OFFICIAL RECORDS
OF THE
WORLD HEALTH ORGANIZATION
No. 213

THE WORK OF WHO
1973

ANNUAL REPORT OF THE DIRECTOR-GENERAL
TO THE WORLD HEALTH ASSEMBLY
AND TO THE UNITED NATIONS

The Financial Report, 1 January–31 December 1973, which constitutes a supplement to this volume, is published separately as Official Records No. 214.

WORLD HEALTH ORGANIZATION
GENEVA
1974
The following abbreviations are used in volumes of the *Official Records of the World Health Organization*:

- ACABQ — Advisory Committee on Administrative and Budgetary Questions
- ACAST — Advisory Committee on the Application of Science and Technology to Development
- ACC — Administrative Committee on Co-ordination
- CIOMS — Council for International Organizations of Medical Sciences
- DANIDA — Danish International Development Agency
- ECA — Economic Commission for Africa
- ECAFE — Economic Commission for Asia and the Far East
- ECE — Economic Commission for Europe
- ECLA — Economic Commission for Latin America
- FAO — Food and Agriculture Organization of the United Nations
- IAEA — International Atomic Energy Agency
- IARC — International Agency for Research on Cancer
- IBRD — International Bank for Reconstruction and Development
- ICAO — International Civil Aviation Organization
- ILO — International Labour Organisation (Office)
- IMCO — Inter-Governmental Maritime Consultative Organization
- ITU — International Telecommunication Union
- OAU — Organization of African Unity
- PAHO — Pan American Health Organization
- PASB — Pan American Sanitary Bureau
- SIDA — Swedish International Development Authority
- UNCTAD — United Nations Conference on Trade and Development
- UNDP — United Nations Development Programme
- UNEP — United Nations Environment Programme
- UNESCO — United Nations Educational, Scientific and Cultural Organization
- UNESOB — United Nations Economic and Social Office in Beirut
- UNFDAC — United Nations Fund for Drug Abuse Control
- UNFPA — United Nations Fund for Population Activities
- UNHCR — Office of the United Nations High Commissioner for Refugees
- UNICEF — United Nations Children's Fund
- UNIDO — United Nations Industrial Development Organization
- UNITAR — United Nations Institute for Training and Research
- UNRWA — United Nations Relief and Works Agency for Palestine Refugees in the Near East
- UNSCEAR — United Nations Scientific Committee on the Effects of Atomic Radiation
- USAID — United States Agency for International Development
- WFP — World Food Programme
- WHO — World Health Organization
- WMO — World Meteorological Organization

© World Health Organization 1974

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. For rights of reproduction or translation of WHO publication in part or in toto, application should be made to the Office of Publications and Translation, World Health Organization, Geneva, Switzerland. The World Health Organization welcomes such applications.
## CONTENTS

### PART I — GENERAL REVIEW

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communicable diseases</td>
<td>3</td>
</tr>
<tr>
<td>Epidemiological surveillance of communicable diseases</td>
<td>Leprosy</td>
</tr>
<tr>
<td>Smallpox</td>
<td>Veterinary public health (incl. Food hygiene and Comparative medicine)</td>
</tr>
<tr>
<td>Virus, chlamydial, rickettsial and related diseases</td>
<td>Prevention of blindness</td>
</tr>
<tr>
<td>Endemic treponematoses and venereal diseases</td>
<td>32</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>17</td>
</tr>
<tr>
<td>2. Malaria and other parasitic diseases</td>
<td>34</td>
</tr>
<tr>
<td>Malaria</td>
<td>Leishmaniasis</td>
</tr>
<tr>
<td>Schistosomiasis</td>
<td>Amoebiasis</td>
</tr>
<tr>
<td>Onchocerciasis</td>
<td>Mycotic infections</td>
</tr>
<tr>
<td>Other filarial infections</td>
<td>Miscellaneous parasitic infections</td>
</tr>
<tr>
<td>Trypanosomiasis</td>
<td>47</td>
</tr>
<tr>
<td>3. Vector biology and control</td>
<td>51</td>
</tr>
<tr>
<td>Applied ecology</td>
<td>Biological control</td>
</tr>
<tr>
<td>Resistance to insecticides and rodenticides</td>
<td>Genetic control</td>
</tr>
<tr>
<td>Evaluation of new insecticides and development of chemical control methods</td>
<td>Vector control in international traffic</td>
</tr>
<tr>
<td></td>
<td>The safe use of pesticides</td>
</tr>
<tr>
<td>4. Noncommunicable diseases</td>
<td>58</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>Dental health</td>
</tr>
<tr>
<td>Cancer</td>
<td>Human genetics</td>
</tr>
<tr>
<td>Mental health, drug dependence and alcoholism</td>
<td>67</td>
</tr>
<tr>
<td>5. Immunology</td>
<td>75</td>
</tr>
<tr>
<td>6. Environmental health</td>
<td>78</td>
</tr>
<tr>
<td>Basic community sanitation</td>
<td>Evaluation and control of specific exposures and conditions</td>
</tr>
<tr>
<td>Environmental health criteria</td>
<td>Promotion of environmental services and institutions</td>
</tr>
<tr>
<td>7. Strengthening of health services</td>
<td>95</td>
</tr>
<tr>
<td>Health planning</td>
<td>Health service development institutes</td>
</tr>
<tr>
<td>Functioning of health services</td>
<td>Health services information systems</td>
</tr>
<tr>
<td>Development of health services</td>
<td>Health laboratory services</td>
</tr>
<tr>
<td>8. Health statistics</td>
<td>103</td>
</tr>
<tr>
<td>Development of health statistical services</td>
<td>Health statistical methodology</td>
</tr>
<tr>
<td>Collection and dissemination of statistical information</td>
<td>International Classification of Diseases</td>
</tr>
<tr>
<td>9. Family health</td>
<td>107</td>
</tr>
<tr>
<td>Maternal and child health</td>
<td>Health education</td>
</tr>
<tr>
<td>Nutrition</td>
<td>Human reproduction</td>
</tr>
<tr>
<td>Chapter</td>
<td>Title</td>
</tr>
<tr>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>10.</td>
<td>Health manpower development</td>
</tr>
<tr>
<td></td>
<td>Health manpower planning</td>
</tr>
<tr>
<td></td>
<td>Education and training of health personnel</td>
</tr>
<tr>
<td></td>
<td>Educational technology</td>
</tr>
<tr>
<td></td>
<td>Fellowships</td>
</tr>
<tr>
<td>11.</td>
<td>Prophylactic and therapeutic substances</td>
</tr>
<tr>
<td></td>
<td>Drug evaluation and monitoring</td>
</tr>
<tr>
<td></td>
<td>Pharmaceuticals</td>
</tr>
<tr>
<td></td>
<td>Biological standardization</td>
</tr>
<tr>
<td>12.</td>
<td>Coordination of medical research</td>
</tr>
<tr>
<td>13.</td>
<td>Cooperation with other organizations</td>
</tr>
<tr>
<td></td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td></td>
<td>United Nations Children’s Fund</td>
</tr>
<tr>
<td></td>
<td>United Nations Relief and Works Agency for Palestine Refugees in the Near East</td>
</tr>
<tr>
<td></td>
<td>World Food Programme</td>
</tr>
<tr>
<td></td>
<td>Nongovernmental organizations</td>
</tr>
<tr>
<td></td>
<td>Summary of cooperation with other organizations</td>
</tr>
<tr>
<td>14.</td>
<td>Public information</td>
</tr>
<tr>
<td>15.</td>
<td>Constitutional, legal, financial and administrative developments</td>
</tr>
<tr>
<td></td>
<td>Legal matters</td>
</tr>
<tr>
<td></td>
<td>The financial position</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
</tr>
<tr>
<td>PART II</td>
<td>THE REGIONS</td>
</tr>
<tr>
<td>16.</td>
<td>African Region</td>
</tr>
<tr>
<td>17.</td>
<td>Region of the Americas</td>
</tr>
<tr>
<td>18.</td>
<td>South-East Asia Region</td>
</tr>
<tr>
<td>19.</td>
<td>European Region</td>
</tr>
<tr>
<td>20.</td>
<td>Eastern Mediterranean Region</td>
</tr>
<tr>
<td>21.</td>
<td>Western Pacific Region</td>
</tr>
<tr>
<td>PART III</td>
<td>PROJECT LIST</td>
</tr>
<tr>
<td>Projects in operation in 1973</td>
<td>196</td>
</tr>
<tr>
<td></td>
<td>African Region</td>
</tr>
<tr>
<td></td>
<td>Region of the Americas</td>
</tr>
<tr>
<td></td>
<td>South-East Asia Region</td>
</tr>
<tr>
<td></td>
<td>European Region</td>
</tr>
<tr>
<td></td>
<td>Eastern Mediterranean Region</td>
</tr>
<tr>
<td></td>
<td>Western Pacific Region</td>
</tr>
<tr>
<td></td>
<td>Interregional</td>
</tr>
</tbody>
</table>
ANNEXES

<table>
<thead>
<tr>
<th>No.</th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Members and Associate Members of the World Health Organization at 31 December 1973</td>
<td>293</td>
</tr>
<tr>
<td>2.</td>
<td>Membership of the Executive Board</td>
<td>294</td>
</tr>
<tr>
<td>3.</td>
<td>Organizational and related meetings in 1973</td>
<td>295</td>
</tr>
<tr>
<td>4.</td>
<td>Expert advisory panels and meetings of committees and scientific groups in 1973</td>
<td>295</td>
</tr>
<tr>
<td>5.</td>
<td>WHO reference centres, collaborating institutions and laboratories</td>
<td>297</td>
</tr>
<tr>
<td>6.</td>
<td>Research grants awarded for training and exchange in 1973, by subject and type of grant</td>
<td>310</td>
</tr>
<tr>
<td>7.</td>
<td>Fellowships awarded, by subject of study and by Region</td>
<td>311</td>
</tr>
<tr>
<td>8.</td>
<td>Publications issued in 1973</td>
<td>313</td>
</tr>
<tr>
<td>9.</td>
<td>WHO library statistics, 1973</td>
<td>316</td>
</tr>
<tr>
<td>10.</td>
<td>Intergovernmental organizations which have entered into formal agreements with WHO approved by the World Health Assembly, and nongovernmental organizations in official relations with WHO</td>
<td>317</td>
</tr>
<tr>
<td>11.</td>
<td>Regular budget for 1973</td>
<td>318</td>
</tr>
<tr>
<td>12.</td>
<td>Numbers and distribution of the staff</td>
<td>319</td>
</tr>
<tr>
<td>13.</td>
<td>Composition of the staff by nationality</td>
<td>321</td>
</tr>
</tbody>
</table>

FIGURES

Fig. 1. Countries with endemic smallpox in 1967 where transmission has since been interrupted, and areas of endemic smallpox in 1973 ................................................. 7
Fig. 2. Diagnosis and treatment of hypertension in the community ................................. 60
Fig. 3. WHO Regional Offices and the areas they serve ................................................. 166

The designations employed and the presentation of the material in the Official Records of the World Health Organization do not imply the expression of any opinion whatsoever on the part of the Director-General concerning the legal status of any country or territory or of its authorities, or concerning the delimitation of its frontiers.
INTRODUCTION

SINCE it was only in July 1973 that I took up my appointment as Director-General, much of the work described in the present report was carried out while my predecessor, Dr M. G. Candau, was holding this office. In fact, the report as a whole reflects the outcome of policies that he implemented and programmes that he initiated in accordance with the objectives and guidelines laid down in the Fifth General Programme of Work Covering a Specific Period. If this programme has not gained full momentum in its first year of operation, that is perhaps only in the nature of things. It would be easy for me to pick out in this introduction a few areas in which excellent progress has been made and to base upon them a rosy picture of WHO's achievements during the year. But this would only breed a false sense of complacency at a time when the Organization is, in fact, faced with a rather critical situation because, as the Executive Board has pointed out, in many countries the health services appear to be deteriorating rather than improving. If WHO is not to forfeit the high reputation and the goodwill that it has built up over the past 25 years, it will not only have to make much greater efforts than in the past but also have to look with determination and imagination for ways in which it can discharge even more effectively the mandate entrusted to it by its Constitution.

A reassessment of WHO's role and activities has, in fact, been taking place for a number of years. It has been made possible and inevitable by the new managerial concepts that have been evolving over the past decade, by the improvements in communications science that have resulted from the applications of computer technology, and not least by the changing needs of the developed and developing countries alike. I believe that this process of critical reappraisal must not only continue but be intensified if WHO's role is not to degenerate into a purely managerial one in relation to the assistance it provides to countries.

* * *

Probably the most spectacularly successful large-scale programme so far undertaken by WHO is the attempt to achieve worldwide eradication of smallpox. This goal now seems to be almost within reach. Only seven countries are now affected by the disease, compared with 30 in 1967; and in August a special PAHO/WHO commission, appointed to assess the smallpox eradication programme in South America, concluded that the requirements had been met for considering the disease to have been eradicated from the whole of the Region of the Americas. At present we consider the disease to be endemic in only one country in Africa and three in Asia—although the figures reported from those countries in 1973 were very high. Why has this programme been so rapidly successful, whereas the malaria eradication programme seems now at a virtual standstill? Of course, malaria is a much more complex disease than smallpox and the weapons at our command for attacking it are neither as effective nor as universally applicable as those available for smallpox. Smallpox is a dramatic disease transmissible direct from person to person and an outbreak anywhere is an immediate threat to the rest of the world; the threat of malaria is more insidious and the full burden of this infection falls mainly on developing countries. But perhaps the single most important factor has been the build-up of momentum through the establishment of close working relations with national staff, and it is greatly to the credit
of the health administrations of the countries that have eliminated the disease that they have been able to carry through the case detection and vaccination programmes with the vigour necessary to achieve interruption of transmission. It is essential that this momentum should not be lost if a recrudescence of smallpox is to be prevented. This is particularly important in view of the phenomenal increase in the speed and volume of travel between countries and continents.

It is easy to understand the disappointment felt by many that the goal of the disappearance of malaria from the whole world is not yet within our reach and that it still kills over a million infants and small children in tropical developing countries every year. And yet we must emphasize the achievements of this enormous international public health programme which, within a decade and a half, has freed well over 1000 million people from the threat of endemic malaria, saved millions of lives and contributed so much to economic development. It is true that our task is still unfinished and that what remains may be more difficult than all that has been accomplished until now.

The solution of the problem of endemic malaria is inseparable from the solution of that of socioeconomic advance in the developing countries. The use of all available and improved technical methods such as new insecticides and better antimalarial drugs must go hand in hand with the expansion of basic health services in rural areas, with the provision of more trained personnel, with better health education, and above all with an improvement in the economic conditions of underprivileged communities in tropical areas.

Smallpox and malaria are the only two communicable diseases with a worldwide distribution on which WHO has so far waged such large-scale concerted attacks. In 1973, however, the first step was taken towards implementing an ambitious plan to rid the Volta River basin of onchocerciasis. It is one of the most detailed plans ever drawn up for the control of a disease and it is hoped that it will prepare the way for the economic development of one of the poorer regions of the world. Seven African governments—those of Dahomey, Ghana, Ivory Coast, Mali, Niger, Togo, and Upper Volta—will participate in the operation, which is expected to extend over 20 years and to cost some US $120 million. WHO is the executing agency for this project, which is also sponsored by the United Nations Development Programme, the Food and Agriculture Organization of the United Nations, and the International Bank for Reconstruction and Development. The conduct of the work is based upon a joint report prepared by these agencies and incorporating the results of two years of intensive work in the countries concerned, where the disease was investigated together with its social and economic aspects, methods of controlling it, and the possible economic benefits of such control. Thus, although the elimination of onchocerciasis is a much more complex and difficult operation than the eradication of smallpox, the programme starts out with considerable advantages, and if the lessons of the past can be applied there is good reason to hope that it will be successful and that it will be possible to repopulate the fertile river valleys of the Volta River basin.

WHO's approach to the control of other parasitic diseases has as yet been somewhat piecemeal. The main problems are the many gaps in fundamental research on host-parasite relationships, the multiplicity of factors that modify the incidence and severity of the diseases, the lack of persons with the diagnostic competence required and of technical resources, and the unsatisfactory nature of the environmental measures and chemotherapeutic agents now available. Clearly, a much more aggressive attack on these diseases will be needed and we hope it will be possible to establish centres in the countries where they are major public health problems to carry out the necessary fundamental and applied research on which to base comprehensive programmes.
Vaccines are now available against a number of communicable diseases, especially those of childhood. In the developing countries, however, the possibilities of mass immunization have still not been fully exploited, except in the smallpox eradication programme. This is largely because of lack of sufficient personnel to effect the necessary number of vaccinations, failure of health education programmes, and other organizational problems. In other words, the means are available but the delivery has been inadequate. Various ways of remedying this situation are at present under study.

An analogous situation exists in regard to tuberculosis, the control of which was for many years my main preoccupation. The clinical trials that WHO was instrumental in initiating have shown that if present knowledge were properly applied the prevalence of the disease could be drastically reduced. Yet even in many developed countries tuberculosis continues to be an important public health problem. It is certain that, although the tools for combating the disease are available, if they are to make an impact they must be used systematically, continuously, and on a national scale with the participation of the entire health delivery services.

When we turn to the noncommunicable diseases and other health problems, we find that they fall into two broad categories—those where the application of available knowledge is hampered by economic and social obstacles, and those where there is little hope of real progress until more fundamental knowledge has been acquired. In the first category, a classic example is the problem of malnutrition and nutritional disorders in the tropics and subtropics. Much is already known about nutritional requirements and how to meet them, but until the socioeconomic situation in these countries improves, application of this knowledge is fraught with the gravest difficulties. Again, WHO is sponsoring a vast programme of research into improved methods of family planning and other aspects of family health. But the major problem here is to overcome social resistance to changes in attitudes and practices, without which new advances are likely to remain of little more than academic interest.

On the other hand, the cardiovascular diseases exemplify the situation where little more progress can be expected until we have gained a much better understanding of their etiology and pathogenesis. This is now being attempted through a worldwide cooperative programme of research, which also includes large-scale trials to assess the value of preventive measures. This will unquestionably be a long-term effort. Two other examples are mental disorders and cancer. Although recent advances in psychosocial, psychopharmacological, and other therapies have provided powerful means for attenuating many forms of mental disorder, scientific knowledge of their etiology and pathogenesis remains limited. Without this knowledge, further progress is likely to be slow, so that much greater attention needs to be given to the promotion of multidisciplinary research in this field. Similarly, techniques for early detection and improved diagnosis are now available for some types of cancer and recently developed chemotherapeutic agents have considerably increased survival rates. Nevertheless, it is unlikely that there will be a major breakthrough until greater insight is obtained into the causes of cancer and the mechanisms involved. Fundamental research on these questions is being pursued energetically in national institutes all over the world and WHO is cooperating with the International Agency for Research on Cancer in pathological and epidemiological investigations in different population groups and in the development of new approaches to treatment.

*
From this brief review of a few WHO programmes, it is apparent that the reasons for the failures have been multiple. With limited resources not all problems can be given equal priority, and it will be many years before effective methods can be developed for the prevention and treatment of some of the diseases mentioned. Nevertheless, it has to be recognized that a great deal more could have been accomplished if all the available knowledge had been properly applied. The most signal failure of WHO as well as of Member States has undoubtedly been their inability to promote the development of basic health services and to improve their coverage and utilization. In its organizational study of this problem, the Executive Board recognized in January 1973 that in many countries the health services are not keeping pace, either in quantity or in quality, with the changing populations and may even be getting worse. It considered that a major crisis is on the point of developing and that in the developed countries as well as in the third world there is widespread dissatisfaction with the health services. This unequivocal admission may well mark a turning-point in the life of the Organization.

It is frequently stated that the developing countries are too poor to afford a comprehensive health system providing universal coverage. Certainly there is no easy answer to this objection and obviously it will never be possible to provide a blueprint for a health service that would be applicable to all developing countries. Nevertheless, I believe that it is possible to design a health delivery system that has a wide coverage, is reasonably cheap, and has the primary qualities needed by many populations. The cost of such a service may well be within the reach of many countries now, if one takes into account not only the resources raised by taxation but also individual expenditure on health and the contributions that could be made by the villagers themselves, both in labour and in kind. The type of financing and organization adopted in rural China, which depends heavily on the primary health worker, and other alternatives such as those introduced in Cuba and in rural areas of the United Republic of Tanzania have aroused great interest in Asia, Latin America, and Africa. At present, however, there are few models to demonstrate that primary health care can come out of the villages at a reasonable cost and in a manner that is technically and socially acceptable. It is an urgent task for WHO to seek a number of innovator countries that will be willing and able to set up such systems of primary health care and demonstrate their effectiveness. The geographical location and the needs of those countries will also have to be relevant to those of a wider region. Above all, they must possess a national capability for continuous change. One way in which WHO hopes to encourage this is to support the establishment of health service development institutes staffed by national personnel capable of showing to the government the needs, the available resources, the ways in which these resources can be allocated, and the likely outcome of different decisions. Such institutions should also be able to evolve, adapt, and test various national alternatives. The first institute of this kind was designated in Iran in 1973 and its performance is being followed with the greatest interest.

The Executive Board pointed out in its organizational study in January 1973 that one of the main reasons for the lack of effective change was the low priority that the development of health services has been accorded within country programmes and the consequences at the international level. It is my conviction that, if we are to bring into being a truly effective partnership between WHO and its Member States, we shall need to develop programming and evaluation techniques whereby we establish a much closer relationship between the two processes of priority setting by governments collectively at the World Health Assembly and individually at the country level. I believe that increased emphasis on WHO's coordinating role at the country level could contribute substantially to bringing the two priority-setting processes together. One of the mechanisms being developed to assist countries in identifying national priorities is country health programming, by which the
health problems of a country are assessed systematically in their proper context, taking into account the resources that are or could be available, with the aim of pinpointing areas susceptible to change. Country health programming is intended to be followed by project formulation, which describes the measures to be adopted and the detailed use of resources for their implementation in the priority areas. Management techniques and evaluation procedures are then applied in the implementation of these decisions. Thanks to the cooperation of the Government of Bangladesh, the country health programming part of this process has already taken place in that country, and WHO is prepared in 1974 and 1975 to assist several other countries to carry out the total process.

Because WHO's resources are minute compared with those of governments, it is vitally important to identify national capabilities for change and to select projects that will promote self-sustaining growth, with WHO providing the technical support. If governments are determined to make the projects succeed and to accord WHO a true coordinating role, I am convinced that it will be possible to mobilize much greater resources for national development than could ever become available from WHO's regular budget. Moreover, in order that direct country assistance may exploit to the full the knowledge and resources available throughout the Organization, there must be much closer coordination between WHO's central technical services and direct assistance to countries. A vigorous attack on this problem seems to me to be one of WHO's primary tasks for the seventies. Its success is going to require a high degree of confidence in the Organization from developed and developing countries alike.

The interrelationship between WHO's central technical services and programmes of direct assistance to countries is the subject of the organizational study of the Executive Board in January 1974 and its recommendations will no doubt arouse great interest at the World Health Assembly. It is already clear, however, that one prerequisite is that the lines of communication between WHO headquarters, its regional offices and field staff, and the health administrations of Member States must be kept open and that information must flow freely in both directions along them. Unfortunately, the functioning of WHO's information network has left much to be desired. One result of this is greatly to hamper the operation of WHO's communicable disease surveillance programme, as was again made abundantly clear in 1973. The Organization has a reasonable mechanism for the surveillance of the four diseases subject to the International Health Regulations (1969)—smallpox, yellow fever, cholera, and plague—and for five other communicable diseases notifiable under World Health Assembly resolutions—paralytic poliomyelitis, viral influenza, louse-borne typhus, relapsing fever, and malaria. This mechanism can only be effective, however, if governments fulfil their obligations to report promptly the occurrence of these diseases and follow up these reports with further epidemiological information. The extent to which this reporting system breaks down is illustrated by the fact that in the whole history of the Organization there has not been a single notification to WHO of a case of yellow fever having been imported into a Member State and only one notification of the importation of suspected plague. Consequently, the Organization is at a grave disadvantage when it comes to fulfilling its own obligations towards Member States in respect of prompt dissemination of information on these diseases of international importance. Although Member States may fear loss of tourism and export trade, such underreporting is inexcusable and it is symptomatic of the wider problem of obtaining up-to-date and reliable information on the health situation and the health needs of the countries that are desirous of receiving WHO's assistance.

*
The year 1973 may be considered a milestone on the long road of WHO's progress to universal representation. Closely following on the recognition of the Government of the People's Republic of China as the representatives of China to the Organization the previous year, it saw the admission of the Democratic People's Republic of Korea and the German Democratic Republic, bringing the total membership to 138. Such near-universal representation affords immense opportunities for international cooperation to improve the health of all peoples of the world and it would be unforgivable if these opportunities were to be lost through failures in communication. The World Health Organization is a unique forum for the constant exchange of knowledge and experience, in an atmosphere of great freedom of expression. The more actively Member States participate in this exchange, the nearer will the Organization draw to becoming the international health conscience so clearly envisaged in its Constitution.

Director-General

— XII —
PART I

GENERAL REVIEW
1. COMMUNICABLE DISEASES

Epidemiological surveillance of communicable diseases

1.1 Through its epidemiological surveillance programme, the Organization seeks to encourage the fullest use of existing facilities for the prompt and accurate international reporting of communicable diseases and to help to strengthen national epidemiological services in order to provide a sound base for both national and international disease control measures. The administration of the International Health Regulations (1969) also falls within this programme.

1.2 The Weekly Epidemiological Record and the automatic telex reply service continued to be the principal means of dissemination by WHO of timely and important information on the communicable diseases, notably those subject to the International Health Regulations and under international surveillance in accordance with resolutions WHA22.47 and WHA22.48 of the Twenty-second World Health Assembly. In addition to giving summary review articles, technical guides and brief epidemiological notes on a wide range of communicable diseases, the Weekly Epidemiological Record provides confirmation and elaboration of the more urgent information, the principal details of which have been made available on the telex service.

1.3 Gradually increasing use has been made of the automatic telex reply service since its introduction in December 1972 and up to 45 calls per day have been registered during events of particular interest to national health administrations, such as the extension of cholera into European countries. However, it is believed that many Member States are not yet taking full advantage of the simplicity of the service, which operates 24 hours a day in both English and French. In some situations, too, delays in reporting information to WHO have diminished the efficacy of the service, which is potentially the most rapid and economical means of making urgent communicable disease information available to health administrations throughout the world.

1.4 As in the past, semi-annual and annual reports on malaria eradication were published in the Weekly Epidemiological Record. In addition, a special review was issued to provide tourists, businessmen and others who undertake international journeys with as much information as possible on the risk of contracting malaria in the areas they intend to visit, on how to protect themselves, and on what to do if they develop fever on returning home. The information on malaria risk is presented in a map and a detailed table, and guidelines are included to assist physicians who may have to advise on preventive measures. In reply to wide demand, nearly 10,000 reprints were distributed throughout the world to public health administrations, the International Air Transport Association, travel agencies and others.

1.5 Surveillance reports on smallpox were also published at intervals in the Record. These give information on the progress of the eradication campaign and related epidemiological matters, and more than 2000 reprints of each report are regularly provided to smallpox workers in the principal endemic countries.

1.6 Although the number of reported cases of plague declined in 1973 and there were no reports to suggest that any spread of the disease had been associated with international traffic, the persistence of natural foci of the disease in many countries makes its surveillance imperative. A technical guide for a system of plague surveillance was published in the Record to facilitate national surveillance activities and to promote a more uniform methodology internationally.

1.7 Official notifications of cholera cases and deaths were routinely published. However, the quality of cholera reporting continues to be rather poor, largely owing to the fear by an affected country of an overreaction by others with respect to travel requirements and restrictive trade practices. The programme being developed by the Organization to improve both the surveillance and the control of acute diarrhoeal diseases, including cholera (see paragraph 1.143), should help to improve matters in time; meanwhile, a more rational appreciation of the epidemiology of

1 For specific information about these diseases, the reader is referred to the appropriate sections later in this chapter and to Chapter 2.


individual situations would lead to a calmer attitude towards cholera.

1.8 Countries in the African Region have given increased emphasis to the establishment of epidemiological surveillance systems which provide the most effective basis for controlling communicable diseases; these remain the greatest cause of preventable illness and death in this Region. Assistance is given directly from the Regional Office in Brazzaville and through the WHO regional centres for epidemiological surveillance in Abidjan and Nairobi. A limited list of diseases and groups of symptoms has been drawn up for priority notification within the regional surveillance programme, and the processing of data received from Member States (which in 1973 has included information on the evaluation of immunization and treatment schedules) has made it possible to improve the programming of communicable disease operations.

1.9 In the Region of the Americas the first of a planned series of regional seminars on the epidemiological surveillance of communicable diseases, including the zoonoses, was held in Rio de Janeiro, Brazil, in December. Like an interregional seminar on the same subject (held in Bangkok in October), it provided an opportunity for senior epidemiologists, public health specialists and veterinarians to exchange views and experience on general surveillance methodology and on methods specifically applicable to particular diseases, including some of the zoonoses and foodborne infections. The Rio de Janeiro seminar reflected a year of marked development and improvement in national and regional systems of epidemiological surveillance—in many instances as the consequence of strengthening departments of epidemiology within ministries of health. In Brazil, for example, on the basis of the existing system for smallpox surveillance a general system is being developed with emphasis on those diseases that can be prevented by the use of vaccines. The epidemiological surveillance system in the Mexico-USA border area was also expanded and strengthened during the year. The fifth meeting of the Caribbean Health Ministers Conference in February proposed the creation of an intercountry surveillance centre, based on the existing Trinidad Regional Virus Laboratory, as part of an area-wide communicable disease surveillance system.

1.10 The epidemiological surveillance programme of greatest significance in the South-East Asia Region is that on which depends the success or failure of the worldwide smallpox eradication programme—dealt with in the following section of this chapter. In some countries of the Region, the infrastructure of a successful smallpox eradication programme has been used to initiate surveillance and control of other communicable diseases; in Indonesia, for example, a fourfold increase in the number of BCG vaccinations has been possible. Although communicable disease surveillance is undertaken in all countries of the Region, the diseases given emphasis vary. In Thailand and Indonesia dengue haemorrhagic fever is one of the most important under surveillance; in Burma significant progress has been made with trachoma; and in Mongolia measles and brucellosis receive special attention. Information was collected during the year on the epidemiological surveillance programmes in the Region and the Organization's resources to assist governments in this respect have been strengthened. Venereal diseases, diphtheria, tetanus and pertussis are among the diseases for which better surveillance is required.

1.11 In the European Region the importation of cholera without secondary spread into France, the Federal Republic of Germany, Sweden and the United Kingdom and outbreaks in southern Italy underline the fact that, with present-day population movements, the introduction of infection by the cholera vibrio cannot be prevented and that efficient diarrhoeal disease surveillance together with adequate environmental sanitation measures must remain an essential and continuous activity of every health administration. Emphasis was also given during the year to the surveillance of those communicable diseases that are amenable to control by immunization programmes, particular attention being paid in country projects to surveillance of poliomyelitis, measles, diphtheria, tetanus, pertussis and tuberculosis.

1.12 It was in collaboration with nine laboratories in the European Region that the Organization's programme for the surveillance of salmonellae and foodborne disease outbreaks began in 1967. By the end of 1973, 29 laboratories in countries in all WHO Regions were providing data of increasing value for the control of the disease. The programme has shown that a large number of the participating countries are experiencing a decrease in the incidence of *Salmonella typhi* and *S. paratyphi* infections but a considerable increase in other salmonellae.

1.13 Surveillance of communicable diseases was the subject of the Technical Discussions at the meeting of Sub-Committee A of the Regional Committee for the Eastern Mediterranean in September. During the year particular attention was given to the recording of data on communicable diseases at the national level with a view to introducing a standard epidemiological information system for the Region. In some countries there is concentration upon the surveillance of one or more specific diseases—for example, poliomyelitis,
viral hepatitis, influenza and enteric infections in the Libyan Arab Republic. In Ethiopia further emphasis has been given to the organization of epidemiological services particularly at the peripheral level. The Epidemiology Unit newly established in the Syrian Ministry of Health with WHO assistance undertook studies of certain public health problems in cooperation with the Public Health and Endemic Diseases Laboratory; one of these was the investigation of the poisoning outbreak mentioned in paragraph 3.35.

1.14 In all WHO-assisted communicable disease projects in the Western Pacific Region, as in other Regions, the essential relationship has been emphasized between health laboratory and statistical services and an effective epidemiological surveillance programme. The outbreaks of dengue fever, some with haemorrhagic manifestations, that occurred in the Khmer Republic, Malaysia, and the Republic of Viet-Nam during the year drew attention to the need for the surveillance not only of these diseases, but also of their vectors. In Malaysia, collaboration between the disciplines involved in diagnosis, reporting and effective vector control checked the outbreak of dengue haemorrhagic fever that had been building up from February to July. In the Republic of Korea, epidemiological surveillance services have been strengthened and particular attention is to be given to venereal diseases and intestinal parasitism. Assistance was given to Fiji, Singapore and Western Samoa for the study of communicable skin diseases, for which surveillance is also important.

Committee on International Surveillance of Communicable Diseases

1.15 In May the Twenty-sixth World Health Assembly, when it adopted (in resolution WHA26.54) the seventeenth report of the Committee on International Surveillance of Communicable Diseases, stressed the importance of maintaining a high standard of quality of drinking-water and food in international traffic, and in that connexion called the attention of all Member States to the provisions of Article 14 of the International Health Regulations. In preparation for the eighteenth session of the Committee, in 1974, the Organization arranged a consultation in June with the International Air Transport Association at which measures for the quality control of drinking-water and food on international flights were reviewed and the handling and disposal of wastes were discussed. By its adoption of the seventeenth report of the Committee, the Twenty-sixth World Health Assembly approved the use of aerosol formulations of resmethrin and bioremethrin for aircraft disinsection (see paragraph 3.31).

1.16 The Additional Regulations of 23 May 1973 adopted by the Twenty-sixth World Health Assembly in resolution WHA26.55 amended the International Health Regulations (1969) with effect from 1 January 1974. Apart from a rewording of the definition of “airport” and a modification in signature requirements for vaccination certificates the changes resulting from the additional Regulations relate almost entirely to the cholera chapter. An essential point for countries bound by the Regulations was the removal of any requirements regarding cholera vaccination certificates for international travellers. Few countries submitted reservations to the additional Regulations for consideration by the Twenty-seventh World Health Assembly.

Smallpox

1.17 During 1973, the seventh year of the global smallpox eradication campaign, there was a further reduction in the areas where smallpox is considered endemic, as three more countries—Botswana, Nepal and Sudan—were added to the list of those where continuing transmission is believed to have been interrupted. Since 1967 the number of countries and territories reporting any smallpox cases has dropped from 43 to 11, and the number where it is considered endemic from 30 to four (Fig. 1). By the end of the year, endemic smallpox was considered to persist only in Bangladesh, Ethiopia, India, and Pakistan. However, the world’s total of reported cases again rose sharply—from 65 000 cases in 1972 to 130 000 in 1973—as a result of major epidemics in Bangladesh, India and Pakistan. Improved surveillance and better case-reporting account for some part of this figure, but there is no doubt that in many areas of these three countries the situation was much more serious than it had recently been. India recorded an increased incidence for the third successive year as intense outbreaks occurred in the contiguous states of West Bengal, Bihar, Uttar Pradesh and Madhya Pradesh, with subsequent spread to more distant areas. These four states accounted for 95% of all cases in India. However, by the end of the year several foci outside these states persisted, although containment operations conducted in the course of a special autumn surveillance campaign appeared to have reduced transmission. A more exact appraisal of the success of these efforts will require further observation during the January-May 1974 smallpox season. In Bangladesh, smallpox incidence rose to over three times that recorded in 1972, necessitating in March emergency programmes that involved for a time virtually all personnel in the health services. Special programmes were continued throughout the summer monsoon period and were
further intensified with additional WHO assistance in the autumn. By autumn, transmission had been virtually interrupted in one of the country’s four divisions. The absence of a significant seasonal increase between October and December created optimism that Bangladesh might not be far away from the freedom from smallpox it had attained in 1970-71. In Pakistan, the eradication programme succeeded in virtual interruption of transmission in two of the four provinces by summer. An intensified surveillance programme was begun in September in the principally infected areas in Sind and Baluchistan, and by the end of the year it appeared that Pakistan as well might achieve zero incidence early in 1974. Transmission appeared to have been interrupted in Nepal.

1.18 In Africa, remarkable progress was achieved in the fourth of the world’s endemic countries, Ethiopia, where, despite the effect of better notification, the number of reported cases has declined from more than 26,000 in 1971 (the first year of the eradication programme) to some 17,000 in 1972 and to 5,300 in 1973. By the end of the year, endemic smallpox appeared to have been restricted to five of the 14 provinces and one or more surveillance and containment teams were working in every district of those provinces that remained infected. Although the strategy has been principally one of surveillance and containment of outbreaks, more than 8 million persons, about one-third of the population, have been vaccinated throughout the country by the teams and cooperating health services since the programme began. In Botswana a single residual focus of cases was detected early in the year; surveillance teams kept up an extensive search, and what were probably the last cases were discovered in December in the same area. Continuing importations of smallpox from Ethiopia into Somalia and the French Territory of the Afars and Issas underlined the importance to countries throughout the continent of maintaining surveillance and vaccination. To strengthen this effort, WHO-assisted programmes were therefore pursued in most countries of Africa. The situation in western and central Africa, with a population of more than 120 million, remains that no case of smallpox has been detected since May 1970. Smallpox programmes in many of these countries have been gradually transformed into general communicable disease control activities embracing surveillance and immunization for a number of diseases subject to control through immunization procedures.

1.19 In the western hemisphere no cases of smallpox have been detected since April 1971. Since more than two years had elapsed since the occurrence of the last known case, the Organization convened an international commission in Rio de Janeiro, Brazil, in August to assess the status of smallpox eradication. This commission, taking into account the extent of the surveillance programmes and the special investigations which had been conducted to date, decided that it was reasonable to conclude that smallpox had now been eradicated from the western hemisphere; it advised, however, that continuing programmes of surveillance and vaccination be maintained until global eradication had been achieved. In October, the twenty-second meeting of the Directing Council of PAHO, which was also the twenty-fifth session of the Regional Committee for the Americas, took note of these findings and especially cited the Government of Brazil for its decisive and forceful efforts in contributing to the eradication of smallpox from the Region of the Americas.

1.20 Although importations into smallpox-free countries were fewer in number during 1973, six countries or territories did experience smallpox as a result of such importations. Nepal, which shares a long common border with the heavily infected states of northern India, was the most seriously afflicted. A total of 30 importations and 277 cases were recorded. These could all be shown to be directly or indirectly due to importation from India or, in one case, from Bangladesh. Effective surveillance and containment measures prevented the re-establishment of endemic smallpox, but Nepal’s status will remain highly precarious so long as the disease persists in India. In Afghanistan 25 cases among nomads were the result of three importations from Pakistan. Somalia and the French Territory of the Afars and Issas reported a total of 20 cases, all in persons who acquired their infections in Ethiopia. Japan and the United Kingdom each reported one case—imported from Bangladesh and India, respectively. In addition, four cases occurred in the United Kingdom following the accidental infection of a laboratory technician.

1.21 With the main smallpox outbreaks restricted to a more limited geographical extent, it was possible in September to concentrate efforts and to launch special programmes throughout the remaining areas of endemicity, which are estimated to amount to less than half of the total area of the four countries concerned. WHO staff from countries now free of smallpox assisted, additional staff were recruited and additional equipment was provided. These programmes, begun at a time when smallpox incidence was at its lowest seasonal point, were designed to detect and eliminate all remaining chains of transmission of infection. In each country, mobile surveillance teams conducted an active search for cases; in some areas, all health staff were mobilized for a
Fig. 1. Countries with endemic smallpox in 1967 where transmission has since been interrupted, and areas of endemic smallpox in 1973

rapid systematic programme of village-by-village search; and, in some areas, financial rewards were offered for the detection of cases.

1.22 The WHO International and Regional Reference Centres for Smallpox Vaccine in Utrecht, Netherlands, and Toronto, Canada, continued their valuable work in training and consultation for production laboratories throughout the world. During 1973, 400 batches of vaccine were tested; this sampling represents the monitoring of more than 200 million doses. All vaccine released for use in the eradication programme now meets WHO's required standards of potency, stability and purity. Donations to the Special Account for Smallpox Eradication (see also paragraph 15.18) in the form of vaccine, equipment, personnel and cash were received from Argentina, Belgium, Brazil, Canada, Colombia, Greece, Hungary, Iran, Japan, Kenya, Netherlands, Switzerland, Uganda, the USA, and the USSR as well as from individuals. More than 33 million doses of vaccine were distributed. It is noteworthy that an increasing quantity of the vaccine being employed in smallpox programmes throughout the world is now produced by vaccine production laboratories in the developing countries.

1.23 The WHO International and Regional Reference Centres for Smallpox in Moscow and in Atlanta, Ga., USA, received and processed some 275 specimens from suspected patients from 19 countries throughout the world. These laboratories, along with other collaborating laboratories, continued their research studies to characterize variola and related poxviruses and to appraise the epidemiological and virological characteristics of smallpox in the remaining endemic areas. The WHO International Reference Centre for Smallpox Vaccine, Utrecht, Netherlands, in a special investigation, demonstrated the feasibility, given suitable laboratory conditions, of producing a stable smallpox vaccine in tissue culture.
1.24 Investigations of human cases of monkeypox were continued and three additional cases were discovered in Zaire, bringing the known total to 17 cases so far. In two instances, there appears to have been transmission between family members; these are the only documented instances of apparent person-to-person transmission although extensive and close contact between other cases and their susceptible contacts has often occurred. An informal consultation of the principal investigators collaborating in the study of monkeypox, smallpox and related poxviruses was held in Geneva in December. After reviewing all data, the participants reiterated the conclusion that it is highly unlikely that there is any natural reservoir for smallpox other than man, but they advised the active pursuit of surveillance programmes and the careful investigation of all suspect cases in smallpox-free areas, especially in Africa.

1.25 More than 250,000 copies of WHO’s diagnostic wall charts, smallpox recognition cards and teaching slides were distributed in English and French, and translated as required for local use; these have been prepared in recent years to assist in surveillance activities and in the clinical diagnosis of smallpox in African and Asian patients. Posters on smallpox were also widely distributed, with such text as is necessary being printed in the appropriate languages; for example, posters for India and Indonesia were printed in 12 and 11 tongues respectively. Requests continued to be received from many laboratories for copies of the illustrated guide to the laboratory diagnosis of smallpox

Virus, chlamydial, rickettsial and related diseases

1.26 The organization and execution of collaborative studies, many of them coordinated by the reference centres designated by the Organization, has been a very successful part of the WHO virus diseases programme. In April the directors of the WHO respiratory virus and enterovirus reference centres met in London to review their activities since the last meeting in 1969 and to consider developments for the future.

Developments in the reagents programme

1.27 Even laboratories with restricted facilities and staff of relatively limited experience may start diagnostic virology services using such simple tests as haemagglutination inhibition and complement fixation. However, laboratories in developing countries often have difficulty in preparing or procuring the necessary antigens, which are expensive and are required in fairly large amounts unless microtest techniques are employed. The Organization is therefore establishing a collaborative programme in which several laboratories in developed countries, including the reference centres mentioned above, will assist those in developing countries, first by providing small amounts of antigens (so that the laboratories can obtain experience) and then by helping them to prepare their own antigens.

WHO team for special studies in virology in Africa

1.28 One of the subjects of investigation by this WHO team, at the East African Virus Research Institute, Entebbe, Uganda, has been the poor serological responses that are sometimes encountered to oral poliomyelitis vaccines. The explanations most commonly advanced have been the presence of antibody in the breast milk of mothers or interference by other enteroviruses in the intestine. As reported previously, the team found that breast feeding did not influence the seroconversion rates but that an inhibitor not associated with breast milk was involved. It has now shown that the main factor is a substance present in saliva and in the throat which inhibits the multiplication of the virus without neutralizing it. This inhibitor is being further studied in an attempt to characterize it by chemical and other means. Preliminary work suggests it may also be present in monkey saliva.

1.29 In the team’s study of virus infections of the upper and lower respiratory tracts of children, begun in 1972, specimens for virus isolation have been obtained from over 400 patients and serial samples of sera have been taken from many of the children. Preliminary results indicate that, though the commonest pathogenic viruses in respiratory disease in the tropics are also those commonest in temperate climates, a number of enteroviruses which can cause respiratory disease are also prevalent.

Virus reporting system

1.30 In 1973 six further laboratories, four in Europe and two in the Eastern Mediterranean Region, joined the WHO system of collection and distribution of

---

3 This programme was reviewed in a recently published paper: Cockburn, W. C. (1973) Progr. med. Virol., 15, 159-204.
information on virus infections other than influenza and arboviruses, bringing the total number of countries participating to 41; the number of reports received by WHO in 1973 on viruses isolated or on cases diagnosed by serology amounted to nearly 38,000. A study is now in progress on the pathogenic significance of the isolation of adenoviruses and myxoviruses other than mumps virus in a relatively large number of cases of diseases of the central nervous system.

Influenza

1.31 The first cases of influenza A in the northern hemisphere in the winter of 1972-73 appeared in Hong Kong, Panama (Canal Zone) and the Republic of Viet-Nam. Among institutionalized groups circumscribed outbreaks occurred in the United Kingdom and the USA in October 1972. The epidemic reached a peak in Europe and North America in December-January, 10-25% of persons in some population groups being affected. The disease was generally mild; nevertheless, the number of deaths in the United Kingdom (one of the countries from which precise data are available) attributed to influenza, pneumonia and bronchitis in December-January (25,904 deaths) considerably exceeded the number (17,086 deaths) during the same months in the previous winter—a period of low influenza incidence. An outbreak in Ethiopia at about the same time was shown, from sera sent to the East African Virus Research Institute, Entebbe, and to the World Influenza Centre, London, to be due to the prevalent A/Hong Kong/1/68 (H3N2) strain in Uruguay and to A/England/42/72 strain (see below).

1.32 In the southern hemisphere, outbreaks occurred in Argentina and Uruguay during April-June 1973. The virus isolates typed were similar to the A/Hong Kong/1/68 (H3N2) strains in Uruguay and to A/England/42/72 (H3N2) in Argentina.

1.33 The World Influenza Centre, London, and the WHO International Reference Centre for the Americas, Atlanta, Ga., USA, received strains from almost all the 90 national centres in the influenza laboratory network. The study of these strains confirmed the rapid spread of the new variant A/England/42/72, which has widely replaced A/Hong Kong/1/68. In these two international centres over 4800 items of reagents were prepared, evaluated and shipped to national influenza centres for the identification of isolates. A new kit of reagents for neuraminidase and neuraminidase-antibody assay was also made available.

1.34 Vaccine prepared from the strain A/Hong Kong/1/68 showed some degree of protection against the new variant, but better protection was achieved with the strain A/England/42/72, and a high-yielding recombinant was quickly prepared in the international reference centres and made available to producers. A note on the composition of inactivated influenza vaccines for the 1973-74 season was published in October.\(^1\)

1.35 Influenza virus B, which is antigenically much more stable than virus A, showed a considerable antigenic drift in strains isolated from sporadic cases in Hong Kong in December 1972 and January 1973. The new variant, characterized in the World Influenza Centre, was designated B/Hong Kong/5/72. During the spring of 1973 outbreaks of influenza B occurred in Japan, Europe, and North America; the strains of virus isolated in these outbreaks were antigenically intermediate between B/Hong Kong/5/72 and the type previously prevailing, as were some isolated from sporadic cases in Australia. However, later in the year there was evidence, especially in the United Kingdom, that the Hong Kong strain was tending to replace the intermediate strain.

1.36 A simple method, developed at the World Influenza Centre,\(^2\) for the detection of influenza virus antibody is being used in a study of the changing levels of antibody in populations in more than 20 countries (100 sera per month are examined). The technique is not influenced by the non-specific inhibitors frequently found in animal sera and so is well suited to the study of the ecology of influenza viruses in animals (particularly in wild birds), which may play an important role in dissemination.

1.37 The role of animals in influenza was reviewed at a consultation in January. It has become apparent that both wild and domestic birds constitute a reservoir of influenza A virus that circles the world. Antibodies to this virus (including the Hong Kong strain and other human subtypes) or to related or influenza-like viruses have been found in migratory birds in the far-eastern USSR, in seabirds off the eastern Australian and Norwegian coasts, in Brazilian forest birds, in wild ducks and imported birds (mostly from Thailand) in the USA, in as many as 15% of sera from 500 domestic ducks in one study in the Western Pacific Region, and in chickens in the Kamchatka peninsula in the USSR. No less wide-ranging is the mammal reservoir. Antibodies to the Hong Kong strain have recently been found in pigs in Czechoslovakia, the United Kingdom and the USA (mainland and Hawaii). Equine influenza has been freshly noted in Romania,\(^3\)

---

Switzerland and the United Kingdom, and also in Japan, where the virus showed signs of antigenic drift—the first observation of this in an animal other than man. The World Influenza Centre has confirmed the first recognized isolation of influenza virus from a bovine—a calf in the USSR. Antibodies have also been reported from mink and fur seals.

1.38 Further research, with which WHO is associated, at the Plum Island Animal Disease Laboratory, New York, USA, has established that it is possible for hybridization of influenza strains from different species, including man, to occur in the respiratory tract, even of partly immune animals. The experiments simulated some of the conditions that could occur naturally and give rise to new subtypes, and the results indicate that new pandemic strains might arise from hybridization of human and animal strains.

Poliomyelitis

1.39 At the request of Dr Albert Sabin, WHO has accepted responsibility—hitherto assumed personally by Dr Sabin—for the storage and distribution of his strains for types 1, 2 and 3 poliomyelitis virus vaccine. In the immediate future the Organization will deal only with laboratories requesting the strains in order to set up vaccine production for the first time. A group that includes Dr Sabin, the heads of certain national laboratories for the control of biological substances, and other recognized experts on enteroviruses, has been established to advise the Organization in this matter.

1.40 In the Americas increased numbers of poliomyelitis cases were reported from the Dominican Republic, Ecuador and Paraguay. In the first-mentioned country there was an outbreak of 14 cases of polyradiculoneuritis of unknown etiology, associated in time and place with a very large epidemic of gastroenteritis in the community. In Africa, poliomyelitis, which occurs throughout the Region, continued to appear in sporadic outbreaks, with 90% of cases in children under 5 years of age. An outbreak in Equatorial Guinea in 1972-73 was rapidly contained with a mass immunization campaign, WHO furnishing advice.

1.41 A WHO-sponsored surveillance programme for poliomyelitis began during the year; 19 countries in different Regions are already participating. The information received by the Organization is made available immediately to the participating countries and annually to all national health authorities.

Viral hepatitis

1.42 In line with the recommendation of the WHO Scientific Group on Viral Hepatitis\(^1\) in 1972 that WHO should develop a programme on hepatitis B, a number of projects have been or are being established. Some 29 laboratories in 25 countries in tropical and temperate climates are collaborating in a study of the prevalence of hepatitis B antigen by age, sex and socioeconomic conditions. This study is made possible by the availability of sufficient specific antisera donated by the National Heart and Lung Institute in the USA and prepared in the WHO International Reference Centre for Enteroviruses, in Houston, Tex., USA, which is closely concerned with the investigation. In Senegal, advantage has been taken of a serological survey of the prevalence of yaws in rural areas (see paragraph 1.65) to determine that of HB antigen and antibody in the surveyed population. Preliminary results indicate that almost 10% of the population are carriers of the antigen. In Israel, a renal dialysis unit was recently established, and this has afforded the opportunity to follow from the inception of the unit the appearance and spread of HB antigen in patients, staff and their families; WHO is collaborating in this study.

1.43 The WHO International Reference Centre for Enteroviruses has shown that the counter-immunoelectrophoresis test currently in widespread use may fail to detect low levels of HB antigen in blood donors, the transfusion of whose blood has resulted in the occurrence of hepatitis. A re-evaluation of screening procedures may therefore be necessary.

Cytomegalovirus

1.44 In view of the role that cytomegalovirus plays in congenital malformations and later disease, a WHO collaborative study was initiated in 1970 to assess the frequency of cytomegalovirus infection in different parts of the world; 17 laboratories in 16 countries have participated in this study, conducted among healthy blood donors 20-24 years of age. The frequency of antibodies has not been noted to differ between arctic areas and tropical areas and appears to be related to socioeconomic standards; it may reach 100% in the less favoured population groups. The study is being expanded in an effort to shed light on the frequency of intrauterine infection as a cause of postnatal disease; 30 laboratories in 26 countries have been invited to participate. The frequency and time of acquisition of cytomegalovirus antibody in the first four years of life will initially be studied; later a

pilot study will be made to determine the frequency of pre- and post-natal infection.

**Arboviruses**

1.45 In the Americas, limited outbreaks of jungle yellow fever occurred in Bolivia, Brazil and Peru in forest areas, and vaccination was carried out in the rural communities at risk. Serological findings among wild primates suggest that the current wave of jungle yellow fever probably reached into the Darien region of Panama. In Africa, three fatal cases occurred in July-August in an area near a forest reserve in western Ghana, where there has been no vaccination recently. A case was notified in Cameroon, also in a forest area; a few similar cases had been observed in the same country in 1970 and 1972, but no cases had been known between 1941 and 1970: this suggests that endemic jungle yellow fever cases will be recognized more frequently in Africa wherever surveillance is intensified.

1.46 A serological survey for antibodies to yellow fever virus was carried out in Sierra Leone among 899 schoolchildren less than 14 years old. Only 21 of them had such antibodies, and the complement-fixation reactions indicated that some of the infections were recent. Such a low level of infection suggests the jungle type of yellow fever. *Aedes aegypti* is generally not abundant in Sierra Leone outside some limited areas, and in most villages the conditions do not favour an outbreak of yellow fever. A similar survey in Senegal two years previously had also shown recent infection both in human beings and in monkeys. In Ivory Coast, Mali and Upper Volta, examination of 373 monkeys for yellow fever antibodies in 1973 showed enzootic infections in the area around the point where the borders of these three countries meet. The permanent threat of more severe epidemics arising from such endemic or enzootic areas has led the Organization progressively to help national laboratories to strengthen their capabilities for yellow fever surveillance. The use of viscerotomes is being especially encouraged in the African Region; they are maintained at Brazzaville and Abidjan for use in emergencies.

1.47 A regional seminar on the epidemiological surveillance and control of yellow fever was conducted in October in Bangui, with participants from 15 countries in the African Region and two in the Eastern Mediterranean Region. This offered an opportunity for evaluation of modern methods of surveillance and control of yellow fever.

1.48 While dengue and chikungunya haemorrhagic fevers seem to be becoming endemic in some parts of India, they are still epidemic in Thailand. In the latter country, there were 20,457 cases of dengue haemorrhagic fever with a case-fatality rate of 2.6% in 1972, according to the statistics now available, and the disease continued to be reported from all provinces in 1973. In Burma, 1013 cases, with a case fatality of 3.2%, were reported for Rangoon in 1972. During the year, the Organization advised these two countries on surveillance and control, as well as Indonesia, where outbreaks occurred for the first time in Padang and Semarang. An epidemic of dengue haemorrhagic fever with more than 700 cases and approximately 50 deaths occurred in peninsular Malaysia, where dengue viruses have been isolated since 1962 from sporadic cases or limited outbreaks.

1.49 In the Americas, endemic dengue virus transmission continued in Colombia, Dominican Republic, Haiti, and Puerto Rico. In Colombia, small communities along the Atlantic coast, which had been reinfested with *Aedes aegypti* after 1969 and were not reached by the current control campaign, continued to report sporadic cases of dengue. In the Dominican Republic and Haiti, antibody rates against dengue viruses in populations examined serologically ranged from 63% to 94%.

1.50 Inactivated antigens for dengue, chikungunya and Japanese encephalitis were prepared by the WHO Collaborating Laboratory for Arboviruses, Moscow, and further examined in the WHO International Reference Centre for Arboviruses (in New Haven, Conn., USA); they were then distributed to 12 laboratories in the South-East Asia and Western Pacific Regions for a collaborative assay designed to show to what extent techniques may be standardized.

1.51 In most of Asia, the number of recorded cases of Japanese encephalitis was generally lower than in the 1960s, for the third consecutive year. In India, however, an outbreak occurred in West Bengal that gave rise to more than 300 cases.

**Lassa fever**

1.52 In further investigations of the outbreak of Lassa fever in Sierra Leone reported a year ago, several species of wild vertebrates were examined virologically by the WHO Regional Reference Centre for Arboviruses, Fort Collins, Colo., USA. All 10 isolations of Lassa virus were from a species of rat with a wide geographical distribution, *Mastomys natalensis*, eight being from rats trapped in two households inhabited by Lassa fever patients hospitalized

---

1. See also paragraph 5.5.
during the epidemiological investigations. These results suggest that this rodent may play a role in the natural history of the disease. However, person-to-person transmission, as has occurred in nosocomial outbreaks in Liberia and Nigeria, is relatively more important. In view of the possibly wide extent of the disease in central West Africa, a technical note on diagnosis and the management of patients was prepared by the above-mentioned reference centre and distributed to physicians and public health officers in this part of Africa and in other countries where Lassa fever patients might be found among travellers from this area.

Insect viruses

1.53 Following the joint FAO/WHO meeting on the use of viruses for the control of insect pests and disease vectors in 1972, an informal consultation was held on the implications of such use from the virological standpoint, as viral insecticides are already being developed and used in some countries although there is very little information on their potential hazards. In considering the (probably very remote) risks which might arise from the release of replicating viruses into the ecosystem, the participants pointed out that the possibilities of a candidate virus infecting insects other than the target pest and of infecting invertebrates other than insects, or even vertebrates, must be carefully studied. Changes in the pathogenicity or specificity of the pest control virus might also occur. They thought it therefore of great importance to stimulate the development of methods of characterizing and assaying insect viruses and determining their infectivity in cell cultures of invertebrate and vertebrate origin. Another approach suggested was to conduct serological surveys of workers in contact with insect viruses and of human and other animal populations in areas where virus had been sprayed to determine whether and to what extent human infection with these viruses does occur.

Epidemic haemorrhagic conjunctivitis

1.54 This new type of conjunctivitis caused fairly extensive epidemics in Africa, Asia and in some European countries in the period from 1969 to 1972. In 1973, according to as yet unconfirmed information, new outbreaks have occurred in several countries, including Algeria, France, Romania and Saudi Arabia. Studies on viral strains isolated in Japan, Morocco, Singapore, Thailand and the United Kingdom have confirmed that the etiological agent is a new type of picornavirus and have shown that the strains are antigenically similar.

Trachoma

1.55 Trachoma, with its complications, is still the single most important cause of preventable blindness in the world, notwithstanding the fact that the infection is amenable to treatment and that disabling complications may be prevented by relatively simple and inexpensive methods. The persistence of trachoma as a public health problem is intimately linked with socioeconomic factors: overcrowding, lack of clean water, insanitary habits, an abundant fly population all contribute to the spread of trachoma and of the associated bacterial infections which affect the severity of the disease. Limited resources, a shortage of trained personnel and the pressure of other health priorities are often obstacles to the development of adequate control measures.

1.56 WHO has continued to promote and facilitate the development and field application of effective control methods, and during the year photographic material illustrating different degrees of significant clinical signs, scored according to WHO recommended criteria, was assembled in collaboration with the WHO International Reference Centre for Trachoma and other Chlamydial Infections, San Francisco, Calif., USA. Sets of colour slides prepared from these photographs have been distributed for use as reference material and for demonstration and training purposes. These sets should contribute considerably to developing uniform diagnostic criteria and to reducing observer variation in the evaluation of the results obtained by control measures. A technical field guide for trachoma control was also published.

1.57 WHO continued to provide direct support to trachoma control activities in terms of personnel, advisory services and supplies to programmes in Algeria, Burma, the Libyan Arab Republic, Morocco, Sudan, the Syrian Arab Republic and the United Republic of Tanzania. In the Libyan programme, control activities were extended to all ten provinces. In Algeria and Morocco, the assistance also included long-term planning for the training of laboratory personnel and for strengthening diagnostic and research activities as well as planning in public health ophthalmology. In the Northern Province of Sudan the prevalence rate of active trachoma has decreased from nearly 40% before the beginning of treatment in 1963 to 4.7% in 1973.

1 See also paragraph 3.25.
1.58 Close contact was also maintained with activities carried out by national authorities in other African and Asian countries (among them, India, Nigeria and Thailand) and preliminary steps have been taken to provide WHO assistance to some of them. The emphasis in these control programmes—some of which also deal with other causes of blindness or visual impairment—continued to be on evaluation of the results and on coordination and integration into general health services whenever possible.

1.59 Assistance to trachoma research programmes was provided to laboratories in seven countries (Australia, Denmark, France, Israel, United Kingdom, USA, USSR). The work carried out in these laboratories has contributed to a better understanding of the metabolic and antigenic characteristics of the trachoma agent and has helped to refine laboratory diagnostic techniques. Some of this new knowledge is now being applied in the field—for instance, by WHO-supported research centres in the United Kingdom and USA—to clarify basic problems of epidemiology, to assess the practical value of new diagnostic or therapeutic approaches, and to develop field research programmes in endemic areas.

**Other chlamydial infections**

1.60 Since the functions of the WHO International Reference Centre for Trachoma were enlarged in 1972 to include other chlamydial infections, it has, in addition to providing reference services in respect of ornithosis and of lymphogranuloma and other urogenital infections in man, intensified its contacts with laboratories active in the study of chlamydial infections of animals. The centre is also continuing its collaborative study on the diagnosis of chlamydial infections and has started an immunological study of strains causing different infections in a number of animal species.

**Rickettsial diseases**

1.61 During 1973 louse-borne typhus continued to be reported from a few Latin American countries and from known foci of the disease in Africa. The numbers of cases reported were not significantly different from those for 1972 except for Rwanda, where there was a sharp rise.

1.62 Studies supported in part by WHO and conducted in Czechoslovakia and in the USA have helped to throw further light on the stability of vaccine prepared with the attenuated E strain, so that it is now possible to consider the use of this vaccine for the control of louse-borne typhus in areas where the level of endemicity is very high and, particularly, when epidemic outbreaks occur. It does not seem justifiable, however, to recommend the use of the attenuated E strain vaccine in areas where the risk of infection is limited.

**Endemic treponematoses and venereal diseases**

1.63 As a result of the mass treatment campaigns carried out since 1948 with the support of WHO and UNICEF,¹ the prevalence of endemic treponematoses in a number of the developing countries has dropped significantly. Over the same period, however, the hope that venereal diseases could be eradicated in the developed countries and at least limited in the others has faded. The soaring incidence of gonorrhoea, the failure of existing methods for its control, and the changing epidemiology of the endemic treponematoses make it clear that new approaches are needed.

**Endemic treponematoses**

1.64 Since 1960, WHO has provided epidemiological surveillance teams to assist countries in following up mass treatment campaigns against the endemic treponematoses. These teams help with the epidemiological and serological evaluation of the campaigns, review the statistical, serological and survey methods employed, and study the prevalence of venereal syphilis in the areas where treponematoses had been endemic. The serum samples taken are also used for the investigation of other infections of public health interest.

1.65 During 1973, the WHO interregional treponematoses team continued its multipurpose survey in the Casamance and Senegal River areas of Senegal, where high serological positivity rates and active cases of yaws and endemic syphilis had been reported. Sampling in the Casamance area was finished: among more than 4200 individuals (2.3% of the rural population) examined clinically and serologically, not a single case of active yaws was found, although treponemal tests were positive in 3.4% of adults. The positivity rate in the sample population, as determined by the Venereal Disease Reference Laboratory (VDRL) test, varied between 7% and 10%. Because of lack of immunity against syphilis following the mass campaigns in the area where yaws had been endemic, cases were found of venereal syphilis among young adults and of congenital syphilis in children.

¹ The valuable cooperation of the Canadian Students' War against Yaws in this work in recent years has been greatly appreciated.
The team visited 27 sampling points in the Senegal River valley where a mass campaign against endemic syphilis had been carried out in 1956-58. Almost 2700 persons were examined, and low-level transmission of endemic syphilis with infectious lesions was observed in 1.7% and serological positivity in 20.1% of children, the rates among nomads being much higher (11.8% and 60.6%, respectively). As a result of previous mass campaigns, no active cases of endemic syphilis were found among adults, although the overall seropositivity rate was 49%.

1.66 The results of a WHO survey of endemic syphilis carried out in Niger between 1969 and 1972, with financial support from UNDP, became available during the year. More than 7000 people, one-third of them children, were examined at 61 sampling points. Early infectious lesions were found in 1.1% of those examined. Contrary to expectations, more people with symptoms were found in the settled population than among nomads; this suggests an increasing incidence of venereal, as opposed to non-venereal, transmission.

1.67 In spite of the favourable results recorded by WHO teams, there is indisputable evidence of continued transmission of yaws in some countries, though apparently at a lower level than before. For example, nine countries in the Americas reported a total of 273 cases in 1970 and 442 cases in 1971. The disease also persists in some Western Pacific countries. A recrudescence has been observed in parts of the African Region, notably in the Congo and Ivory Coast.

1.68 In countries where mass treatment campaigns against the endemic treponematoses have been followed by improvements in socioeconomic conditions, there has been no recrudescence of yaws. Examples are Sri Lanka and Thailand, where better living conditions in the villages have been accompanied by better facilities for treatment and surveillance and more widespread health education.

1.69 From WHO surveys over the past 10 years, it is clear that the epidemiological pattern of the endemic treponematoses is changing and that a new strategy is needed. In areas formerly endemic for yaws, genital lesions are observed among the sexually active population; because of the localization and also on epidemiological evidence, these are diagnosed as venereal syphilis. Venereal syphilis has been found to coexist either with active yaws or with endemic syphilis in populations in the Caribbean island of Dominica and in certain African countries (Ivory Coast, Mali and Senegal). Seropositive children with no active or burnt-out clinical symptoms are also found; their condition is diagnosed as low-level yaws infection or, according to the seropositivity of the parents, as congenital syphilis. There are a few pockets of yaws and endemic syphilis in areas otherwise free from these diseases—for example, among particular ethnic groups in Cameroon and Zaire. The clinical picture of yaws in these areas still closely corresponds to the "classical" one.

1.70 Clinical diagnosis and surveillance of the endemic treponematoses must ultimately depend on serological tests. False positivity rates are, however, very high for adults and relatively high in the younger age-groups. When results with the lipoidal test in Senegal were checked by the Treponema pallidum immobilization (TPI) test at the WHO International Reference Centre for Endemic Treponematoses, Paris, they showed a non-specific positivity rate of 30-60%. Simple treponemal tests, such as the Treponema pallidum haemaggglutination (TPHA) and fluorescent treponemal antibody (FTA) tests, were, however, shown to be less specific when applied in developing than in developed countries, partly because of the presence of cross-reacting antibodies.

**Venereal diseases**

1.71 The upward trend in the incidence of early infectious syphilis and of gonorrhoea, observed in recent years, has continued in most parts of the world, but the rates vary considerably from country to country. In the Americas in 1971, for example, 16 countries reported rates ranging from 11.3 to 271.0 per 100 000 population for syphilis and rates ranging from 4.4 to 913.7 per 100 000 population for gonorrhoea. The high rates for gonorrhoea are matched in other countries of the world. In certain countries where there do not seem to have been any profound changes in social behaviour, there has been no indication of an upward trend in venereal disease incidence.

1.72 Because of the effectiveness of penicillin treatment in preventing congenital and late syphilis, the number of reported cases of these forms continued to be low. The problem of preventing serious complications is, however, not yet completely resolved, even in countries where excellent medical facilities are available. In 1970, almost 1800 deaths from congenital or late syphilis were reported from 20 European countries.

1.73 The incidence of gonorrhoea is 10-50 times that of syphilis and is still mounting steeply in practically

---

1 The use of penicillin in the treatment of all forms of syphilis over the past 30 years is reviewed in: Ideas, O. et al. (1972) *Penicillin in the treatment of syphilis*, Geneva (*Bull. Wld Hlth Org.*, 47, Suppl.).
all areas. In many countries, the number of cases now exceeds the peak that occurred during the Second World War; in the USA, for example, it has the highest incidence among the notifiable diseases reported to the Public Health Service. Moreover, the epidemiological pattern of the disease has changed. Formerly confined to the poorer sections of the community, today it affects rich and poor alike and is common in the younger age-groups, which were rarely affected in the past. In 1972, the morbidity rate in the age-group 15-19 years was 1035.4 per 100,000 in the USA, and 20.1% of all gonorrhoea cases reported in Canada were in this age-group. Data from France, Italy, Scandinavia, and certain South American countries suggest that the shift to the younger age-groups is now very widespread.

A decrease in the sensitivity of gonococci to various antibiotics, including penicillin, has been observed in periodic surveys in different parts of the world, notably in the developing countries. This trend was apparent, for example, in a recent survey world, notably in the developing countries.

The decline in the sensitivity of gonococci to penicillin has been such that it is not unusual to find gonococci for which the minimum inhibitory concentration is as much as 2 or more IU/ml. If adequate treatment schedules are employed in the population as a whole, the proportion of less sensitive strains will remain at a level similar to that observed by the International Reference Centre for strains isolated in Denmark since 1968 (26-30%). A WHO-supported study in the Hôpital St-Louis, Paris, showed that the treatment schedule applied in Paris (3.0 mega-units penicillin) was practically as successful in 1972 as it had been 11 years earlier.

Wider social acceptance of homosexuality and changing sexual habits have resulted in a greater incidence of primary gonorrhoeal infections of the throat, pharynx, or rectum. From the data collected by the WHO International Reference Centre for Gonococci, it appears that gonococci can be isolated from throat specimens in 2-10% of cases of the disease.

The course of gonorrhoea is essentially milder in those parts of the world where people have easy access to antibiotics. The “old” type of gonorrhoea with complications leading to sterility, infertility and urethral strictures, and thus affecting population growth, is, however, a major public health problem in developing countries, where it is endemic in rural areas. In field surveys carried out in rural Senegal by the WHO interregional treponematoses team in 1972 and 1973, urethral discharge was found in 7.3-11.2% of the males examined. According to figures communicated to WHO, gonorrhoea was diagnosed in 8.9% of the adult males and 22.9% of the females of child-bearing age examined during a survey in villages of the Teso district of Uganda; the equivalent rates in the Black Volta area of Upper Volta are 9.4-29.5% for males and 23.1% for females. The prevalence of non-gonococcal urethritis makes diagnosis difficult. From the WHO-supported venereal disease control project in the Republic of Viet-Nam, it was reported that 39.5% of patients seen at the Saigon venereal disease centre in 1972 had non-gonococcal urethritis and only 29.9% had gonococcal urethritis.

The “minor” venereal diseases, chancroid and lymphogranuloma venereum, have practically disappeared from developed countries, but are still a problem in countries where the medical infrastructure is inadequate. For example, according to data provided by the WHO-assisted venereal disease control programme in Thailand, almost 24,000 cases of chancroid and more than 6,200 cases of lymphogranuloma venereum were reported in that country in 1972. In the venereal disease dispensary of Abidjan, 862 cases of chancroid and 369 cases of lymphogranuloma venereum were diagnosed in 1971.

In view of the unstable epidemiological situation created by large-scale movements of workers and tourists in Europe, WHO has issued a directory of venereal disease treatment centres in the European Region with the aim of facilitating international contact tracing and treatment. This directory has been distributed to the national offices responsible for the international contact tracing of venereal diseases, together with information on the legislative and administrative aspects of venereal disease control.

Research

Gonorrhoea. At the WHO International Reference Centre for Gonococci, in Copenhagen, 7,327 strains were examined for sensitivity to antibiotics in 1972. Strains from Kampala were shown to be no less sensitive to penicillin than strains from Denmark, which have shown no reduction in sensitivity over the last four years.
1.80 In a WHO-supported project at the Venereal Diseases Reference Laboratory of the London Hospital Research Laboratories, the use of delayed and direct fluorescent methods for detecting gonococci in unselected patients and contacts was examined. The delayed method was found the more sensitive, particularly in detecting rectal involvement. Studies were also made of bacteriocin production by gonococcal strains and of gel diffusion with extracts of gonococci as means of characterizing strains. Four strains of different antigenicity have been found by the direct fluorescent antibody technique.

1.81 A serological screening method for the detection of asymptomatic female carriers has long been needed. WHO is sponsoring a collaborative study for the evaluation of a procedure using an antigen isolated from the pili of gonococci. Developed by the Department of Microbiology, Rockefeller University, New York, USA, this procedure was shown to be highly specific and capable of detecting the disease in 89% of asymptotically infected females. Another approach to the problem, namely, screening by means of the fluorescent antibody test, is being studied, with WHO support, at the Venereal Diseases Reference Laboratory of the London Hospital Research Laboratories.

1.82 In WHO-supported research at the Wright-Fleming Institute of Microbiology, London, the mechanism of the pathogenicity of gonococci was examined as a step towards elucidating the immune mechanisms operating in gonorrhoea patients. It was observed that, during the incubation period, bacteria adhere to the urethral mucosa cells and that gonococci with pili have a much greater ability to attach themselves to human fibroblast cultures in vitro than non-pilied colony types of the same strains. The phenomenon of the "survival" of gonococci in leucocytes was also examined. It was demonstrated in vitro that gonococci degenerate within 30-60 minutes of phagocytosis and in vivo that virulent gonococci cannot resist the proteolytic enzymes of polymorphonuclear cells.

1.83 The development of an effective vaccine against gonorrhoea is still awaited. The only candidate vaccine at present is a gonococcal autolysate containing three strains of colony type 1, prepared in Canada at the Canadian Communicable Disease Centre, Ottawa. The results of a small field trial of this vaccine in Inuvik, Canada, have been communicated to WHO. The incidence of gonorrhoea in the three months following immunization was much the same in the immunized group (30%) as in the controls (24%). None of the immunized patients infected developed antibodies inhibiting the destructive effect of gonococci on cell cultures; these antibodies are believed to be a significant indicator of immunity.

1.84 Treponematoses. Work has continued on the improvement and standardization of serological diagnostic methods, together with studies of strains isolated from yaws and endemic and venereal syphilis and, in accordance with the recommendations of the WHO Scientific Group on Treponematoses Research, the study of the mechanism of immunity in syphilis.

1.85 In the WHO International Reference Centre for the Serology of Treponematoses, Copenhagen, an antigen prepared with chromatographically purified cardiolipin and egg-lecithin was tested with excellent results; this appears to be highly preferable to antigens prepared by the usual methods.

1.86 The study of antagalactosyldiglyceride antibodies is continuing at the Laboratory of Antibody Biochemistry, Institut Pasteur, Paris. These antibodies are formed in the course of destructive diseases of the central nervous system and give false positive reactions with Reiter antigen, which is still used in some countries for the serological detection of syphilis. The same laboratory has continued studies on the chromatographic purification of anticardiolipin antibodies and the mechanism of cardiolipin false-positive reactions due to the denaturation of antibodies in high serum dilutions.

1.87 In the Immunological Laboratory of the Institut Pasteur, Paris, the WHO-supported study of the molecular structure of treponemal antibodies, particularly natural antibodies reacting with T. pallidum, has continued. It appears that these antibodies react with a polysaccharide shared by both T. pallidum and T. reiteri.

1.88 In a further WHO-assisted study at the Venereal Disease Reference Laboratory, London Hospital Research Laboratories, sonicates of commensal oral and genital treponemes were evaluated as agents for the removal of group treponemal antibody in the FTA-absorption (FTA-ABS) test. The FTA test using unabsorbed spinal fluid was evaluated at the same laboratory; it was found to be sensitive and suitable for screening purposes. In addition, the TPHA test was compared with the TPI and FTA-ABS tests; it appears to fall between them as regards both sensitivity and specificity. The quantitative


detection of specific treponemal IgM antibody was found valuable in detecting infection in the newborn and in differentiating it from the passive transfer of maternal antibody.

1.89 At the WHO International Treponematosis Laboratory Centre, Baltimore, Md., USA, the TPI test was successfully performed with frozen suspensions of *T. pallidum* stored in liquid nitrogen and protected by means of serum and dimethylsulfoxide added to the original survival medium. Humoral antibodies were shown to have a slight protective effect in rabbits.

1.90 Attempts to reduce the sensitivity of treponemes to penicillin in rabbits were continued at the WHO International Reference Centre for Endemic Treponematosis, Paris. No sign of resistance to penicillin has been observed in a Nichols strain that has been exposed to the antibiotic for seven years. It was observed, however, that the division time of treponemes varies widely in vivo; this may explain the failure of short treatment schedules or of the incidental action against syphilis of penicillin administered for other purposes.

1.91 WHO-supported research on immunization against syphilis has continued. In the Department of Microbiology, University of California, Los Angeles, USA, a new shortened method of immunization using γ-irradiated and deep-frozen treponemes has been developed in rabbits. That humoral antibodies play a part in conferring immunity has been demonstrated by different methods. At the Ludwik Hirszfeld Institute of Immunology and Experimental Therapy, Wroclaw, Poland, a new radioisotope-labelling method has been developed for studying the immune phagocytosis of treponemes in rabbits immunized with treponemal vaccine.

**Tuberculosis**

1.92 Tuberculosis remains a major public health problem in developing countries, and it is still frequent in certain less privileged strata or areas of technically advanced societies. While the mortality rate from tuberculosis has decreased throughout the world, the disease is still an important cause of death even in a number of technically advanced countries, where, although many may think it rare, it often causes more deaths than all other notifiable infectious diseases combined.

1.93 The total number of infectious cases of tuberculosis in the world cannot be determined precisely because of inadequacies in reporting, but extrapolations from available data have led the Organization to conclude that it must be in the region of 15-20 million. In some areas in Africa, Asia, and Oceania, the reported annual incidence of pulmonary tuberculosis is as high as 250-300 cases per 100 000 inhabitants, and the figures for prevalence are usually twice those for incidence.

1.94 WHO's programme for tuberculosis control depends on the existence of comprehensive nationwide general health services dealing with a range of infectious diseases. Integrated programmes of this kind are in operation in a number of countries. In some they have been established on a national scale; in others they are at the stage of expanding from pilot area projects to countrywide services—a development that is particularly noteworthy in the African Region.

1.95 During the year, intercountry teams operating in the South-East Asia and the Western Pacific Regions gave technical advice on the improvement of tuberculosis control to the following countries and territories: Bangladesh, British Solomon Islands Protectorate, Burma, Fiji, French Polynesia, Guam, Indonesia, Mongolia, Nepal, New Hebrides, Papua New Guinea, Sri Lanka, Tonga, Trust Territory of the Pacific Islands, and Western Samoa. In the Americas, the Organization provided advice on specialized aspects of tuberculosis control programmes to Argentina, Brazil, Uruguay, and Venezuela.

1.96 The Twenty-second International Tuberculosis Conference, which was held in Tokyo under the auspices of the International Union against Tuberculosis, provided a forum for promoting the strategy and discussing the problems of modern tuberculosis control. WHO was represented, and the close collaboration and complementary functions of the two international organizations were emphasized. A plenary session of the conference was devoted to the subject of tuberculosis control programmes as part of socioeconomic development as a whole, including the development of basic health services. This reflects the shift in the approach to tuberculosis; it is no longer regarded as a clinical specialty but as part of a community health programme. The prominent place given to community health on the agenda emphasizes the continued need for reorientation of the medical profession in this respect.

1.97 The WHO Expert Committee on Tuberculosis met at Geneva in December. The previous (eighth) report of the Expert Committee on Tuberculosis that met in 1964 was reviewed in the light of recent

scientific and technological developments and recommendations were made on WHO’s future technical policy on tuberculosis control, especially as applied in countries where the tuberculosis problem still ranks high and where resources are limited.

1.98 In the draft ninth revision of the International Classification of Diseases, which has been transmitted to Member States for comment, a new and important criterion has been proposed—namely, that the diagnosis of tuberculosis should in future include provision for the bacteriological confirmation of the disease.

1.99 Assistance was given for the training of national experts in the production and quality control of freeze-dried BCG vaccine. This and other training activities related to tuberculosis control are tabulated in Chapter 10.

1.100 The WHO International Reference Centre for BCG Seed-lots and Control of BCG Products continued the quality control of BCG vaccine supplied by, or with the help of, UNICEF and WHO. Assistance was given to a number of laboratories considered competent to produce freeze-dried BCG vaccine, priority being given to those that could not only meet the national demand for the vaccine but also function as a production centre for a geographical region. With WHO assistance, the BCG laboratory of the Institut Pasteur in Dakar has considerably increased its production during the year, the vaccine being of a quality fully meeting WHO requirements. The BCG laboratory in Cairo has been similarly assisted and should be able to supply several countries of the Eastern Mediterranean Region with freeze-dried BCG vaccine in the near future. Countries in the Western Pacific Region should benefit from the expansion of the WHO-assisted BCG laboratory at Alabang, Philippines, while in the Americas, advice on BCG production was given to national laboratories in Argentina, Brazil, Ecuador, Mexico, Peru, and Uruguay.

Research

1.101 The information so far collected in the follow-up of the WHO-assisted tuberculosis prevention trial in India has permitted an investigation to be made into the safety of BCG vaccination. Results reported in 1973 show that the administration of BCG does not worsen the prognosis in persons who react to tuberculin, in persons with pulmonary X-ray shadows, or even in bacteriologically confirmed cases of tuberculosis. They thus confirm the long-standing hypothesis that BCG vaccination does not provoke a reactivation of dormant tuberculous lesions and does not influence the course of active disease.

1.102 During the year, two more research institutes—the Tuberculosis Reference Laboratory, University Hospital of Wales, Cardiff, United Kingdom, and the Institute of Public Health of Croatia, Zagreb, Yugoslavia—joined the cooperative research programme on the standardization of bacteriological diagnosis techniques, which is organized by WHO and the International Union against Tuberculosis.

1.103 Considerable efforts have been made over the years to develop a serological diagnostic test for tuberculosis. More recently, several research workers have described a fluorescent antibody technique that may lend itself to practical use. WHO is assisting the Department of Microbiology, George Washington University, Washington, D.C., in the further investigation of this technique, which may be expected to provide not only a high degree of species (and even strain) specificity for diagnostic purposes but also a means of measuring response to treatment. It would thus be most valuable for prognostic purposes.

1.104 WHO-supported studies on slow-release isoniazid for the treatment of tuberculosis patients are being conducted at the WHO Collaborating Centre for Tuberculosis Chemotherapy, Prague, and the Madras Tuberculosis Chemotherapy Centre, India.1 The slow-release formulation was developed for the once-weekly treatment of rapid isoniazid inactivators, and the aim of the present studies is to determine whether the same formulation can be used at the same frequency for slow inactivators without toxic effects. The results obtained to date indicate that the drug exposures obtained with matrix (slow-release) isoniazid compare well with those obtained with ordinary soluble isoniazid.

1.105 Another line of research2 with which WHO is concerned and that may have a profound effect on tuberculosis control programmes concentrates on the shortening of the period of treatment. In a controlled clinical trial a comparison was made between a standard 18-month daily regimen and four 6-month daily regimens. The shorter period of treatment was found to be effective in 856 cases out of 860, but further research is needed on bacteriological relapse rates.

1.106 Results obtained during the year from WHO-assisted trials in Poland of rifampicin and ethambutol for the treatment of chronic cases of tuberculosis and of patients who fail to respond to standard treatment

---

2 East African/British Medical Research Councils (1973) Lancet, 1, 1331-1338.
confirmed the initial promising observations. The bacteriological conversion after 12 months of regular treatment was over 90%. Unfortunately, the frequency of side-effects and the high cost militate against the mass application of such a regimen in national programmes. These disadvantages reinforce the conclusion that it is more important to improve primary chemotherapy than to institute secondary treatment services, since there will then be no chronic cases and only a few patients needing secondary treatment, which can be provided on an individual basis.

1.107 WHO-supported operational research projects continue in Algeria, Japan, Romania, and Venezuela, and a similar project was started in Colombia to examine the feasibility of integrating tuberculosis control services into the existing system of general health services.

1.108 A publication on the application of linear programming to the allocation of resources in the planning of tuberculosis control measures was issued during the year. It explains how the manpower, financial, and other resources required for a comprehensive control programme are estimated and put into a decision model. The benefits accrued from the different programme components are then expressed for the different age-groups in terms of the reduction in disability years, impairment, "excess deaths", and economic loss.

1.109 Mortality and morbidity statistics are not sufficiently reliable to permit a quantitative appraisal of the tuberculosis problem. The two most relevant indices for quantitative surveillance are the prevalence of excretors of tubercle bacilli (especially those who are positive by sputum smear microscopy) and the age-specific prevalence of infection with tuberculosis. In order to apply such indices and to pursue research on the dynamics of tuberculosis, which may disclose new epidemiological parameters, WHO maintained its assistance to the Tuberculosis Surveillance Research Unit of the International Union against Tuberculosis and to the International Tuberculosis Surveillance Centre in The Hague, Netherlands. During the year this Centre assisted the Netherlands, Romania, and Venezuela in measuring the prevailing risk of tuberculosis infection. Owing mainly to lack of manpower, the scope of the Centre's activities and the assistance rendered to countries to promote tuberculosis surveillance had to be restricted.

1.110 One of the important conclusions to emerge from the Tenth International Leprosy Congress—held in Bergen, Norway, in August and marking the centennial of the discovery of Mycobacterium leprae—was that, where an effective case detection and case-holding programme has been developed, the total number of patients and the annual rate of detection of new cases has been reduced. To achieve this, however, long and intensive control by chemotherapy with continual evaluation is needed. To make this practically and economically feasible, several countries have, in cooperation with WHO, been rationalizing their approach to leprosy control, which is now included in their general national health planning.

1.111 The Organization continued to provide technical guidance for leprosy programmes assisted by UNICEF and in some countries also by voluntary organizations. As in the past, the WHO Special Account for the Leprosy Programme received valuable contributions for national control programmes or for individual research programmes from various agencies, including the Order of Malta (Comité international de l'Ordre de Malte pour l'Assistance aux Lépreux), the Danish Save the Children Organization, the German Leprosy Relief Association (Federal Republic of Germany), the Italian association Amici dei Lebbrosci, the Lepers' Trust Board Inc. (New Zealand), and Emmaüs-Switzerland.

1.112 In the African Region, WHO is carrying out evaluations of national leprosy control activities at the request of governments and UNICEF; so far, these have been started in Botswana, Central African Republic, Chad, the Gambia, and Upper Volta. The recommendations made will serve as a basis for proposals for further international assistance. In some countries (e.g., the Gambia, Kenya, Nigeria) leprosy control activities began to be transferred from specialized services to regular general health activities. Promotion of the training of general health personnel in leprosy control is receiving priority attention from WHO.

1.113 In the Region of the Americas some 10 000 new cases are reported annually from 29 countries and territories. This is probably a deceptively low figure due to low detection rates and underreporting. Some improvement in this situation is hoped for as a result of the establishment by the Organization in Caracas of a centre for training and research in leprosy and related diseases; one of its functions will be to serve as a focus for the exchange of information and experience between countries.
In the South-East Asia Region, long-term WHO assistance was continued for the national leprosy control programme in Burma. An additional field evaluation was made in three areas involving random sample surveys of a population of about 40,000; preliminary data suggest that in two areas a reduction in prevalence of 60% will be achieved after those cases no longer needing treatment have been released. In Thailand, a WHO-assisted follow-up evaluation of leprosy control activities (24,000 persons examined in random samples) showed a 75% reduction in the total leprosy prevalence rate. Bangladesh, Indonesia, Maldives, Nepal and Sri Lanka also received WHO support for leprosy control.

In the Eastern Mediterranean Region leprosy continues to present a public health problem of concern in Ethiopia and Southern Sudan. The Organization gave advice on leprosy control activities in the latter. In some other countries (e.g., Afghanistan, Libyan Arab Republic, Pakistan, Tunisia and Yemen) the disease is confined to more circumscribed areas.

In the Western Pacific Region, advisory services were continued to the Republic of Korea, the British Solomon Islands Protectorate and the New Hebrides. UNICEF, as in the past, supplied equipment and antileprosy drugs for most countries of the Region.

Research

In 1973, WHO cooperated with 42 institutes in 24 countries in 58 research projects, embracing epidemiology, leprosy control, biology of *Mycobacterium leprae*, experimental leprosy, immunology, pathology, experimental and human chemotherapy including chemoprophylaxis, and prevention. This is essential work so long as the disease can only be restrained by secondary prevention measures.

Research in epidemiology is an important part of the large-scale leprosy investigation that WHO has been conducting in Burma since 1964. During the year an analysis was published of the epidemiological data collected over a 4-year period during which 93.9% of a population of over 69,000 persons had been examined. The mean prevalence was 316 per 100,000 in the area, with a range from 0 to 797 per 100,000 in different villages. This study has definitely confirmed the correlation between the leprosy endemity and the rate of lepromatous (infectious) forms. A WHO Collaborating Institution for Epidemiology of Leprosy in Louvain, Belgium, has built and is refining an epidemiometric (deterministic) model of leprosy, and has computed prediction values for prevalence and incidence of lepromatous and tuberculoid cases over several decades.²

In cooperation with the University of Campinas, Sao Paulo, Brazil, WHO prepared the protocol for a genetic study of leprosy in twins to be conducted by centres in Africa, the Americas and South-East Asia.

The systems analysis approach to *leprosy control* is being adopted in research, conducted in cooperation with the Burmese health authorities, into the feasibility and acceptability of integrating specialized programmes, including the national leprosy control programme, into the general health service. Baseline population surveys are being carried out and various socioeconomic and cultural factors are being analysed in the Kyaukse district.

To improve the international *classification* of leprosy, the WHO International Reference Centre for the Histological Identification and Classification of Leprosy, Caracas, is coordinating the double-blind examination by pathologists in 10 countries in different parts of the world of histopathological material representing the entire pathological range of the disease.

Seven institutes in four WHO Regions are attempting, in cooperation with WHO, the *cultivation* of *Mycobacterium leprae* in different cell-free systems. Some have reported limited growth of acid-fast or of temporarily non-acid-fast organisms; in most instances, however, the successful multiplication claimed has not proved repeatable by other independent research institutes or has not been attempted. So far as possible, WHO is seeking to ensure the replicability of growth methods.

Techniques for the preservation in liquid nitrogen of suspensions of *Mycobacterium leprae* have been developed and tested by the WHO Regional Reference Centre for *Mycobacterium leprae*, London, where high infectivity of *Mycobacterium leprae* kept in liquid nitrogen was observed. A WHO Collaborating Laboratory for the Cultivation and Study of *Mycobacterium leprae*, Antwerp, Belgium, has developed similar methods with comparable results.

The multiplication of *Mycobacterium leprae* being so slow, the slightest alterations in a culture may be of importance. The growth rate and viability are therefore being studied with radioactive markers at the


Experimental leprosy is another important aspect of the research assisted by WHO. The first animal model with a practical application was introduced by Shepard in 1960. Later progress has largely been due to his technique of inoculating the footpad of the mouse. The main shortcoming of the technique, however, is the localized infection, which can be overcome by immunosuppressive measures, first described by Rees in 1966. At the Department of Leprology, Central Institute for Research on Skin and Veneréal Diseases, Moscow, long-continued administration of antilymphocytic serum to mice has been observed to promote a rather intensive growth of the bacillus. In transmission studies being carried out by the WHO Regional Reference Centre for Myco. leprae in London, material from the nasal discharges of lepromatous patients has been successfully inoculated into the footpads of mice but the survival time of Myco. leprae outside the body has been found to be only a matter of a few hours.

The suitability of the nine-banded armadillo (Dasypus novemcinctus) as an animal model for experimental leprosy was reported in 1972. In cooperation with WHO the Laboratory Research Branch, Public Health Service Hospital, Carville, La., USA, is devising a susceptibility test for this species; and the Department of Biochemistry, Gulf South Research Institute, New Iberia, La., which has established a colony of over 300 wild-caught armadillos, is undertaking studies on the reproduction and animal husbandry of different species of armadillo, as well as specifically leprosy-orientated investigations. Attempts to transmit leprosy to armadillos have been started at the WHO Regional Reference Centre for Myco. leprae, in Atlanta, Ga., USA, the Institute of Leprology, Rio de Janeiro, Brazil, and the National Institute of Dermatology, Caracas; the latter has reported the successful transmission of Myco. leprae to another species (Dasypus sabanicola).

A different approach to experimental leprosy has been adopted by the Leprosy Research Institute, Rosario, Argentina, and the Institute for Leprosy Studies, Astrakhan, USSR, which are seeking to induce greater susceptibility by dietary influences. There is evidence to suggest that pro-oxidant diets enhance the multiplication of Myco. leprae in mice and rats, but confirmation is needed.

The immunology of leprosy is receiving increasing attention from WHO (see also paragraph 5.6). An important contribution was made by the National Institute for Leprosy Research, Tokyo, which demonstrated specific antibodies to Myco. leprae by means of indirect immunofluorescence with sera from lepromatous patients. The Department of Immunology, National School of Biological Sciences, Mexico, reported findings indicating that a high percentage of lepromatous patients possess immune complexes which appear to be composed, at least in part, of antigens and specific antibodies to Myco. leprae. In a field study, investigators from the All India Institute of Medical Sciences, New Delhi, found untreated lepromatous cases to be deficient in the production of peptides; this affects their macrophage function and thus their immune defence.

As in the past, the two WHO Regional Reference Centres for the Standardization of Lepromin (in Japan and the USA) supplied lepromin to WHO-assisted programmes and to other interested investigators in several parts of the world. Studies on lepromin with different bacillary concentrations were carried out at the centre in Japan with the aim of reducing the incidence of false positive reactions. Similar studies, as well as the distribution of no less than 9780 ml of lepromin, were carried out in collaboration with WHO at the Institute of Leprology in Rio de Janeiro, Brazil.

Advances in the detection of subclinical leprosy were reported from a WHO Collaborating Institution for the Cultivation and Study of Myco. leprae, in Addis Ababa, using the lymphocyte transformation test. This test is not yet sufficiently developed for use in the field, but the results it has so far given provide a basis for further research aimed at the development of a specific immuno-allergic test to detect inapparent Myco. leprae infection; such a test is badly needed for epidemiological studies.

In chemotherapy, dapsone continues to be the drug of choice for management of leprosy in field

---

programmes. Standard doses of dapsone have been recommended by the WHO Expert Committee on Leprosy. Some investigators had suggested very much lower doses, however; and controlled trials to compare the effectiveness of different dosage levels and to investigate their long-term effect were initiated by WHO in 1968 and are still in progress in centres in India, Mali, Senegal and Venezuela, which are now also studying the parenteral administration at 75-day intervals of a long-acting, low-dosage derivative of dapsone, acedapsone. Clofazimine, a promising drug for the management of lepra reactions and for certain dapsone-resistant cases, is also being tested in a WHO-coordinated multicentre trial. The Central Leprosy Teaching and Research Institute, Chingleput, India, and the Culion Sanitarium, Palawan, Philippines, are carrying out long-term clinical observations on chemoprophylaxis in leprosy high-risk groups. A total of 281 children and adolescents are included in their studies.

1.132 The principal aim of the large-scale leprosy investigation in Burma mentioned in paragraph 1.118 has been to assess the value of BCG vaccination for preventing leprosy. The results of six annual follow-up examinations were published during the year. The number of children included in the trial was 28,220, evenly divided into BCG and control groups. There were 285 and 325 new cases of leprosy detected in the two groups respectively, giving incidence rates of 5.2 per 1000 person-years for the BCG-vaccinated and 6.0 for the control group. For all age-groups (0-14 years old at intake) the protective effect conferred by BCG vaccination up to March 1973 was 20%, and 38% for those 0-4 years old at intake. In the light of these interim findings (and of different protective values obtained in other similar trials not assisted by WHO) the Tenth International Leprosy Congress in August agreed that it would be premature to recommend the general use of BCG vaccination for the prevention of leprosy.

1.133 Clearly, a better immunizing agent than BCG is needed. To this end the Dr I. Cantacuzino Institute of Microbiology, Parasitology and Epidemiology, Bucharest, is attempting the genetic transformation of BCG strains with heterologous DNA with a view to developing a strain specifically protective against Myco. lepra. At the Armauer Hansen Research Institute, Addis Ababa, it has been found that Myco. duvalii is closely related antigenically to Myco. lepra and that the combination of Myco. duvalii with BCG can increase threefold the immune response that is induced in animals by BCG alone.

Bacterial diseases

Cholera

1.134 Whereas in 1972—a year of relative quiescence of cholera—no country had been newly affected by the present pandemic, five countries or territories were so involved in 1973: three in Africa, one in Asia, and one in Europe. In addition, one indigenous case was notified to the Organization by the USA—the first case reported to have occurred in that country since 1911, with the exception of a laboratory-acquired infection a few years ago. All but one of the 26 known cases of importation of the disease without further spread were into Europe: France, Federal Republic of Germany (and West Berlin), Sweden, and the United Kingdom; the remaining case was an importation into South Africa.

1.135 In Africa, cholera continued to cause concern, particularly in the drought-affected Sahelian areas of West Africa. Under the circumstances it is difficult to obtain accurate information on the magnitude of the problem caused specifically by cholera in these areas, but acute dehydrating diarrhoeas along with cholera have been taking a heavy toll of human lives. The three lands in Africa which reported cholera for the first time in the present pandemic were Mozambique and then Malawi and Southern Rhodesia. In North Africa, Algeria and Tunisia recorded a recrudescence of cholera and several of the cases imported into Europe were reported to have originated from this area. Further observations by national workers and WHO have given added support to the view that the disease has become endemic in many recently affected parts of Africa, particularly in the coastal areas where the temperature, humidity, rainfall, population density and sanitary conditions favour the infection's becoming entrenched.

1.136 In Asia, Sri Lanka in the later part of the year reported cholera for the first time since 1953. India and Indonesia continued to report large numbers of cases. In the latter, however, the figure was lower than that for 1972, and the general situation appears to be improving, partly owing to better surveillance and treatment. No major outbreak was reported from Bangladesh. The Khmer Republic and Thailand, which had been free since 1968 and 1969 respectively, again reported cholera in 1973. Sabah (Malaysia) and Yemen also had relatively large outbreaks.

1.137 In Europe, apart from the imported cases noted above, 23 deaths were notified from some parts of southern Italy (including Sardinia), which experienced an outbreak, due to the Ogawa serotype, for the first time in the present pandemic. However, the infected areas could all be declared free of infection by the end of October. The relatively small number of cholera deaths in this outbreak may be contrasted with some 1200 deaths due to other acute diarrhoeas that occur annually in this relatively lightly-populated area of Italy; these represent about 40% of the annual national total of more than 3000 diarrhoeal deaths. The outbreak emphasizes the fact that cholera thrives in those localities which already have the problem of acute diarrhoea.

1.138 The Americas continued to be free of cholera, except for the single incident noted in paragraph 1.134 above. This is a puzzling case: it occurred in a man in Texas who had not been abroad since the 1950s, had not been away from his home town for several months, and had had no known contact with persons who had recently travelled abroad. Extensive search revealed no other cases of cholera, suspected or confirmed, in his area. The source is still under investigation. However, this case, and the 25 cases imported into Europe that gave rise to no secondary infections, attest to the small likelihood of cholera spreading after its introduction into an area where standards of sanitation and personal and food hygiene are high.

1.139 The number of countries reporting cholera during the year declined slightly from that during the peak reached in 1970-71; by late December 30 countries or territories—15 in Africa, 14 in Asia and 1 in Europe—reported about 75,000 cases (not counting imported cases and the USA case). Unfortunately, this decrease (and that in the total number of cases reported) does not reflect the real situation, as reports of outbreaks and of sporadic cases in some countries could not be officially confirmed. Although there have been fewer instances in recent years of the imposition of excessive restrictive measures on traffic and trade because of cholera, this has not led to an improvement in notifications.

1.140 The classical *V. cholerae*, which for years has been the predominant causative agent of cholera in Bangladesh, has not been isolated since August 1972 from cases in and around Dacca. In this area of Bangladesh the classical vibrio has now been replaced by the El Tor vibrio, whereas this change occurred in India as long ago as 1965, although a few strains of the classical type can still be isolated in Assam. In several areas of West Africa the Ogawa serotype of the El Tor biotype, that caused the first of the recent epidemics in Africa, has been replaced by the Inaba serotype, whereas the reverse has been observed in the Arabian peninsula. In 1970 the determination of serotype was valuable for tracing the flow of the pandemic, but that is no longer possible in view of this spontaneous shift in serotype. The difficulty of tracing is compounded by the fact that most of the El Tor strains isolated in Africa and Asia and examined by the WHO International Reference Centre for Vibrios, Calcutta, India, are of phage type 4, except for a significant number of those isolated in India and Bangladesh, which are of phage type 2.

1.141 Assistance in the form of intravenous rehydration fluid, ingredients for oral rehydration fluid, cholera vaccine, antibiotics, and disposable syringes was provided to a number of countries affected or threatened by cholera, including drought-stricken countries in Africa. However, the number of requests for advisory assistance has declined in 1973, as Member States have gained experience and confidence in their ability to control cholera. This has been due in no small measure to the work in recent years of the WHO interregional cholera control team and to the seminars and training courses on cholera control that WHO has organized. Several of these were held in 1973 for participants from all WHO Regions (see Chapter 10).

1.142 Members of the interregional cholera control team or other WHO staff visited Afghanistan, France, Indonesia, Ivory Coast, Liberia, Malawi, Malaysia, Mali, Niger, Nigeria, Philippines, Singapore, Spain, Togo, Tunisia, Upper Volta, the USSR, and Zambia to gather information on the efficacy of various cholera control measures in different situations and collect epidemiological data as well as to assist governments in their cholera control activities and in the production of rehydration fluid.

1.143 Some of the information collected during these visits was considered at the second of two consultations that were held (in February and June) to assist the Organization to develop an expanded programme ultimately aimed at wider surveillance and more effective control of cholera and other acute diarrhoeal diseases. The basis of the programme is the early detection of outbreaks of diarrhoeal disease (in rural areas particularly) by village headmen, religious and community leaders, teachers, etc., so that medical
staff and auxiliaries can institute treatment promptly and apply appropriate control measures. As a first
step, simple guidelines have been prepared for case
detection and reporting by laymen, for treatment
methods (emphasizing oral rehydration) suitable for
medical auxiliaries, and for sanitation for enteric
infection control (see also paragraph 6.22). Guidelines
have also been prepared for bacteriological diagnosis
by laboratory technicians as well as more senior
staff, and for vaccine production and assay. These
will all be tested in different countries with differing
health services networks and cultures.

1.144 Research activities, aimed mainly at improve-
ment of cholera vaccines, continued. A controlled
field trial of a cholera vaccine with aluminium
hydroxide adjuvant, prepared with WHO support in
Hungary, is being undertaken in Surabaja, Indonesia,
in collaboration with the national and provincial
governments. About 480 000 people have been
randomly divided into three groups—vaccinated with
the cholera vaccine containing the adjuvant, with
plain cholera vaccine from the same batch, or with
tenanus toxoid. Active surveillance for case-finding
is in progress and will continue for at least two
cholera seasons to determine whether the adjuvant
improves the degree and duration of protection; the
preliminary results are encouraging.

1.145 A further development in the joint investiga-
tion into oral vaccines conducted in collaboration with
WHO at the Cholera Research Centre, Calcutta,
India, and the University of Florida, USA, has been
the finding that the intestinal secretions of persons
receiving oral killed vaccine showed a significant degree
of protection for a longer period than those of persons
fed attenuated live vaccine. The immunoglobulin
class of antibody produced in the small intestine was
predominantly IgA. In the light of recent work on
the biological functions of IgA in the gut, it is possible
that the secretory IgA prevents the cholera vibrio
from adhering to the gut mucosa; such adherence
appears to be essential for the pathogenicity of
V. cholerae. It has been previously shown that
V. cholerae remained free in immune rabbit ileal loops
and failed to cause fluid accumulation. In a WHO-
supported study in the Department of Microbiology,
University of Adelaide, Australia, has demonstrated,
using the organ-culture technique, the extremely
rapid antibacterial action of pieces of intestine in the
presence of antibody containing IgA among other
immunoglobulins.

1.146 Research on the development of purified
colloidal cholera toxoids is being continued in various
countries to assess the effectiveness of antitoxic as
distinct from antibacterial immunity in cholera; none is yet
ready for a controlled field trial, however. One WHO-
supported study in the USA has shown that, although
both the Ogawa and Inaba serotypes of V. cholerae
produce the same type of enterotoxin, the immunity
acquired by man after an induced attack of cholera
is predominantly serotype-specific. This and many
other observations do not yet indicate any particular
advantage of antitoxic immunity over the antibacterial
immunity induced by currently available whole-cell
vaccine.

1.147 In collaboration with WHO and the WHO
International Reference Centre for Vibrios, Calcutta,
a global surveillance of drug sensitivity of V. cholerae
has begun at the Department of Bacteriology, Royal
Hospital of St Bartholomew, London. A large number
of African and Asian strains has been received from
the Calcutta centre and through WHO, and more
than 600 have already been examined. The pattern of
sensitivity to the drugs commonly used for cholera
treatment and prevention (including long-acting sulfo-
namides) appears so far to be fairly similar in most
parts of the world. On the basis of this finding, a
controlled field trial has been arranged in collabo-
rating with the Indian Council of Medical Research
and the Government of West Bengal to ascertain the
effect of one long-acting compound, sulformethoxine,
on the transmission of V. cholerae among family
contacts.

Other bacterial enteric infections

1.148 Studies supported by WHO at the University
of Maryland in the USA with live oral typhoid
vaccines utilizing streptomycin-dependent and enzyme-
epimerase-deficient strains of Salmonella have shown
that both vaccines conferred 88-92% protection after
being given for a 4-week period in 6-8 doses. A WHO-
associated trial in Yugoslavia further confirmed the
safety of the vaccine made from the streptomycin-
dependent strain; no strain reversion or adverse
reaction was noted among 600 children studied.

1.149 In accordance with guidelines prepared in
1972 new killed oral typhoid vaccines have been
prepared, containing a considerably greater number
of organisms (400 × 10⁹) per dose than hitherto. One
of these, an acetone-inactivated oral vaccine, which
was scrupulously tested for adverse reactions in over

---

2 Williams, R.C. & Gibbons, R.J. (1972) Science, 177, 697-
699.
2000 children in a WHO-supported trial in Mexico and proved safe and innocuous, is now undergoing a field trial in India, in collaboration with the Indian Council of Medical Research and the vaccine production laboratory in the Federal Republic of Germany. A trial of a similar oral vaccine produced in the German Democratic Republic is under way in Chile.

1.150 In Tonga, a seven-year follow-up comparison of one with two doses of acetone-inactivated typhoid vaccine was completed which has shown that, whereas the single dose protected for only about a year, the two-dose regimen conferred protection for the entire period of observation. On the other hand, a parenteral vaccine prepared from a non-motile strain, for which a field trial was started in Egypt a year ago, has proved ineffective, and the trial has been discontinued.

1.151 In bacillary dysentery the continuing WHO-sponsored study of drug resistance has shown that outbreaks in Asia are increasingly due to multiple-drug-resistant strains of Shigella dysenteriae. Further studies conducted in Yugoslavia in association with the Organization on oral immunization using streptomycin-dependent strains of different serotypes of Shigella have confirmed their 70-80% effectiveness and their serotype-specific immunogenicity. The mode of administration has been simplified as the vaccine is now given as a "cocktail" with bicarbonate and streptomycin in milk, although at least three doses are still required.

1.152 Two WHO International Reference Centres for Bacterial Vaccines were designated during the year, at the Institute for Serobacteriological Production and Research, Budapest, and the Institute of Immunology, Zagreb, Yugoslavia. They have tested the potency and safety of bacterial vaccines used in WHO-assisted projects, including all batches of cholera vaccine received by WHO for use in emergencies through donations or purchased at the request of governments and a number of vaccines produced in national laboratories.

Plague

1.153 The highest incidence of plague was again reported from the Republic of Viet-Nam (405 suspected or confirmed cases notified up to mid December). Some reactivation of natural foci of plague was reported from the United Republic of Tanzania, and Zaire, to which the Organization furnished supplies and assistance, and from the Libyan Arab Republic and Yemen. In the Region of the Americas assistance was provided to Bolivia, Brazil, Ecuador, Peru, and Venezuela for the investigation of natural foci and for the improvement of plague surveillance and control programmes. In view of the paucity of clinical teaching material in connexion with this disease, the Organization has prepared sets of slides, illustrating different clinical forms of plague, for distribution to institutions.

Cerebrospinal meningitis

1.154 Cerebrospinal meningitis is not known to have given rise to major epidemics in the "meningitis belt" of Africa during the year, although reliable figures are not yet available. However, this belt runs through the Sahelian areas south of the Sahara affected by severe drought, which may create conditions more favourable for cerebrospinal meningitis than in the recent past.

1.155 The resistance of Neisseria meningitidis to sulfonamides is still apparently on the increase, according to data collected by the WHO International Reference Centre for Meningococci, Marseilles, France. Nevertheless, these drugs remain a powerful tool for treatment of the disease; chloramphenicol is kept in reserve for situations in which they prove ineffective. The most recent information collected by WHO in the course of clinical trials in several African countries on the efficacy and appropriate use of chloramphenicol in treating meningitis has been forwarded to countries of the African Region. Stores of sulfonamides and chloramphenicol are maintained by the Organization at Brazzaville and Niamey to meet emergency requests.

1.156 Encouraging progress was made during the year in research on cerebrospinal meningitis vaccine. Large-scale controlled field trials coordinated by the Organization and carried out in Egypt (1972) and Sudan (1973) have proved the prophylactic effectiveness in both endemic and epidemic situations of a group A polysaccharide vaccine prepared under WHO auspices by the Mérieux Institute, Lyons, France, in collaboration with Rockefeller University, New York, USA. Further collaborative international studies of this antigen have been organized to assess the duration of its efficacy and to determine its effectiveness against the carrier state. Purified polysaccharide antigens of groups A and C, of high molecular weight, are the first effective bacterial vaccines whose potency has to be defined chemically since it cannot at present be assessed by animal potency tests. They are group-specific, affording no protection against other groups of meningococci; and they are complex and costly to produce, making their wide application in the field impracticable. Further studies have been initiated in several laboratories in Europe and the USA to ensure the stability of the
vaccines, to standardize them, and facilitate their use in public health practice, possibly as a component of combined vaccine.

**Tetanus**

1.157 Emergency prophylactic measures against tetanus, which are universally performed in all countries, are frequently ineffective and may be dangerous owing to the anaphylactic properties of the horse antitoxin used. Therefore a collaborative project has been initiated by WHO the aim of which is to develop rapid serological tests for detecting anti-toxin levels in human blood. Such a technique would help physicians faced with emergency cases to select quickly the active or passive prophylactic measure appropriate in each individual case, thus reducing the risk of anaphylactic shock. Workers in Brazil, Czechoslovakia, Spain, the USA and the USSR are receiving WHO assistance to evaluate various serological tests, particularly the passive haemagglutination test, for this purpose.

**Pertussis**

1.158 Pertussis continues to be a major cause of death in developing countries, in many of which it is second only to measles as a killer of infants. A WHO International Reference Centre for *Bordetella pertussis* has been established at the Gamaleja Institute of Epidemiology and Microbiology, Moscow, among whose main tasks will be formulating a programme for the control of this disease under different socio-economic conditions, and organizing international collaborative studies on the quality of pertussis vaccines, which continue to be reactogenic.

**Streptococcal and staphylococcal infections**

1.159 To follow up suggestions made at a WHO-sponsored round-table discussion at the Fifth International Symposium on *Streptococcus pyogenes* (Amsterdam, 1972), the Organization is conducting a survey of the procedures used in national reference centres for identifying *Str. pyogenes* with a view to improving their reliability and the international reporting of infections. In collaboration with the WHO International Reference Centre for Streptococcus Typing, Prague, and laboratories in Israel and the USA, it is also conducting a study to assess the reliability of a recently developed haemagglutination test, which holds out some promise of quicker and simpler screening for streptococcal antibodies.

1.160 In view of new evidence of the effectiveness of staphylococcal toxoid obtained in a recent controlled clinical trial in the USSR, WHO is providing assistance for a similar trial in hospitals in Nigeria to evaluate this antigen further.

**Veterinary public health (including Food hygiene and Comparative medicine)**

1.161 The WHO programme in veterinary public health, which is implemented with the cooperation of FAO, is largely concerned with the control of zoonoses, the improvement of food hygiene practice, and the utilization of animal models of human disease in medical research. These activities require a close collaboration between the medical and the veterinary services.

**Rabies**

1.162 Further progress in the development of antirabies vaccine for man has been achieved. Research carried out at the WHO International Reference Centre for Rabies, in Philadelphia, Pa., USA, showed during the year that concentrated antirabies vaccine prepared from human diploid cell cultures is highly immunogenic in man and very safe to use owing to its homologous substrate. Three or four inoculations with this vaccine elicit a better antibody response than does a long course of inoculations with current vaccines. The Centre has also completed the development of a radioimmunoassay procedure for rabies-binding antibodies, and it succeeded in initiating, under experimental conditions, a primary antibody response to rabies virus. It was the first time that such a response to an animal virus had been obtained in vitro.

1.163 The WHO International Reference Centre for Rabies, Moscow, reported the results of field trials with live and inactivated cell culture rabies vaccines made from an attenuated strain (Vnukovo-32). After initial trials in 1968, the inactivated vaccine has recently been used to treat 3355 persons bitten by animals suspected of being rabid. No cases of rabies occurred. Successful trials of this vaccine have also been reported from Czechoslovakia and the German Democratic Republic. Minor local reactions were observed in 5.1% of treated persons, and general but transient reactions such as headache, indisposition, nausea, or sleeplessness were noted in 3.4%. The prophylactic use of the live virus vaccine in animals (250 000 dogs, 17 000 cattle, and 5000 sheep and goats) caused no complications and resulted in a

---

considerable improvement in the epidemiological situation.

1.164 In the Eastern Mediterranean Region, the rabies section of the Institut Pasteur of Iran, Teheran, has been designated a WHO Regional Reference Centre for Rabies.

1.165 Within the framework of the WHO/FAO-coordinated research programme on wildlife rabies in Europe, consultations were held in February on the use of telemetry in studying the movement of foxes. Ecologists, epidemiologists, and electronic engineers discussed the technical equipment of an automatic tracking system that would permit the continuous and simultaneous observation of foxes from various family groups in a particular neighbourhood. Information on the movement and dispersal of foxes is important for an understanding of the effect of control measures, in particular if oral rabies vaccines should become available for the immunization of foxes. Research on such vaccines is concentrated on the selection of attenuated virus strains that are not pathogenic to wild animal species. Though safe and effective in foxes, the ERA vaccine strain used so far in studies at the WHO Regional Reference Centre for Rabies, Atlanta, Ga., USA, and at the State Veterinary Investigation Laboratory, Frankfurt, Federal Republic of Germany, has proved to be pathogenic for hamsters when given orally.

1.166 In June discussions were held in Geneva on the evaluation of computer-recorded data on wildlife rabies in a study area in Central Europe. Surveillance of the area ahead of the front line of the epidemic permits the monthly redrawing of this line to include all new cases of animal rabies discovered. In the study area, the average distance of newly infected animals ahead of the previous month's line was 4.6 km; the maximum distance observed in one case was 23 km. The results indicate that the average distance is largely independent of topography (rivers and lakes excepted) and of fox population density, provided that this density is sufficient to allow the spread of the disease.

1.167 The Pan American Zoonoses Centre, Buenos Aires, reported the occurrence in the Americas in 1972 of 189 cases of rabies in man and 21323 cases in animals. About 20000 persons had received post-exposure antirabies treatment every month in the Americas. Since 1967 the annual number of cases of postvaccinal neurological complications in man had decreased from 51 to 9, owing, probably, to the use of safer vaccines.

1.168 With the assistance of the Organization, the consolidation phase was completed or the maintenance phase achieved in the pilot programmes for rabies control in Santa Cruz (Bolivia), the Cauca River valley (Colombia), and Lima and Callao (Peru), and similar pilot programmes were begun in Guayaquil (Ecuador) and in Guatemala City. In Peru a countrywide rabies control programme has been initiated and the Government of Brazil has drawn up a working plan for a similar programme. The public health laboratory in Bolivia began the production of antirabies vaccine, and in Ecuador a UNDP-assisted project has been started for the development of the veterinary laboratories of the Ministry of Health.

1.169 Assistance was provided to rabies control programmes in Bolivia and in Grenada, West Indies. In Bolivia, attention is being given to controlling the vampire bat, which transmits bovine paralytic rabies, and studies have begun on the efficacy of anticoagulants in bat control and on ways of using these chemicals so that they present no risk to other animals or to man. In the wildlife rabies control programme in Grenada, campaigns to reduce the mongoose population began in February and 80 000 baits had been distributed by August. Sampling of the mongoose population suggests an 80% reduction of the number of these animals.

1.170 In other Regions assistance mainly concerned help in the production of antirabies vaccine.

### Brucellosis

1.171 WHO and FAO continued to assist in controlling this ravaging disease, which is a major health hazard in several areas, especially where virulent melitensis infection is prevalent. In Mongolia, where brucellosis seriously affects animal farming in some parts of the country, production of brucellosis vaccines has started with WHO/UNDP assistance. Some 5 million doses will be required every year when the control programme is fully in operation.

1.172 In Latin America, where both bovine and caprine forms of the disease are prevalent, assistance was provided in strengthening the epidemiological services, in enhancing collaboration between public health and veterinary services, and in some cases in obtaining loans from the Inter-American Development Bank. A regional seminar on the control of brucellosis and tuberculosis for the chiefs of departments concerned with animal health and zoonoses control in Mexico, Central America and Panama was held in Panama City in July. A seminar on brucellosis was also held in Venezuela in the same month to promote the national brucellosis control programme.
Further technical assistance in epidemiological investigations, provision of reference strains and reagents, and training of staff was provided by the Pan American Zoonoses Centre, Buenos Aires, and by the FAO/WHO Brucellosis Centres in different parts of the world.

The WHO Brucellosis Centre in Moscow studied the epidemiology of the disease in the Soviet Union and reported a continuing fall in incidence. Although, in the USSR, the bulk (67%) of new human cases still occurs in the sheep-rais ing areas of Kazakhstan and Central Asia, some increased incidence has also been noticed among private cattle owners, among workers in meat packing and processing plants, and in consumers of certain dairy products.

To diagnose brucellosis by isolating and identifying the organism is a slow and relatively expensive procedure, often involving the inoculation of experimental animals. The WHO Brucellosis Centre in Moscow has modified an indirect haemagglutination test to detect the organisms in infected discharges, milk, and organs. The test is simple, takes only 3-4 hours from receipt of the specimen, and can be performed in small peripheral laboratories. The results obtained so far indicate that it is specific and somewhat more sensitive than the animal inoculation test, which fails to detect dead or inactivated Brucella cells.

Although the value of the brucellogen skin test in epidemiological investigations is recognized, the allergens used and the interpretation of the test remain to be standardized. Scientists at the Department of Veterinary Science, University of Wisconsin, USA, working in collaboration with WHO, have studied in guinea-pigs the factors influencing biometric potency assays of Brucella allergens. They found that different Brucella strains produced different degrees of skin reactivity. Allergens prepared from smooth strains were more likely to produce an anamnestic antibody response than were those prepared from rough strains. This property of smooth strain allergens is an obvious handicap to their use in the field.

Scientists collaborating with WHO in the Immunology Laboratory of the Faculty of Medicine, Tours, France, have compared Brucella fractions (phenolic extracts and insoluble residues) for their immunological and biological properties. The phenolic extracts, particularly those of Br. melitensis, produce a wasting disease in mice but do not produce skin sensitization in guinea-pigs. This interesting work indicates that differences in the pathogenicity and other biological properties of Brucella species, and the phylogenetic relationship between them, may be determined by immunochemical analysis.

The same workers have also drawn attention to the high prevalence of clinically unrecognized Brucella infections in rural human populations. These infections result mostly from exposure to bovine brucellosis.

Leptospirosis

This widespread infection continues to prevail in different parts of the world where man is exposed to contact with infected mud and water. WHO and FAO have assisted countries by providing laboratory support for epidemiological surveillance and investigations. The Pan American Zoonoses Centre, Buenos Aires, assisted several countries and territories in the Americas in serological investigations, the identification of cultures, the training of staff, and the supply of reference reagents. Similar services were provided in other parts of the world by WHO/FAO Leptospirosis Reference Laboratories.

The WHO Leptospirosis Reference Laboratory in Moscow studied the susceptibility of various field rodents to graded doses of different serotypes of Leptospira and the severity of the disease produced by them. The results reported in 1973 indicate that adaptation to different hosts in nature may be related to the emergence of different serotypes. Workers at the WHO/FAO Leptospirosis Reference Laboratory in Israel reported that the variable immune response in rabbits may influence the results of serotyping using rabbit sera. Further studies are, however, required before the exact significance of these observations in serotyping can be determined.

Through its research on the diagnosis of leptospirosis by blood culture, the Pan American Zoonoses Centre has developed a method of eliminating the inhibiting influence of antibody in the inoculum by laking and prior sedimentation of the patient’s blood.

Collaborating workers at the Department of Microbiology, Monash University, Melbourne, Australia, reported the isolation from pathogenic leptospires of a lipopolysaccharide O antigen that is immunogenic in rabbits, guinea-pigs, and Australian hopping mice (Notomys alexis). The inoculated

animals develop immunity to infection from challenge doses and resist the development of a carrier state. Their serum is leptospirocidal *in vitro* and contains serotype-specific IgM antibodies. This work strongly suggests the possibility of developing a safe and effective vaccine.

1.183 The WHO research programme on leptospirosis was reviewed at an informal consultation held in Smolenice, Czechoslovakia, in September, and plans for further work on serotyping, diagnosis, epidemiology, and on certain aspects of the biology of leptospirosis were formulated.

**Animal tuberculosis**

1.184 The Pan American Zoonoses Centre, Buenos Aires, assisted countries in the Americas by providing them with purified protein derivative (PPD) tuberculin and reference strains of mycobacteria, by controlling the quality of biological products, and by training personnel. A start has been made on the production of bovine PPD tuberculin, which is more sensitive than human PPD in the diagnosis of bovine tuberculosis. In an epidemiological study carried out by the Centre, 563 cultures of mycobacteria isolated from the lymph nodes of pigs in a slaughterhouse were typed. Of these 90.1% were *Mycob. bovis*, 7.6% were *Mycob. avium*, and 2.3% were chromogenic mycobacteria. *Mycob. tuberculosis* was not found.

1.185 A national seminar on the control of animal tuberculosis was held in Coahuila, Mexico, in September, with the support of the Pan American Zoonoses Centre. It reviewed new methods of control and was attended by over 50 veterinarians participating in the national tuberculosis control programme of Mexico.

**Parasitic zoonoses**

1.186 *Hydatidosis*. As a result of studies assisted by the Pan American Zoonoses Centre, Buenos Aires, a project for hydatidosis control in Uruguay was begun in August. The Centre provided technical guidance for a new trial control programme in the Central Sierra of Peru, and, in accordance with advice given in a seminar assisted by the Organization, the Peruvian Government has established a National Hydatidosis Commission.

1.187 Workers in laboratories associated with WHO have investigated the treatment of hydatid cysts by chemotherapy. If successful, this could replace the costly and hazardous surgical removal of cysts. The Institute of Medical Parasitology and Tropical Medicine, Moscow, reported that compounds of the acridine series and some aminoquinoline derivatives penetrated the cuticular membrane and inhibited the development of germinative cyst elements. Chloroethyramines and ethylamines were found to inhibit the infiltrating growth and multiple exogenic division of alveolar cysts in the liver and other parenchymatous organs. The Dr I. Cantacuzino Institute, Bucharest, reported on the scolicidal effects in animals of the antimalarial drugs proguanil and chloroquine when inoculated into the cyst. Both compounds exerted an inhibitory as well as a teratogenic effect on the parasite. The Pan American Zoonoses Centre tested several drugs, including thymol and proguanil, against secondary hydatids in mice and birds. None of the drugs was found effective except methotrexate, which appeared to exert some preventive effect. The optimum dose of this drug is now being determined. In spite of the promising results reported by these collaborating laboratories, the chemotherapy of hydatidosis is still in the experimental stage.

1.188 *Cysticercosis*—*taeniasis*. Workers at the School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., USA, who are collaborating in a WHO-coordinated research programme, have studied specimens of blood and saliva submitted to them to determine the immune response of man to the adult tapeworm, *Taenia saginata*. They observed a marked increase in the IgE immunoglobulin levels, indicating a marked response to the parasite in the intestine.

1.189 *Toxoplasmosis*. Pyrimethamine and sulfadiazine, the two drugs commonly used in the treatment of toxoplasmosis, sometimes fail to prevent the development of the disease. In studying this problem, collaborating workers at the Toxoplasma Laboratory of the Gamaleja Institute of Epidemiology and Microbiology, Moscow, have isolated parasite clones that are several hundred times more resistant to pyrimethamine than are wild strains. This would partly explain some treatment failures and warrants a further search for effective drugs.

**Socioeconomic aspects of the zoonoses**

1.190 Collaborative studies based on a draft guide prepared in 1972 have been initiated at the Department of Agriculture, University of Reading, United Kingdom, and at the University of Melbourne, Australia, to assess the socioeconomic benefits of controlling the major zoonoses, particularly brucellosis and cestode infestations. Emphasis is being placed on the methods of collection, collation, and analysis of data under conditions in developing countries.

---

1.187 Paragraph 1.224.
Foot-and-mouth disease

1.192 At a consultation on the hygienic disposal and recycling of animal carcasses and wastes, held in Hanover, Federal Republic of Germany, in December, the harmonization of the hygienic requirements for the international trade in products prepared from carcasses and wastes was discussed. Consideration was also given to the elaboration of indices of environmental pollution characteristics due to such wastes, and to the development of guidelines for disposal programmes.

1.193 With the cooperation and advice of the Organization, the health authorities in El Salvador and Panama (which are within the area in the Americas free of foot-and-mouth disease) carried out exercises to eradicate a simulated outbreak of the disease. The exercises revealed certain deficiencies and highlighted the necessity of intensifying the training of professionals and animal health assistants to detect the disease and prevent its reintroduction.

1.194 The Pan American Foot-and-Mouth Disease Centre at Rio de Janeiro, Brazil, is carrying out research on inactivated and modified live virus vaccines, the significance of carrier animals in the epidemiology of the disease, immunology, bovine immunity, and physicochemical studies of the virus. It was shown during the year that oil adjuvants considerably enhance the immune response elicited by vaccine.

1.195 The Sixth Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control, held in Medellin, Colombia, in April, considered the problems of food and nutrition, manpower development, foot-and-mouth disease, and certain diseases exotic to the Americas. The first Latin American seminar on animal health planning was held in the same city in July.

Food hygiene

1.196 Activities in this field in 1973 were mainly concentrated on strengthening food hygiene activities in Member States, developing standards for the laboratory examination of food, and supporting research on microbiological and parasitological agents causing foodborne disease. In the Eastern Mediterranean Region, studies on the public health aspects of food storage were undertaken in Bahrain, Iraq, Kuwait, Lebanon and Qatar. In Iran steps were initiated to improve the bacteriological surveillance of foods.

1.197 Research assisted by WHO and carried out by the International Commission on Microbiological Specifications for Foods showed that the reliability of the method of detecting Salmonella in dried food was not affected if composite samples were used instead of a great number of individual samples. According to further results announced during the year, this finding is also true for foods of high moisture content and is thus true for foods in general. A reduction in the cost of food examination is therefore possible without loss of sensitivity.

1.198 At a consultation on food virology, held in Geneva in July, a data retrieval system was designed for use in the WHO food virology programme. This international collection of data on viruses in foods (more than 150 reports have already been processed) is intended to help food control authorities and research workers in food virology to solve specific problems. Other aspects of the programme are the improvement of communications between laboratories, which is facilitated by the periodic distribution of up-to-date lists of food virologists, and the coordination of research on methods of detecting viruses.

1.199 In WHO-assisted work carried out at the Royal Veterinary and Agricultural University, Copenhagen, it was found that the organs and tissues of pigs fed with aflatoxin or ochratoxin A contained residues of these mycotoxins, which constitute a health hazard to man. This finding indicates the need for the careful control of animal feed.

1.200 The National Institute of Public Health, Bilthoven, Netherlands, reported on WHO-supported studies on the detection of Trichinella spiralis in swine. A reliable methodology for this purpose is a

---

1 Food additives and contaminants are discussed in paragraphs 6.73-6.88.
3 WHO Chronicle, 1973, 27, 210-211.
prerequisite for drafting appropriate meat legislation and for developing a reliable inspection procedure to safeguard the consumer from trichinosis. In a comparison study of two methods for this purpose, the digestion method was found to be more sensitive than trichinoscopy. While the digestion method was able to detect trichina even after light infections, trichinoscopy revealed trichina only in the animals given comparatively heavy doses.

1.201 A study group on methods for the sampling and examination of food met in Geneva in July. Its discussions were concerned primarily with microbiological and related methodologies in food hygiene programmes and included the delineation of the principles and objectives underlying the development of methods for sampling and examination, the interpretation of results, and a review of present work on the development of such methods. The study group also touched on the feasibility of laboratory methods and the economic and operational constraints to which they are subject, the simplification of laboratory techniques, and the systematic collection and dissemination of data.

1.202 A WHO Expert Committee on Food Hygiene (Fish and Shellfish Hygiene) was convened in cooperation with FAO in September. It reviewed recent advances and practices in the hygienic production, processing, and distribution of fish and shellfish that serve as food for man. Special attention was paid to fish- and shellfish-borne diseases and to factors that have contributed to their increase in the past few years. Besides stressing the need to establish microbiological and toxicological standards for fish and shellfish, the Committee emphasized the importance of ensuring close cooperation between the authorities responsible for fish hygiene and those responsible for environmental protection programmes, so that the effect of man-made environmental changes on the quality of fish and shellfish can be evaluated and appropriate action taken. The Committee also recommended that WHO and FAO should further develop their capability to advise countries on all matters related to fish and shellfish hygiene, including legislation, organization of control services, training, education, and research.

1.203 An interregional conference on the control of foodborne diseases, principles of food hygiene practice, and food standardization was held in Singapore in November to review recent advances in the epidemiology and surveillance of foodborne diseases prevalent in the Eastern Mediterranean, South-East Asia, and Western Pacific Regions, and to discuss the application of control measures under various local conditions. The conference, which was attended by participants from 13 countries, also dealt with the national and international aspects of food hygiene practice and with legislation and standardization, the aim being to provide guidance to countries in the drafting or revision of legislation and the organization of food hygiene services.

1.204 The Pan American Zoonoses Centre, Buenos Aires, helped in the reorganization of the meat inspection laboratory of the National Institute of Livestock Technology, Argentina, and provided technical assistance in food microbiology to the Specialized Analysis Laboratories of the University of Panama.

1.205 In the joint FAO/WHO Food Standards Programme, several meetings were held of committees of the Codex Alimentarius Commission. At the meeting of the Codex Committee on Food Hygiene in May, WHO presented a summary of methods currently in use for the detection of Salmonella in eggs and egg products. On the basis of a proposal made by the Organization, the Committee established a group to elaborate an international standard method for this purpose. The Codex Committee on Meat Hygiene, in June, further elaborated the draft codes of hygienic practice for fresh meat and of ante- and post-mortem inspection of slaughter animals. The Committee considered that it would be of great value if WHO would assess the quality of medical examinations for persons handling meat. It also invited FAO and WHO to consider convening a group of experts to prepare a preliminary document on criteria for the inspection of meat. In October, the Codex Committee on Fish and Fishery Products considered standards for quick frozen fillets of flat fish, canned crab meat, and other fish products.

**Comparative medicine**

1.206 A significant development in the Organization's programme on comparative medicine during the year was the designation of two leading veterinary schools as WHO research and training centres in this subject; they are the College of Veterinary Medicine, at Hanover, Federal Republic of Germany, and the School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., USA. These centres will undertake or coordinate research on subjects of particular concern to the Organization in connexion with animals as sources of zoonoses, as indicators of environmental quality, and as models of human disease; they will also offer, to start with, individual training for holders of WHO fellowships from the various Regions.
Two veterinary schools in Australia and Denmark which have developed data-processing programmes in collaboration with WHO are now undertaking epidemiological studies of noncommunicable diseases in animals—an area of investigation that has been rather neglected hitherto. This work is additional to the Organization's own collection and processing of data from six veterinary schools and nine zoos in various parts of the world. During the year some analysis of the accumulated data was made, mainly concerning tumours. One human tumour that lends itself to investigation in an animal model is carcinoma of the cervix; its possible causation by herpesvirus type 2 is being studied by the WHO Regional Reference Centre for Simian Viruses, in the USA, which is using cebus monkeys and baboons and has succeeded in producing ulcerating lesions and, in some cases, persistence of the virus. 1

Further WHO-supported studies at the Veterinary School, Sydney, Australia, on the effect of hyperthermia on the fetal tissues of guinea-pigs 2 have shown that the damage caused by heat is not mediated through tissue anoxia, as had been suggested, and that anoxia does not accentuate the damage. Extensive experiments have shown that, after hyperthermia in early gestation, brain damage occurs 6-8 times more commonly than do gross malformations of other parts of the body. When the learning capacity of guinea-pigs whose brains had been damaged in this way and which had been allowed to reach maturity was tested in mazes, their performance was much inferior to that of control animals. Investigations are also being supported at the Massachusetts Institute of Technology, Cambridge, Mass., USA, on the effect of artificial sunlight on pregnant rats; preliminary findings indicate a significant decrease in the number of cells in certain parts of the brain of the offspring after exposure of the mother early in the gestation period.

Comparative virology

Good progress was made during the year in the WHO/FAO programme on comparative virology,3 in which 15 international teams are studying as many groups of animal viruses, particularly with a view to establishing reference reagents. Reference sera, prepared in gnotobiotic animals, to four porcine enterovirus types are being tested by the international team concerned with this virus group. The international team for rinderpest and distemper viruses has produced reference sera to these; and, in view of the uncertain etiology of human subacute sclerosing panencephalitis (SSPE), the scope of its studies has been extended to include SSPE agents. The international team for rhabdoviruses characterized a virus isolated from a horse in Nigeria as serotype 4 of the rabies subgroup of these viruses. The new serotype shares nucleocapsid protein with other viruses of the subgroup, but is distinct in its envelope proteins. With the exception of serotype 1 (classical rabies virus), the strains of the rabies subgroup have been found to multiply easily outside the nervous tissue—e.g., in the viscera (serotype 3) and muscle tissue (serotypes 2 and 4). The international team for feline caliciviruses carried out cross-neutralization tests at different institutes and found all the virus strains examined to belong to one serotype—the definition of which had previously been agreed—regardless of whether the antisera were produced in the cat, goat, rabbit, rat or hamster. There were differences, however, in the number of serological variants of the serotype.

Laboratory animal medicine

The WHO Regional Reference Centre for Simian Viruses, in the USA, has recently examined, on behalf of other institutes, 1500 simian sera for antibody to B virus, a herpesvirus of monkeys. The continued use of rhesus monkeys as experimental animals and the recognition of their possible contamination by B virus, which has caused some deaths among monkey-handlers, has prompted the demand for this service. A survey by the Centre of human and nonhuman primate sera for antibody to three adenoviruses newly isolated from squirrel monkeys indicates that these agents are common in squirrel monkeys and occur to a varying degree in other New World primates, but not in man or Old World monkeys. One of the three strains is of particular interest since it produces tumours in hamsters.

At a consultation held in Geneva in December, the discussions centred on arrangements for the establishment of breeding colonies of species and strains of laboratory animals with particular and well-defined properties and on the sources of such material.

Prevention of blindness

There was during the year an intensification of current activities for the prevention of blindness,
1. COMMUNICABLE DISEASES

particularly as regards the three conditions—trachoma, onchocerciasis and xerophthalmia—to which priority was given by the Twenty-second and Twenty-fifth World Health Assemblies (in resolutions WHA22.29 and WHA25.55) and by the WHO Study Group on the Prevention of Blindness that met in November 1972.¹

1.213 Among the various activities concerning these diseases described elsewhere in this chapter and in Chapters 2 and 9, of special significance are the preparation and distribution of sets of colour slides on the diagnosis of trachoma for demonstration and training purposes and the publication of a WHO field guide for the control of trachoma (see paragraph 1.56), the development of the Volta River basin onchocerciasis control programme and other activities concerning this disease (paragraphs 2.42 et seq.), and the design of a survey of blindness and the start of a programme for the prevention of xerophthalmia (vitamin A deficiency) in Bangladesh (paragraph 9.41).

1.214 Some countries of the South-East Asia Region are showing increasing concern with the prevention of blindness and the restoration of sight to those suffering from cataract and have accordingly sought to make use of the Organization’s advisory services to stimulate epidemiological investigation of the causes of blindness, especially cataract and glaucoma, and of its assistance to train medical and allied health personnel for prevention, treatment and rehabilitation. A preliminary assessment of the needs and resources in Bangladesh, Burma and India was conducted at the end of the year.

1.215 In the European Region, as part of an inter-country programme on the prevention of visual impairment and blindness, even in countries where communicable eye diseases continue to present problems other potentially blinding conditions are being given greater attention. Thus, the Moroccan Government was assisted in an assessment of non-communicable blinding conditions in the younger age-groups.

1.216 As a further step towards the uniform international definition and recording of blindness and visual impairment, the proposals on this subject made by the WHO Study Group on the Prevention of Blindness were recommended for inclusion in the ninth revision of the International Classification of Diseases by the study group concerned with that Classification that met at the beginning of the year (see paragraph 8.25).

1.217 The value of the work being done by certain nongovernmental organizations in this field was recognized by the World Health Assembly in resolution WHA22.29. In January 1973, the Executive Board decided, at its fifty-first session, to establish official relations with the World Council for the Welfare of the Blind; and contacts with nongovernmental organizations were intensified during the year.

2. MALARIA AND OTHER PARASITIC DISEASES

2.1 There is a growing appreciation both of the public health importance of some of the parasitic diseases and of the fact that they not only impose a heavy burden on society and the economy but also impede efforts for socioeconomic development—that, indeed, such efforts, if ill-advisedly pursued, may even accelerate the spread of these diseases. Awareness of this is leading to greater international partnership, which is well illustrated by the joint attempt by seven African countries together with UNDP, FAO, IBRD and WHO to control onchocerciasis in the Volta River basin (see paragraphs 2.42-2.45). This programme may be expected to lead also to more intensive disease surveillance and to the control, wherever feasible, of other parasitic diseases such as trypanosomiasis and schistosomiasis.

2.2 Despite good progress in recent years, much has still to be learnt about the consequences for the human host of parasitism by protozoa and helminths, and additional studies are needed to distinguish usefully between the prevalence of infection found and the amount and severity of actual illness that this represents in a population. Research on the pathogenicity of the different species that parasitize man has to be supported by studies on the basic immune mechanisms that determine his response to them.

2.3 The onus of dealing with malaria and other parasitic diseases rests upon rudimentary health services in some areas of developing countries. In many cases the task can be eased by integrating services for the control of specific diseases, but often there is little to integrate. Nevertheless, a flexible and realistic distribution of the duties of whatever health personnel there are is essential, particularly in Africa, if some reduction in the morbidity and mortality caused by these diseases is to be achieved. This necessity has been reflected during the year within WHO itself, by the merging into a single and more adaptable programme of the two formerly distinct programmes of malaria eradication and of control of the other parasitic diseases.

Malaria

2.4 With the increase in international travel a considerable number of cases of malaria, some of them with a fatal outcome, occur annually among persons unadvised of the dangers of the disease. For the assistance of such travellers and of their medical advisers the Organization published 1 a document entitled "Information on Malaria Risk for International Travellers", which contains a guide to areas of the world where malaria can occur and information on protection against malaria (see also paragraph 1.4). In spite of the large number of cases imported into malaria-free areas, no instances were reported in 1973 of the re-establishment of the disease either in areas from which its eradication has been certified 2 (and Cuba, Mauritius, European Portugal excluding the islands, and Yugoslavia, for which such certification has been recommended by the WHO Expert Committee on Malaria; see paragraph 2.29) or in those countries or territories which had previously completed the attack and consolidation phases 3 of their malaria eradication programmes but where eradication has not yet been certified—namely, Albania, Brunei, Israel, Japan (Ryukyu Islands) and Lebanon.

Progress in antimalaria operations

2.5 On 30 September 1973, of the estimated 1877 million people 4 living in the originally malarious areas of the world, 1389 million (74.0%) were in areas where malaria had been eradicated or where eradication programmes were in progress. Of these, 770 million (41.0%) of the population of the originally malarious areas were living in areas in the maintenance phase; 291 million (15.5%) in areas in the consolidation phase; 325 million (17.3%) in areas in the attack phase; and 3 million (0.1%) in areas in the preparatory phase. Of the 488 million people (26.0%) living in areas where eradication programmes were not yet in operation, 142 million were benefiting from malaria control measures, while governments were making an organized effort to ensure that antimalaria drugs were

---

3 A malaria eradication programme is divided into four phases: the preparatory phase, characterized principally by geographical reconnaissance and training of staff; the attack phase, during which total coverage house-spraying or other attack methods are applied; the consolidation phase, during which these attack measures have ceased and surveillance is carried out; and lastly, the maintenance phase, during which vigilance operations aim at preventing the re-establishment of the disease.
4 From information available.
available as a control measure for a further 118 million. The Organization assisted 40 malaria eradication projects and 25 projects for other types of antimalaria action during 1973.

2.6 African Region. Malaria remains certainly the most widespread infection and a major public health problem almost throughout the African Region, with a very high level of endemicity and varying but often intense transmission. It is difficult to make an accurate assessment of the incidence of malaria and its intensity in the Region, but according to estimates, 10% of the population live in hypendemic areas, 30% in mesoendemic zones and 60% in hyper- or holoendemic areas, with almost 100 million cases at any given time during the year. Up to 30% of clinic attendances and 10% of hospital admissions are due to the disease, which is estimated to cause over a million deaths a year in the Region, mainly in the youngest age-groups. Most governments are acutely aware of the fact that malaria remains one of the top health priorities, which must be tackled if they wish to improve the general health condition of the population. In most parts of the Region, however, eradication is not yet feasible and even control in rural areas is difficult and costly. Hence, the regional approach is to attempt gradually to lower the high levels of endemicity, particularly in economic development areas, and to protect the most vulnerable groups, young children and pregnant women and nursing mothers, by making antimalarial drugs widely available. WHO assistance in tackling the disease is channelled partly through three intercountry projects providing advisory services in malaria and partly through some projects for the development of health services where there are specialist advisers on malaria. Assistance has also been given for pilot studies to find out the most economical ways to control the disease in different ecological or epidemiological situations in view of the very limited resources of most of the countries and to make clear the true rank of malaria as one of the main causes of mortality and morbidity in the Region so that the decision-makers may be aware of the situation and motivated to increase their efforts against the disease. A few examples will indicate the scope of such assistance. In the Comoro Archipelago a chemoprophylaxis campaign among schoolchildren, pregnant women and infants is being carried out and trials have been undertaken of the use of Abate as a larvicide. In Gabon a long-term malaria control plan for antilarval operations in the larger towns was developed. Assistance was provided to various States in Nigeria on the organization of malaria control in the bigger towns and advice was given on malaria in connexion with the UNDP/FAO South Chad irrigation project, the health components of which are dealt with by WHO (see also paragraph 2.37). In the United Republic of Tanzania a rural area has been selected for a demonstration zone for malaria control, and a country-wide malaria control programme is being prepared. In Togo a trial of mass drug administration is being undertaken in one district as a supplement to annual residual insecticide spraying. In Zambia, following studies of the malarial endemicity, a country-wide malaria control plan of operations has been prepared by the Ministry of Health. In addition three interregional malaria projects are based in Africa: one on the epidemiology and control of malaria in the African savanna at Kano, Nigeria; and two on Anopheles control research—at Kaduna, Nigeria, and Kisumu, Kenya, respectively—in which the methodology of the control of malaria in certain geographical situations is being studied and newer effective but biodegradable anti-mosquito insecticides are being tested (see paragraphs 2.26, 2.27, 3.17 and 3.18).

2.7 Region of the Americas. In this Region the general trend has been one of progress in the campaign against malaria; and in Central America and in Panama, despite continuing financial difficulties, this progress has been quite marked, particularly in those areas where the residual insecticide propoxur is being used, although resistance to it by Anopheles albimanus has been reported in El Salvador and Nicaragua. In Panama it has been possible to discontinue residual spraying in areas where malaria transmission has been interrupted, containing 37% of the population of the originally malarious areas. In Haiti there has been no significant change in the malaria situation since 1972; the programme was evaluated in 1973 by a joint team from UNICEF, USAID and the Organization, which recommended a more flexible approach with different attack measures to suit different local epidemiological situations. The situation in the neighbouring Dominican Republic remains generally good; most of the cases are imported ones and the malaria eradication service is participating in other rural health activities. Turning to the southern part of the Region, the situation has deteriorated in Colombia, where there was an increase in malaria transmission in attack-phase areas during the first six months of the year and a reduction in the national budget for malaria work. There has also been some deterioration in the situation in Bolivia, where, although the national budgetary allocation for the programme was increased, the provision of funds was delayed. In Guyana, a seroepidemiological survey was carried out to assess the disappearance of the disease in coastal areas. In view of an increase in the number of malaria cases in
areas in the consolidation and maintenance phases in France Guiana, the amodiaquinized salt used in attack-phase areas was distributed in these other areas as well. In the programme in Brazil, which was evaluated by a team from the Organization and USAID, progress has been maintained in areas covered by the short-term plan of malaria eradication and further areas, embracing a population of about 1.5 million, have reached the stage where attack measures may be suspended and consolidation operations undertaken. Special attention has been paid to the potentially dangerous epidemiological situation occasioned by the construction of the Trans-Amazon Highway and the related population movements. In Paraguay the excellent progress of recent years has been maintained and an evaluation team similar to that in Brazil recommended that areas with over half the population of the total malarious areas of the country should pass to the consolidation phase. All the cases reported in the first half of 1973 were considered as imported. In Argentina, the reappearance of the disease in two foci near the Bolivian frontier necessitated the reintroduction of attack measures.

2.8 South-East Asia Region. Although malaria has become a much less serious public health problem in some areas in this Region, there have been setbacks and, in some cases, a resurgence of the disease. Plans covering the next few years have been completed for the programmes assisted by WHO in each of the eight malarious countries in the Region (Bangladesh, Burma, India, Indonesia, Maldives, Nepal, Sri Lanka, Thailand). The programme in Bangladesh has made more satisfactory progress than was thought possible a year ago, and an independent assessment team in February recommended that areas with 25 million of the total population of 66 million should be classified as in the maintenance phase and areas with 33 million as in the consolidation phase. In India, there has been a steady increase in the numbers of cases in the major towns and greater efforts have been made to control urban malaria with increased assistance from the Government of India to State governments and municipalities. The number of malaria cases reported in the first six months of 1973 amounted to over a million—a figure equal to that for the whole of 1972—and the situation is not yet stabilized. The majority of cases, half of which were again reported from Gujarat State, occurred in areas where the vector, Anopheles culicifacies, is showing increasing resistance to DDT. The Government of Indonesia and WHO further reinforced the programme in that country, and funds for operations in the outer islands have been augmented. In Nepal, where more than 80% of the population live in areas in the consolidation phase, increased WHO assistance has been required in consequence of the withdrawal of direct bilateral aid to the programme. During the first part of 1973, a reversal occurred in Sri Lanka of the generally favourable trend in the prevalence of vivax malaria in particular which had been observed in 1972 and some 128,000 cases were recorded in the first eight months. In addition, there has been an extension in the areas in which falciparum malaria has occurred, although the use of mass drug administration in areas previously infected with this form of malaria has led to excellent results there. In Thailand, there has been a gradual increase over the years in the numbers of malaria cases, and the severity of the cases in the forest areas is causing concern; in some hospitals, up to 25% of the total deaths are due to this disease.

2.9 European Region. In the European Region, malaria is still endemic in parts of Algeria, Morocco and Turkey and in small areas in Greece and the USSR. The first three of these countries receive WHO assistance for their antimalarial programmes. In Algeria the programme is progressing satisfactorily in accordance with previous planning and areas with more than 60% of the population of the originally malarious areas are within the coverage of the eradication programme. In Morocco the improvement of the situation that was noticeable in the second half of 1972 was maintained in 1973. In Turkey, where several serious foci occurred in consolidation-phase areas in the Çukurova plain in 1972, mass drug administration and malathion spraying appear to have contained the disease, but a fresh focal outbreak was reported from Diyarbakir in July 1973.

2.10 Eastern Mediterranean Region. The countries carrying out malaria eradication programmes are Afghanistan, Ethiopia, Iran, Iraq, Jordan, Libyan Arab Republic, Pakistan, Syrian Arab Republic, and Tunisia. While a number of these programmes are making satisfactory headway towards eradication, in others there have been considerable setbacks. The distribution of malaria throughout the Region varies from a complete absence of transmission in Cyprus, Israel and Lebanon, through endemicity of some degree in most countries, to uninhibited epidemic transmission in parts of Afghanistan and Pakistan. Although DDT or DDT/dieldrin resistance in anopheline vectors is encountered in all the malaria eradication programmes except Tunisia, this has not proved to be an insurmountable problem, particularly where the administrative machinery has the necessary managerial and technical flexibility. No cases of resistance of the parasite to antimalaria drugs have been reported. In Afghanistan, a joint UNDP/WHO
team assessed the antimalaria project for possible UNDP support. In Ethiopia, the programme is now concentrating on coverage of economically important areas and areas of high endemicity. In Jordan, no indigenous cases have been reported for three years but an increased number of imported cases was recorded in the first half of 1973. In Oman, a malaria survey was conducted, and coordination was established with the United Arab Emirates which are also undertaking control activities. In Pakistan, there have been progressive outbreaks of malaria transmission; conditions have deteriorated, with over 600,000 cases reported in 1972 compared with 100,000 in 1970, and may be further affected by the recent flooding. Insecticide supplies are short, and difficulties have been experienced in obtaining funds from bilateral-aid sources for the provision of malathion and other compounds that are needed in widespread areas where the vector mosquitos are resistant to DDT. Further trials with the use of larvivorous fish have been undertaken in Somalia and in Sudan, where special attention has been paid to the increase of malaria cases in and around Khartoum. A recent review of the malaria eradication programme in the Syrian Arab Republic has shown that, while the entire country has already entered the consolidation phase, the integration of the malaria service with the basic health services will have to be pursued with considerable caution; a planning phase of two years has been recommended to precede the implementation phase.

2.11 Western Pacific Region. Progress of the antimalaria campaigns in the Region, which cover areas inhabited by about 70 million people, was generally steady in 1973; and most of the governments concerned, being fully aware of the benefits that accrue from their antimalarial activities, give them priority. Use was made of assessment teams to advise governments and WHO on the future planning and the appropriate methodology for projects in the British Solomon Islands Protectorate, peninsular Malaysia, Papua New Guinea, and the Philippines. In the first of these, in which an appraisal of the economic impact of the campaign was made, it was considered that good results had been achieved and some areas could be advanced to the consolidation phase. The recommendations in respect to peninsular Malaysia included one for further decentralization. Although expansion of the programme has proceeded according to plan, the coverage achieved could not be considered fully satisfactory; however, in sprayed areas the malaria morbidity rate has now reached a very low level. The situation in Sabah improved compared with 1972, and the project in Sarawak was redefined as one for malaria control. In Papua New Guinea assessment showed a lack of training at the peripheral level and weaknesses in laboratory organization; a period of consolidation will be needed before any further expansion. In the Philippines a multidisciplinary team composed of persons from the Government, USAID and WHO recommended that a sharp distinction be drawn between areas where the malaria eradication programme should be pursued along classical lines, including supplementary measures where necessary, and those areas where this approach is not at present feasible and where control measures must be maintained. In the Khmer Republic and Laos limited activities in malaria control continued. In the latter country residual spraying operations were undertaken in the houses of the population resettled in consequence of the building of the Nam Ngum dam as part of the Mekong Valley development programme.

Research

2.12 During 1973, WHO concluded 41 new or renewed agreements on malaria research to study the biology of the parasite, the epidemiology of the disease and its chemotherapy, resistance of the parasite, and the methodology of operations. The following pages summarize a small sample of the multifarious research activities that have been coordinated, planned and assisted by the Organization in this field.

2.13 Biology of the malaria parasite. The biological aspects of the relationships between the intraerythrocytic malaria parasite and its host erythrocyte are of importance in understanding, for in vitro cultivation, the metabolic needs of the parasite. The Division of Parasitology, National Institute of Medical Research, London, investigated glucose catabolism in the simian malaria parasite Plasmodium knowlesi and postulated that there is an unidentified oxidative process other than the pentose phosphate pathway. The Bernhard Nocht Institute for Marine and Tropical Medicine, Hamburg, Federal Republic of Germany, has characterized the enzymes involved in the metabolism of the rodent parasite P. chabaudi. At the Department of Therapeutic Radiology, Tufts School of Medicine, Boston, Mass., USA, scanning electron microscopy has demonstrated marked differences between normal and infected erythrocytes, the latter showing multiple surface indentations and protrusions.

2.14 In the development of immunizing agents against malaria the Department of Preventive Medicine, New York University Medical Center, USA, using Macaca mulatta immunized with X-irradiated sporozoites of Plasmodium cynomolgi, has established at

20 krad's the minimum irradiation dose which will consistently abolish infectivity of sporozoites. Experiments with sporozoites of *P. cynomolgi* have shown that antisporeterine antibodies against this parasite were produced not only by repeatedly immunized rhesus monkeys but also by rats. In rats immunized with sporozoites of *P. knowlesi* there was no cross-reaction with *P. cynomolgi* and *P. falciparum*.\(^1\) Work carried out at the Department of Chemical Pathology, Guy's Hospital Medical School, London, has shown that sera from monkeys immune to *P. knowlesi* had no detectable effect upon the development of intracellular parasites maintained *in vitro*, but inhibited the cycle of growth which follows parasite division, suggesting that antibody acts on free merozoites and prevents their reinvasion of red cells; \(^2\) it has also shown that the erythrocyte requirements for parasite survival in susceptible species seem to be the presence of red cell receptors for merozoites, the nature of which may be related to antigenic properties of red cells. \(^3\) A strain of *P. berghei* which had been maintained by blood passage in mice for more than 10 years was, with difficulty, adapted, using high dosage inocula, to the gerbil (*Meriones unguiculatus*) by the Laboratory of Cytopathy and Histology, University of Nijmegen, Netherlands. It has been found that the non-adapted parasites, while incapable of penetrating erythrocytes, could stimulate a cell-bound immune mechanism without causing apparent disease, whereas adapted parasites exerted very little stimulation on the cell-bound system. \(^4\)

2.15 The Department of Zoology, King's College, London, demonstrated that, while homologous immunity between *P. vinckei* chabaudi and *P. vinckei vinckei* can best be transferred shortly after the parasites have been eliminated from the blood, heterologous immunity has to be transferred later, presumably at the time when subpatent infections disappear. It would appear that the heterologous parasites share some antigens with the homologous ones and that the whole range of antigens resulting from antigenic variation must be passed through before heterologous immunity becomes fully effective. Work at the Department of Preventive Medicine, New York University Medical Center, USA, showed that with *P. berghei* originating from the highlands of Katanga (Zaire), only a single generation of exoerythrocytic schizonts is formed and all merozoites developing from these pre-erythrocytic schizonts are destined to invade erythrocytes, indicating that there is probably no secondary extra-erythrocyte cycle.

2.16 *Malaria epidemiology.* Difficulties arise in the interpretation of entomological data owing to the multiplicity and inadequacy of methods of sampling mosquitos and to the limitations of the techniques employed. An informal consultation on entomological sampling techniques and on the interpretation of their data was held in November at which suggestions were made in respect of techniques to be employed in various circumstances and on the epidemiological significance of the results which may be obtained. Following studies on the relative frequency with which mosquitos take blood meals from two different hosts, \(^5\) the Imperial College Field Station, Ascot, United Kingdom, is attempting with some success to identify human blood group substances in mosquito blood meals, but so far mixed feeds involving the O blood group cannot be picked up. Further developments on age determination of anopheline mosquitos \(^6\) by the Department of Parasitology, Institute of Microbiology, Hebrew University, Jerusalem, have shown the technique to be useful in the field though not yet applicable to all malaria vectors.

2.17 Investigations at the Institute of Parasitology, University of Rome (designated during the year as a WHO Collaborating Laboratory for Cytogenetic Studies in Malaria Vectors) and at the Institute of Parasitology, Monticelli, Italy, have shown that the homozygote-inverted population of *An. stephensi* originating from Iraq is more tolerant to DDT and malathion than the population with a standard gene arrangement.\(^7\) The WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of *Anopheles*, London, completed a series of identifications of members of sibling species of the *An. farauti* complex; by identifying separate populations through species differentiation it has thus helped to explain behaviour characteristics in various parts of the range of this complex. \(^8\)

2.18 *An. sacharovi* was the first anopheline to show resistance to an insecticide (DDT); indications of this were originally observed in Greece in 1949 and confirmed in 1951. Recent studies in that country, by the Benaki Phyto-Pathological Institute at Kiphissia, indicate that this vector now has the same behavioural characteristics as before the residual

\(^1\) Nussenzweig, R. S. et al. (1973) *J. Immunol.*, 110, 600-601.


\(^3\) Butcher, G. A. et al. (1973) *Nature (Lond)*, 244, 40-41.


insecticides were introduced and that its potential as a malaria vector remains as great as before.\footnote{Hadjinecolau, J. & Betzios, B. (1973) Bull. Wld Hith Org., 48, 699-703.} Similar studies are being undertaken in Italy by the Institute of Parasitology, Monticelli, on An. atroparvus, An. labranchiae and An. sacharovi. Investigations made by the National Malaria Eradication Service of Thailand on the behaviour of An. balabacensis balabacensis and An. minimus in forest and forest-fringe areas have clearly indicated that DDT applied as a residual spray has given insufficient control of these two vector species. An assessment by the Office de la Recherche scientifique et technique outre-mer (ORSTOM), Brazzaville, of the attraction of different human age-groups and sexes to An. gambiae showed no significant differences between the frequencies of biting on either sex but an increased frequency with age (the attraction to adults was four times greater than to infants).

2.19 A number of serodiagnostic methods are now being used in malariology and within each of the main methods different techniques are employed; this causes understandable difficulty in assessing the results. An informal consultation was held in December 1973 to consider the reliability and comparability of serological testing in malaria. The standardization of methods and the provision of reference antigens were discussed. The WHO Collaborating Laboratory for Development of Malaria Serological Techniques, London, has carried out further work on quantitative immunofluorescence in malaria using a fibre-optic device, by which estimates of malarial antibody activity and specificity can be made on a single dilution of test serum. At the same laboratory the use of electrophoresis to analyse enzyme bands in various isolates of P. falciparum from East and West Africa allowed morphologically indistinguishable parasite samples to be differentiated.\footnote{Carter, R. & Voller, A. (1973) Brit. med. J., 1, 149-150.}

2.20 The WHO Regional Reference Laboratory for Malaria Serology (designated in 1973 at the Laboratory of Medical Parasitology, University of Nijmegen, Netherlands) has further improved the techniques used in the indirect haemagglutination test following a collaborative trial at five laboratories in which about 40% of sera tested had to be excluded from comparison because they showed agglutination activity in control cells. To overcome this a simple absorption procedure with a suspension of control cells was developed.

2.21 The operational value of serological survey techniques for assessing a population’s malaria experience and the disappearance of the disease following eradication operations has been studied in Mauritius,\footnote{Bruce-Chwatt, L. J. et al. (1973) Lancet, 2, 547-551.} Romania and Tunisia, in all of which the indirect fluorescent antibody technique was used. The absence of malaria-specific antibodies among children in the first two countries accords with the parasitological evidence and suggests that malaria transmission effectively ceased about a decade ago in Mauritius and some 20 years ago in Romania; and the serological picture in Tunisia corresponds to that of disappearing malaria in the absence of new infections. It is considered that the serological technique is a suitable tool for complementary epidemiological assessment which would be particularly reliable once the parasite rate has dropped below the level at which classical evaluation is meaningful.

2.22 Chemotherapy of malaria and drug resistance. As recommended by the WHO Scientific Group on Chemotherapy of Malaria and Resistance to Antimalarials,\footnote{Wld Hith Org. techn. Rep. Ser., 1973, No. 529.} greater use is being made of the in vivo and in vitro tests for drug resistance in falciparum malaria in Africa. Studies in the United Republic of Tanzania by the East African Institute for Malaria and other Vector Borne Diseases, Amani, and in Upper Volta by the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases (OCCGE), Centre Muraz, Bobo Dioulasso, have shown P. falciparum to be fully sensitive to the 4-aminoquinolines in the areas tested. The Department of Parasitology, Liverpool School of Tropical Medicine, United Kingdom, demonstrated that in rodent malarias the addition of chloroquine to a combination of pyrimethamine with sulfadoxine inhibited the development of resistance.\footnote{Peters, W. et al. (1973) Ann. trop. Med. Parasit., 67, 143-154.} In order to provide an opportunity to obtain further knowledge of the in vitro method its operation was demonstrated under WHO auspices to a number of scientists at Kuala Lumpur.

2.23 Work on the development of new antimalarial compounds has continued to be supported in a number of countries. In the Federal Republic of Germany, the Institute for Medical Parasitology and the Pharmaceutical Institute of the University of Bonn have shown derivatives of 3-aminoquinolines to affect the erythrocytic stages of P. cathemerium and P. berghei and to prolong the survival of infected birds and mice; some of these derivatives proved to be of low toxicity. Compounds from India, Poland and elsewhere were screened at the WHO Regional Malaria Reference
Centre for Screening of Potential Antimalaria Compounds, Liverpool, United Kingdom.

2.24 Work was carried out at the Department of Morphology, National University of Colombia, Bogotá, on the effects of chloroquine on the membrane proteins of human erythrocytes infected with *P. falciparum*. In the course of treatment with chloroquine RNA shows an overall decrease which is more marked in the species of higher molecular weight, probably owing to the destruction of these species with accumulation of low molecular weight species as degradation products.

2.25 The Tropical Epidemiological Laboratory, University of Tokyo, studied the long-term side-effects of varying periods of malaria suppression with sulfonamides and pyrimethamine in association and found the haemoglobin, haematocrit values, leucocyte and differential white cell counts all to be within normal limits.

2.26 *Methodology of control.* At the end of 1973 the WHO research project on the epidemiology and control of malaria in the African savanna completed its operational phase on schedule. The data collected in the field on the various aspects of parasitology, entomology, serology and demography, under the impact of different control measures, are being analysed for comparison with those obtained during the pre-operational period and from areas where no control measures have been applied. Effective control was achieved in the originally holoendemic area, where the maximum intervention was applied. The development of a mathematical model for the better understanding of the epidemiology of malaria and for the possible forecasting of the effect of different control measures has progressed substantially. It may be confidently expected that, after final adjustments in the light of the analysis of the data, the model will become an important tool for deciding on the most efficient methods of malaria control to be adopted under similar ecological conditions. Work will continue on a more limited scale to study the trend of malaria after interruption of the maximum control measures and ensure the protection of the population whose immunity may have decreased as a result of malaria control.

2.27 A methodology of evaluation has been developed for the Stage VII (epidemiological) trial of fenithrothion as a residual insecticide in Kisumu, Kenya (see also paragraph 3.17). Data from incidence and prevalence surveys have confirmed that malaria, mainly due to *P. falciparum*, is holoendemic in the evaluation area. With a view to developing serological methods for epidemiological purposes, immunofluorescence tests are performed on paired blood specimens collected from the population under observation. Transmission has been shown to be perennial with minor seasonal variations, and the effect of the three-monthly application of fenithrothion on malaria is being assessed.

2.28 The Department of Electrical Engineering, Massachusetts Institute of Technology, Cambridge, Mass., USA, studied the feasibility of computer screening of blood films for the detection of malaria parasites in view of the obvious advantages that rapid screening could have if applied to the millions of slides that are examined in the global antimalarial programme. The automated detection technique used successfully identified red blood cells containing malaria parasites, but in its present stage of development gave too many false positive identifications, was too slow and too costly, and required too complex an equipment.1

Meetings and coordination

2.29 In November, a WHO Expert Committee on Malaria, meeting in Geneva, paid special attention to the feasibility, organization and assessment of malaria control programmes in areas where eradication is not at present feasible and to the role of the basic health services in planning and implementing these programmes; and it advised as to methods suitable for such control by virtue of a favourable cost/benefit or cost/effectiveness ratio. In respect of malaria eradication programmes, the Committee reviewed the operational implications of resistance of malaria vectors to insecticides and revised earlier recommendations concerning the organization of the maintenance phase of a programme and the methods to be used in that phase. Recommendations were also made regarding treatment, both where parasites are resistant to some drugs and where *P. falciparum* has not been reported resistant to the 4-aminoquinolines. Reviewing the areas in which malaria eradication programmes have been completed, the Committee recommended that Cuba, Mauritius and—in Europe—Portugal and Yugoslavia be included in the register of countries in which eradication has been achieved.

2.30 The fourteenth in a series of joint WHO/UNICEF/USAID/United States Public Health Service meetings on malaria coordination took place in Atlanta, Ga., USA, in February. This was also attended by the Federal Republic of Germany, which is giving bilateral aid for malaria eradication projects

---

2.33 Some 20 intercountry or interregional malaria meetings whose main aim was to coordinate the antimalaria programmes in border areas were sponsored or organized by WHO during the year. A special meeting of the Ministers of Health of Central America and Panama was held in Washington, D.C., in March at which one of the main subjects was the coordination of antimalarial activities on a subregional basis. In June, the thirteenth meeting of the working group to coordinate the malaria eradication programmes of Central America and Panama was held in Guatemala, and was attended by the directors of the national malaria eradication services concerned.

2.34 Despite the advances made during the year in both laboratory and field research on schistosomiasis, the gaps in knowledge are such that one cannot but conclude that the existing programmes, though valuable, are not sufficient to control the disease in vast areas of the world. Only larger, long-term programmes of investigation into the impact of the infection on the individual, the effect of the disease on a community-wide basis, immunity, epidemiology, and control methodology will supply the means to remedy the situation. It is not merely lack of manpower and money that has inhibited progress, but also insufficient confidence among the decision-makers in such control measures as are available and a lack of conviction that the disease deserves a high priority. In some quarters, however, increasing recognition is being given to schistosomiasis as an important public health and socioeconomic problem of great significance, and it is notable that the Nobel Foundation sponsored an interdisciplinary study of schistosomiasis as a major factor affecting the success of water resources development schemes. The discussions, in which WHO participated, took place in Stockholm in August.

2.35 Neither the degree nor the amount of illness and disability resulting from schistosome infection has yet been properly measured quantitatively; consequently it is difficult to convince governments and assisting agencies of the importance of the disease, both for the health of the community and for its increasing effect as an economic depressant. In June 1973, therefore, the Organization convened a study group on the design of studies to measure the public health importance of schistosomiasis on a community-wide basis. The group recommended that whole communities be studied in depth to detect the existing amount of illness and disability due to both mild and severe infections. They also recommended extension of the studies over a period of years to follow the effects of drug treatment and to observe the course of the disease.

Epidemiology and control

2.36 To meet the challenge created by the spread of schistosomiasis in man-made lakes, a project supported
by UNDP and conducted in Ghana and Egypt was established in 1971 with headquarters in Accra and a field station on Lake Volta to study transmission factors and to explore possibilities for the control of the disease in lakeside situations. In 1973 the collection of essential baseline data on prevalence of infection and transmission factors, including snail populations and human habits, in the Lake Volta area was extended to new areas. The prevalence of infection is high, ranging up to 80% in the study villages, but the indications so far are that transmission is essentially focal, taking place in small water-contact areas close to the villages. Hence, it may be possible to control the snail hosts with chemicals applied to limited parts of the water. It is intended also to test the efficacy of control of the disease by chemotherapy, and a careful clinical study of metrifonate (known to be effective against Schistosoma haematobium) is being made to ascertain whether it would be suitable for use in the project area. In Egypt a comparison was made of the problem on Lake Volta with the situation on Lake Nasser and in the irrigation systems below it.

2.37 WHO is actively engaged in advising governments concerning water resources development schemes and in studying their health consequences as well as in other forms of assistance. In the African Region, for instance, the recent construction of the Kainji Dam in Northern Nigeria has resulted in the creation of a lake covering approximately 1250 km² and the displacement of about 50 000 people who formerly lived along the banks of the Niger. In order to assess the impact of this newly formed man-made lake on the epidemiology and spread of schistosomiasis, WHO has carried out a 3-year longitudinal study in selected villages. It was found that in lakeside villages the prevalence of infection doubled to 69% between 1970 and 1972, and that the intensity of infection as judged by egg counts increased significantly during that period. On the other hand, an opposite trend was observed in a community relocated away from the lake. Some of the villagers who moved to an area where there was no transmission apparently lost their infections. Assistance was also provided to the Government of Nigeria for determination of the present status of schistosomiasis in the 83 000-hectares South Chad irrigation project (see also paragraph 2.6). Assistance was given to the Malawi Government for assessment of the seriousness of the disease in major agricultural development schemes throughout the country; as a result it has been recommended that a pilot control programme be initiated there. In the United Republic of Tanzania, the schistosomiasis pilot control project has completed its initial objective of determining the feasibility of schistosomiasis control within the present resources of the country and evolving a methodology of control applicable to other parts of East Africa. In the Region of the Americas, the Organization collaborated with Brazil in studies relating to hycanthone and its action on human chromosomes, and gave assistance in Surinam to review the plan of operations for a pilot project for the control of the disease. In the Eastern Mediterranean Region assistance to national programmes included study of the disease in relation to the Euphrates Dam in the Syrian Arab Republic and establishment of a long-term programme in that country; evaluation of the control programme near Alexandria in Egypt where mollusicides have been effective in reducing transmission in a series of test villages; assistance to the successful Tunisian programme for control of the disease using both chemotherapy and molluscicides; establishment in Saudi Arabia of a long-term programme; and initiation of a control project in the Yemen. In the Western Pacific Region WHO assisted in identifying and determining the distribution of the intermediate snail host (Lithoglyphopsis aperta) in the focus on Khong Island in the Mekong river. ¹

2.38 As part of the Organization’s programme of information on schistosomiasis, a comprehensive monograph was published on the epidemiology and control of the disease. ² It deals with the distribution of the disease and of the snail intermediate hosts, the dynamics of transmission, national control programmes and the evaluation of control programmes, snail control, chemotherapy, and techniques useful in all aspects of epidemiological studies and control work.

Research

2.39 The following paragraphs (see also paragraph 5.4) give some examples of research assisted and stimulated by the Organization. The interaction of mixed infections of Schistosoma mansoni and Trypanosoma cruzi was studied in mice at the Department of Preventive Medicine, São Paulo, Brazil. The most striking finding when T. cruzi was given first was that very large numbers of that organism were found; moreover, in some mice the peripheral blood remained positive for T. cruzi long after the controls had become negative. When given 5-16 days after T. cruzi, few S. mansoni were recovered, but with an interval of 63 days between exposures the number of worms recovered at autopsy was significantly higher than in controls. However, when S. mansoni infection pre-

² Ansari, N., ed. (1973) Epidemiology and control of schistosomiasis (bilharziasis), Basle, Karger on behalf of WHO.
ceded that with T. cruzi, the latter had no effect on the S. mansoni infection. The investigation raises many interesting questions concerning mixed infections and demonstrates the need for immunological studies regarding them. In another study in Brazil—by the Schistosomiasis Research Unit, Institute of Biological Sciences, Federal University of Minas Gerais, Belo Horizonte—it was found that a wild aquatic rat, Nectomys squamipes, is naturally infected with S. mansoni and that the life-cycle can be maintained in rats and snails under natural conditions; the significance of the rat infections in relation to human infection remains unknown, however.1

2.40 The development of drugs that are much more effective and easier to use than the antimonal compounds has made it possible to use chemotherapy as an adjunct to other control measures. Nevertheless, better drugs are still needed. The Schistosomiasis Research Unit, Belo Horizonte, Brazil, has confirmed that, although oxamniquine has relatively little effect given orally, it is highly effective if given intramuscularly.2 The Bilharziasis Chemotherapy Centre in Tanga, United Republic of Tanzania (jointly sponsored by the Government, the United Kingdom Medical Research Council, and WHO) is conducting comparative trials using niridazole and hycanthone against S. haematobium infections. The work of the Centre is being extended to include study of the chemotherapy of other helminthic infections including those caused by Wuchereria bancrofti and possibly Onchocerca volvulus. The Department of Parasitology, Liverpool School of Tropical Medicine, United Kingdom, is carrying on a study on the prevention of schistosome infection through the use of drugs, using a standard test procedure that it has developed; niridazole and oxamniquine have been found to have prophylactic properties meriting further study.

2.41 The programme for the development and testing of better molluscicides placed emphasis during 1973 on the improvement of the formulation of chemicals to achieve more effective delivery into the snail habitats and longer-lasting effects. Niclosamide, N-tritylmorpholine, organolead and organotin compounds and copper sulfate dissolved in rubber matrices were given further laboratory and field tests, and some of these gave promise that snails may be effectively controlled in some habitats by such slow-release formulations. Molluscicide in paint is also being tested for making certain breeding-sites, such as irrigation ditch branches, unsuitable for snails. Emphasis is being placed on determining the toxicity of effective molluscicides for fish and other valuable organisms, and studies of the behaviour and fate of molluscicides in the environment are being encouraged.

In the Creative Biology Laboratory in Barberton, Ohio, USA, 13 slow-release formulations of niclosamide using three kinds of rubber as solvent were investigated. The half-lives of the best formulations ranged from about 200 to 700 days. In laboratory tests with snails, one formulation showed negligible reduction in snail toxicity after being washed in water for 22 days. The same laboratory studied the efficacy of two carboxylated polyacrylates (widely used in cosmetics) for topical application to prevent penetration by schistosome cercariae. Both substances, applied to the skin in alcohol or water solutions, produced a water-resistant non-occlusive film that adhered well. With a cetyl alcohol solution the film persisted for 16-22 hours on the skin of human volunteers even during swimming and violent exercise. The protection of mice against cercariae was excellent. The substances can be applied as lotions which could also contain insect repellent. At the Federal University in Rio de Janeiro, Brazil, work was continued on the application of wood oils to the skin to prevent the penetration of S. mansoni cercariae. Oils from three trees have been found to be useful, the effect being due to unsaturated sesquiterpene lactones. Another tree extract under study—for its molluscicidal properties—is derived from Phytolacca dodecandra, known as endod in Ethiopia, where its saponaceous berries are used for laundering. Powdered endod berries in solution have already given encouraging results against African snails,3 and a butanol extract of the berries was evaluated during the year by the Department of Parasitology, National Institute of Health, Tokyo, against Oncomelania nosophora, the intermediate host of S. japonicum. The product proved toxic to the snails but at a higher concentration than was needed for niclosamide and sodium pentachlorophenate.

Onchocerciasis

2.42 A considerable proportion of the Organization’s work in onchocerciasis during 1973 was concerned with the final preparations for launching the large-scale onchocerciasis control programme in the Volta River basin that has been the subject of a preparatory assistance mission to governments financed by UNDP and executed by WHO with the participation of FAO as associate agency and the collaboration of IBRD.

---

The final report of the mission, containing the strategy proposed for controlling the disease and for the subsequent economic development of the area, was completed during the year and presented in August to the seven governments concerned (those of Dahomey, Ghana, Ivory Coast, Mali, Niger, Togo, and Upper Volta). A meeting of the representatives of these governments and of the international bodies concerned was held in October-November in Accra; the report was adopted, and a number of aspects related to, for instance, government contributions and the coordination of operations were finalized. An operational agreement between the seven governments and WHO as executing agency was signed.

2.43 The programme area covers about 700,000 km² in the seven countries and it is estimated that among the 10 million inhabitants of the area more than 1 million are infected with onchocerciasis, of whom at least 70,000 are considered "economically blind" and many more suffer serious visual impairment. The disease—carried by the blackfly Simulium damnosum—constitutes the most important deterrent to human settlement and development of the fertile valleys of the Volta River basin which are now performe intensely uninhabited and unproductive.

2.44 Because there is still no drug entirely suitable for mass chemotherapy, control of the simulium vector at the larval stage by a biodegradable insecticide offers the only means at present for interrupting transmission of the disease. However, since persons already infected may remain infective for as long as 15 years, the elimination of the vector must be continued for no less than this period after the appearance of the last new case in the programme area. Consequently, a 20-year control programme is envisaged, and no fewer than five years of concerted study and effort have already been needed to determine under what conditions such an undertaking can be launched with the greatest prospect of success.

2.45 An important part of the work has been establishing firm baseline data to permit the continuous evaluation of changes in disease prevalence, incidence and severity in representative villages of the project area as the operational campaign proceeds. Epidemiological data on 5 million inhabitants of the area were analysed during the year and detailed maps of the prevalence of infection with Onchocerca volvulus and of blindness were prepared, using a special computer mapping programme. The information was compiled from field records of the seven governments, from available reports of WHO and other organizations and scientists, and from special studies supported or conducted by the Organization.

2.46 For the work during the year on the vector control aspects of this programme the reader is referred to Chapter 3.

Epidemiology and pathogenesis

2.47 Of importance for the Volta River basin programme, although not directly a part of it, are intensive studies on the dynamics of transmission, on the incidence of infection and prevalence of ocular lesions, and on the natural history of onchocerciasis that have been started by the Organization in Ghana with the assistance of a special research team of the Royal Commonwealth Society for the Blind, London. The data from these studies will be used for simulation trials in a mathematical model on the epidemiology of onchocerciasis that has been developed by the Organization and is being tested.

2.48 Studies on the clinical and pathological aspects of onchocerciasis supported by WHO have yielded new information on the disease and have brought to light geographical variations in disease patterns. For instance, ocular complications are more frequent in hyperendemic areas of the African savanna than in rainforest foci or in the endemic areas of Latin America and the Yemen. In contrast, lymphatic involvement occurs more often in the African rainforest than in the other endemic foci of the world. Onchocerciasis in the Yemen has special clinical features that are not commonly found elsewhere. In that country the disease, locally known as sowda (Arabic for "black"), typically involves only one leg, of which the affected portion is intensely pruritic, dark and thickened. The most striking histopathological feature of this condition is an extensive inflammatory cell infiltrate. The Organization also carried out studies in the Abu Hamed area of Sudan in November-December 1973 to investigate the reasons for the natural decline of onchocerciasis in a previously endemic focus despite continuous breeding of Simulium.

2.49 There has been an increasing number of reports of the presence of O. volvulus microfilariae in organs other than the skin and eye; for instance, microfilariuria is relatively common in African hyperendemic foci, and the larvae have recently been noted in sputum and vaginal smears as well as in the lymphatic system and cerebrospinal fluid, and, as shown at autopsy, in blood vessels and the liver, kidneys, lungs and spleen. These are complications of the traditionally accepted picture, and some of

1 Buck, A. A. (1973) Z. Tropenmed., 24, 335-338.
these organs are those that are subject to the side-effects of filaricides. This prompted the Organization to review the clinical, diagnostic and pathological aspects of onchocerciasis in the course of two informal consultations in June on standardization of diagnostic materials and classification of typical and atypical manifestations of the disease. The first of these meetings dealt with the general symptomatology and pathology and the second with the ocular aspects.

**Research**

2.50 The Organization has supported studies in Upper Volta by the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases (OCCGE), Centre Muraz, Bobo Dioulasso, and the Mobile Ophthalmology Team of the Rural Health Service, Ministry of Public Health, Ouagadougou, on the use of drugs for mass chemotherapy. Preliminary results have shown that there are considerable variations in drug tolerance from one area to another, and even low doses of diethylcarbamazine may cause severe reactions in some heavily infected persons. The drug stimulates movement of the microfilariae within the body and may lead to increased microfilaremia and even pulmonary oedema with excroration of microfilariae in the sputum. Field trials with suramin—the only macrofilaricidal drug available, but known to have toxic side-effects—are also under way to determine the exact contraindications to its use in mass treatment campaigns. Trials with chimpanzees were undertaken in Kumba, Cameroon, by the Helminthiasis Research Unit of the United Kingdom Medical Research Council into new drugs thought to be of potential value against *O. volvulus*; preliminary results with metrifonate and levamisole have shown an immediate reduction of the microfilariae and blood eosinophilia, mastocytosis and disruption of mast cells (in conjunctiva, cornea, iris and sclera) suggests the possibility that an "immediate" (IgE-mediated) hypersensitivity is involved. There was found to be marked eosinophilia in the eyes of some persons after diethylcarbamazine treatment and a similar response was noted in the dermis. It seems possible to produce an acute reaction in the eye, as in the skin, by administering a microfilaricide such as diethylcarbamazine or by injecting dead microfilariae into an experimental animal.1

2.52 In another study by the Helminthiasis Research Unit, Kumba, of the transmission potential of *S. damnosum* in Sudan-savanna villages with different intensities of *O. volvulus* infection, observations are being extended over the different seasons of the year. Progress was made in the development of a trap for *S. damnosum* and the chemical stimuli necessary to attract the flies are being perfected. At the OCCGE Onchocerciasis Section, Centre Muraz, Bobo Dioulasso, Upper Volta, studies were pursued on, inter alia, the cytotoxicity of the *S. damnosum* complex. Approximately 200 identifications have already been made on material collected from sites in the Guinea and Sudan savannas with a view eventually to mapping the distribution of the different forms of the *S. damnosum* complex in West Africa. Data collected between 1967 and 1971 on the transmission of *O. volvulus* and *S. damnosum* are being analysed.

2.53 At the request of the Government of Liberia, where onchocerciasis is also a serious public health problem, the Organization assisted in defining three major types of research study that might advantageously be conducted there—namely, research on vector control in the rainforest; research on the application of established drugs for mass chemotherapy; and longitudinal studies on the socioeconomic impact of onchocerciasis among miners and skilled workers in an iron mine and among predominantly agricultural employees of a large rubber plantation.

**Other filarial infections**

2.54 Filariasis due to *Wuchereria bancrofti* and *Brugia malayi* has recently been estimated to affect some 200 million people in most of the warmer parts of the world. Although efforts to control it by mass treatment with diethylcarbamazine and by measures against the vectors have given promising results in limited projects, it is another of the diseases that

---

remain uncontrolled in many endemic areas; indeed, the poor sanitation and crowding accompanying uncontrolled urbanization in tropical countries have caused an alarming increase of urban filariasis transmitted by *Culex pipiens fatigans*. Whereas most mosquito-borne diseases are transmitted by vectors of a single genus, *Wuchereria* and *Brugia* have a multiplicity of mosquito vectors representing a wide variety of ecological conditions and making control the more difficult.

2.55 A WHO Expert Committee on Filariasis that met in October in Athens, prior to the Ninth International Congress on Tropical Medicine and Malaria, recommended that, in view of these ecological differences, investigations similar to those carried out in Rangoon by the former WHO filariasis research unit there should be conducted in areas with different vectors and different filarial species. The Committee also noted the changing epidemiological pattern of filariasis in the world and discussed methods for epidemiological assessment and the evaluation of control measures. It considered that, despite the excellent work already done, more multidisciplinary research was needed on all aspects of the epidemiology of filariasis. WHO was particularly well qualified to establish multidisciplinary field teams for this purpose. Among its recommendations, the Committee stressed the need for research into the biochemistry of the parasites and the importance of taking into account, when planning the development of water resources, the risk of creating conditions that might favour the multiplication of filarial vectors.

**Epidemiology and control**

2.56 Under the Organization’s interregional programme of field investigations in filariasis, the epidemiological dynamics of the disease in India and Indonesia were studied during 1973. In the programme in India against *W. bancrofti*, to infection with which 150 million people are at risk, antilavlar measures are used and trials are being made of the use of diethylcarbamazined salt. Control measures against *B. malayi* are still limited to a pilot control project based on imagocidal measures with residual insecticides and trials of mass chemotherapy with diethylcarbamazine. In Indonesia the two forms of the disease are widespread, but control measures are as yet on a small scale.

2.57 In the Western Pacific Region, surveys and control work were carried out in the British Solomon Islands Protectorate, Fiji, the Gilbert and Ellice Islands, the New Hebrides, Niue, Tonga, and Western Samoa. In the last-mentioned country combined parasitological and entomological investigations were completed on the transmission potential of low-density *W. bancrofti* infections in a community in which mass treatment with diethylcarbamazine has been employed as a control measure. It was found that ultra-low-level microfilaraemia, undetectable by most of the commonly used techniques, can produce infections in a significant proportion of mosquitoes. Furthermore, the microfilariae proceed readily to the highly motile infective third-stage larval forms present in the mouth parts and head of the vector; the development of these forms is not affected by previous exposure of the parent worms to diethylcarbamazine. Another interesting finding warranting further investigation was that *Aedes polynesiensis* takes up and sustains the development of approximately 12 times the number of filarial larvae that would be expected from the microfilarial count in the human host.

**Research**

2.58 The Sub-department of Entomology, School of Medicine, Liverpool, United Kingdom, has conducted research with WHO support on the freezing and storage of *W. bancrofti* and has succeeded in obtaining infective larvae in mosquitoes after storage in liquid nitrogen. In connexion with work on the *Aedes scutellaris* group, one of its members, unlike *Ae. polynesiensis* and *Ae. pseudoscutellaris*, was found to be refractory to infections with *Brugia*. Hybrids between susceptible and refractory species are difficult to obtain but a first series of experiments shows that susceptibility is a recessive trait. Work has started to test whether a similar situation holds with *W. bancrofti*. Eggs of the *Ae. scutellaris* group in the South Pacific are collected as part of the interregional field investigations programme, and larval and adult material reared from them were sent during the year to the Smithsonian Institution, Washington, D.C., for taxonomic study and to the Department of Medical Entomology, Johns Hopkins University, Baltimore, Md., USA, for genetic study. In the course of an epidemiological investigation of bancroftian filariasis in Madagascar by the Office de la Recherche scientifique et technique outre-mer (ORSTOM), Tananarive, the causes of the failure of *W. bancrofti* to develop fully in *Mansonia uniformis* were investigated. At the Zoology Laboratory, Museum of Natural History, Paris, work is being undertaken on the factors affecting

---

microfilariae during their passage through and development in the vector and it has been confirmed that there is a considerable difference between vector species in the number of microfilariae that pass from the stomach into the haemocoele. In Honolulu, the Department of Tropical Medicine, University of Hawaii, USA, developed an automated method of counting microfilaria, using *Dirofilaria immitis*; however, the minimum density countable proved too high to be of practical value and further trials to overcome this difficulty are in progress.

2.59 The WHO International Reference Centre for Filarioidea, in London, finished recording in a machine-readable form the catalogue of its reference collection and is completing a computerized bibliography on filariasis containing over 14,000 references. The centre also carried out research on experimental filariasis and its chemotherapy. Immunopathological and antibody studies revealed that cats may show resistance to reinfection with *Brugia pahangi*; this is partly explained by the finding that antibody to the parasite larvae increased considerably in repeatedly infected cats but antibody to the adult forms did not. The testing of various compounds for filaricidal activity using the *Brugia*-cat system showed one compound to have a high macrofilaricidal effect when compared with diethylcarbamazine and suramin, and after successful treatment the damaged lymphatics were regenerated. This may have important implications as it has been suggested that in human filariasis the killing of adult *Wuchereria bancrofti* exacerbates the clinical signs.

2.60 New potential filaricidal compounds are being screened for the Organization by the Institute of Medical Sciences, University of Tokyo, which maintains special colonies of cotton rats and gerbils for this purpose. Studies of the activity of promising chemotherapeutic agents and changes in serum protein during their administration to rodents are also being carried out with WHO support by the Institute of Parasitology, Justus Liebig University, Giessen, Federal Republic of Germany.

**Trypanosomiasis**

**African trypanosomiasis**

2.61 Epidemiological data on the trypanosomiasis situation over the last five years were obtained from 18 African countries in reply to a questionnaire issued on the occasion of the joint WHO/FAO seminar on African trypanosomiasis, held in October 1972. Because of the technical difficulties of detecting infection, particularly with *Trypanosoma gambiense*, precise information on the prevalence of sleeping-sickness is not available. However, this collection of epidemiological data provides a point of departure for longitudinal studies on the epidemiological trend of the disease through periodic follow-up questionnaires and provides basic information on what is being done in different countries, and how. The answers have made it clear that in West Africa the incidence of human trypanosomiasis continues to decrease, although there is no ground for complacency, as was shown by the number of reports of local resurgence, often at the centre of long-established endemic foci. From Central and East Africa, local outbreaks of a serious nature were reported. Kenya, Uganda and the United Republic of Tanzania have developed a programme of common measures for the control of the disease and its vectors in their border areas.

2.62 Travel and large-scale population movements are often associated with an increase of sleeping-sickness, due both to increased individual susceptibility among migrants and to introduction of new trypanosome strains into endemic areas, which may also mean the spread of drug-resistant strains from one area to another. One such high-risk situation has developed in Southern Sudan, where WHO is assisting in organizing a control programme jointly with the Sudanese Government and with financial support from the Office of the United Nations High Commissioner for Refugees. It is important to note that in such a situation the effect of immediate control measures is likely to be vitiates if they are not followed for some years by close surveillance and prompt action if transmission or reinfection occurs.

2.63 Resistance of trypanosomes to melarsoprol and pentamidine remains of concern. In collaboration with IAEA studies were therefore initiated on the mode of action of trypanocidal compounds, using radioisotope-labelled substances.

2.64 The recent development of new diagnostic tools has made it necessary to evaluate them in the field. Five African laboratories—in Congo, Nigeria, Senegal, Uganda (the WHO International Reference Centre for Trypanosomiasis, at Tororo) and Zaire—and two in Europe—in Belgium and the United Kingdom—are participating in a double-blind study on material collected from various parts of Africa, using a variety of serological tests. Established tests such as the raised serum IgM test and the fluorescent antibody technique will be compared and more recent tests such as one for the detection of soluble exoantigens and various modifications of indirect agglutination techniques will be evaluated. At Brazzaville, the
Office de la Recherche scientifique et technique outre-mer (ORSTOM) is comparing, with WHO support, the results of the fluorescent antibody technique, IgM determination and the separation of trypanosomes from blood components by DEAE columns.

2.65 Methods for differentiating T. gambiense and T. rhodesiense, both pathogenic to man, from the morphologically identical non-pathogenic T. brucei form the key to host-reservoir studies. At the Department of Medical Protozoology, London School of Hygiene and Tropical Medicine, WHO-supported studies have shown ¹ that equivocal results can occur with T. rhodesiense in the blood incubation infectivity test. ² It has become clear that no simple relationship exists between the sensitivity of T. rhodesiense strains to trypanocidal factors naturally present in human serum and the number of passages in laboratory animals or the period of laboratory maintenance.

2.66 The same department serves as one of the WHO cryopreservation banks, where trypanosome stabilates are maintained for studies on antigenic characteristics. Another is at the Bureau central de la Trypanosomiase, Kinshasa, concentrating on the collection of T. gambiense strains. The WHO International Reference Centre for Trypanosomiasis, Tororo, Uganda, which also serves as a cryobank, enlarged its collection during 1973 with 85 new stabilates.

2.67 An impediment to research on the pathogenesis of trypanosomiasis is the lack of a suitable animal model to permit the characteristic lesions in man to be reproduced consistently in laboratory infections. In WHO-assisted studies at the Department of Biology, Tulane University, New Orleans, La., USA, promising results were obtained with experimental infections in Microtus montanus, a field mouse previously shown to be susceptible to T. gambiense infection. At the Department of Parasitology, Hadassah Medical School, Jerusalem, the observation was made that haematopoietic cells in T. lewisi infections were covered with IgG; this may have important implications for further research on the cause of anaemia in trypanosomiasis as such is under way at the Cantonal Hospital, Geneva, Switzerland (see paragraph 5.3). Experimental infections with T. lewisi in immune rats by the Department of Medical Protozoology, London School of Hygiene and Tropical Medicine, have shown that trypanosomes continue to multiply in the vasa recta of the kidney long after their apparent disappearance from the blood. A possible explanation is that parasites in this site may be protected from the host immune response, perhaps by intravasal blockage due to the formation of multinucleate and rosette forms.

American trypanosomiasis (Chagas' disease)

2.68 Assistance with Chagas' disease control programmes was provided to a number of Member States in the Americas, and notably to Brazil, Peru and Venezuela. During a vector survey in Honduras conducted in conjunction with the University of Costa Rica and the Organization, a new triatomate was discovered for which the name Triatoma ryckmani sp. nov. has been proposed. The same institution undertook studies on engorgement and defaecation and showed that Rhodnius prolixus defaecates faster and more frequently than T. infestans, which in turn defaecates more rapidly and more often than T. diminuta. As Chagas' disease is transmitted through the faeces of the bug in the open wound of the bite or in scratches, this suggests that R. prolixus may be a more efficient vector.

2.69 Using pure suspensions free of host-cell-derived contaminants, the Biological Laboratory, University of Kent, United Kingdom, has been able to compare the characteristics of kinetoplast DNA of amastigotes and trypanomastigotes and culture forms. It was found that the molecular organization as well as the buoyant density of the different DNA preparations was the same; while this is suggestive of close similarity, further investigation is, of course, needed.

2.70 As part of fundamental investigations on the mode of action of various chemotherapeutics at the same institute, studies were initiated to determine whether thymidine phosphorylase is one of the key enzymes involved in salvage pathways for thymine nucleotides in T. cruzi, as it is in bacteria. The interest here is to determine the possible means by which the organism resists the inhibitory effect of drugs whose activity is based on interference with the normal pathway. Trials with experimental drugs have not so far provided a favourable alternative to nifurtimox, which is at present undergoing clinical trials, but which has the disadvantage that long therapeutic courses are needed for cure.

Leishmaniasis

2.71 The epidemiological picture of visceral and cutaneous forms of leishmaniasis remains fairly con-
stant in the majority of endemic areas. Focal outbreaks in southern Europe usually remain restricted to small areas and are possibly associated with occasional relatively long climatic changes affecting the habitat of wild reservoir hosts. It has been noted that in areas of leishmaniasis endemicity where malaria control campaigns have been carried out the prevalence of leishmaniasis has incidentally been reduced. However, experience in India, Iran, the Syrian Arab Republic and Turkey has suggested that, once a malaria programme has reached the consolidation phase and house-spraying activities decrease or cease, a gradual resurgence of leishmaniasis is to be expected. This is a matter that deserves the attention of health authorities.

2.72 The completion of urbanization projects may be promptly followed by a flare-up of the cutaneous forms of leishmaniasis, as was learnt from a WHO-assisted survey in Afghanistan in 1972. The now-completed analysis of the findings clearly shows that, while house-to-house spraying to control *Phlebotomus* can considerably reduce transmission rates, careful preliminary reconnaissance is essential if anything like total coverage is to be attained.

2.73 In recent years, there has been an increase of visceral leishmaniasis in Iraq; with WHO assistance, a follow-up of previous training activities and epidemiological studies was made, and the results of control measures evaluated.

2.74 The importance of the sandfly genus *Psychodopygus* as a vector of leishmaniasis caused by organisms belonging to the *Leishmania brasiliensis* complex was reported during the year 1 and confirmed by further epidemiological investigations of the Wellcome Parasitology Unit in Brazil in collaboration with the Organization.

2.75 By applying a recently developed method of species identification 2 based on differentiation of the antigenic characteristics of excretion factors, the WHO International Reference Centre for Leishmaniasis, in Jerusalem, has shown that overlapping of the characteristics of various *Leishmania* species can occur. Bengali strains isolated from visceral leishmaniasis appeared congruent with *L. tropica*, the typical organisms which cause cutaneous leishmaniasis. The converse has also occurred, Sudanese strains isolated from cutaneous lesions appearing identical to other Sudanese strains isolated from patients with visceral lesions. This emphasizes the need for further studies on taxonomy as well as on factors determining the host-parasite relationship.

2.76 In order to obtain comparable results from various immunodiagnostic methods applied in different laboratories in the world, three centres for cryopreservation, the WHO International Reference Centre at Jerusalem, the London School of Hygiene and Tropical Medicine, and the Gamaleja Institute of Epidemiology and Microbiology in Moscow, have agreed to use standardized methods and to observe the same conditions for stabilization. The recommended methods were defined in collaboration with the Liverpool School of Tropical Medicine and the Wellcome Parasitology Units in Brazil and Ethiopia. At the Liverpool School of Tropical Medicine, work has continued on strain identification by electron-microscopic studies of morphology, by comparison of DNA structures, and by characterization of metabolic enzymes such as isoenzymes of malate dehydrogenase.

2.77 At the WHO International Reference Centre for Immunoglobulins in Lausanne, Switzerland, a method was developed for quantitative estimation of live *Leishmania* forms in macrophages. Immunological research applied to this disease is reported in paragraph 5.14.

2.78 Tissue culture techniques for drug screening in *vitro* have the advantage of reducing the risk of interference by the host immune system, and allow study of the effect on infective (amastigote) forms of leishmaniasis. To date, the Liverpool School of Tropical Medicine has screened some 180 known and potential antileishmania compounds, and it is expected that this work will provide stimulus to the development of suitable drugs by pharmacological research institutes. At the WHO International Reference Centre in Jerusalem, research on improved methods of preparation of vaccine and leishmanine and their preservation has also been pursued.

### Amoebiasis

2.79 Knowledge of the distribution of amoebiasis in the world remains incomplete for lack of reliable and readily applicable diagnostic methods. A recent method involving specific staining of *Entamoeba histolytica* by fluorescein-conjugated antibodies facilitates the recognition and detection of the parasite in faeces, but has given an unacceptable number of non-specific reactions. This difficulty has now been overcome by a modification developed with WHO assistance in the Royal Free Hospital, London. Evaluation studies of the latex agglutination test at
the same hospital have shown that it detects the same antibodies as the indirect haemagglutination test but different ones from those demonstrated by the fluorescent antibody technique. The simplicity and rapidity of the latex agglutination method give it a considerable advantage over other methods. With WHO assistance the skin test for amoebiasis was modified and evaluated in Bangkok, and encouraging results were obtained for both the intestinal and invasive forms of amoebiasis. There is a long-persistent reactivity with both the skin test and the latex agglutination method which reduces their value for individual diagnosis in endemic areas; however, they are useful as indicators of prevalence in epidemiological studies.

Mycotic infections

2.80 Long-term investigations initiated in 1972 by the Mycology Service, Institut Pasteur, Paris, on sporotrichosis in Central and South America as well as on Madurella mycetomi in Africa have begun to yield interesting results. Surveys, using a skin test and six soluble and cellular antigens prepared from Sporotrichum schenckii and Ceratocystis stenoceras, were carried out in two areas in Mexico, one in Guatemala and two in Nicaragua. About 150 persons were tested in the course of this study and the results obtained indicate that patients with clinical manifestations of sporotrichosis react to the soluble (metabolic) antigen of both species of fungi while those with only a sensitizing contact with these microorganisms react to the cellular antigen. In Guatemala epidemiological investigation of 30 cases of sporotrichosis confirmed in an isolated locality near Lake Ayarza indicated that the probable source of infection was the water or the fish from the lake. Samples of water, fish, mud and aquatic plants are being studied for the presence of suspected species of fungi. Following the first isolation of Madurella mycetomi from the soil (in a termitary in Mauritania) reported a year ago, similar results have been reported from elsewhere and two further strains of M. mycetomi were isolated from the soil from a termitary in the Omo Valley of Ethiopia.

2.81 Further experience has been gained in the treatment of tinea capitis. A team from the Prince Leopold Institute of Tropical Medicine, Antwerp, Belgium, have tested the effect of single-dose treatment with griseofulvin in Tunisia; the therapy proved effective in 95% of the cases. The Organization provided assistance to Singapore to assess the prevalence of mycotic infections, with particular reference to dermatophytes; Trychophyton tonsurans was shown to be the predominant species, and tinea capitis was found to represent some 10% of all skin diseases noted in hospital records.

Miscellaneous parasitic infections

2.82 Following a review of the status of drugs used in the treatment of intestinal helminthic infections which the Organization completed in 1972, a summary and analysis of the most recent information on the subject has now been published by the Organization.

2.83 The Organization gave advice on the planning of comparative drug trials in northern Iran to determine which compounds are best suited for the control of intestinal helminths, in particular hookworm. This pilot project is sponsored by the World Health Foundation of Iran and is carried out jointly by the School of Public Health and the Institute of Public Health Research, Teheran.

2.84 Recent studies have shown that adult Nippostrongylus brasiliensis found in reinjected rats have a reduced immunogenicity compared with adult worms found in initial infections; these worms appear to be antigenic variants, similar in some respect to protozoal variants. To follow up this finding, the National Institute for Medical Research, London, has initiated, with WHO support, a study of the antigenicity and antigens of Necator americanus and of the immune response in the hamster, in particular to discover which immune response Necator avoids or fails to stimulate in order to persist in its host. Such a mechanism may account for the longevity of many helminths parasitic in man.

2.85 In the Western Pacific Region assistance was given to the Government of Laos in planning an epidemiological survey of paragonimiasis and advising on control methods. Intradermal testing with Paragonimus westermani antigen on 1500 persons from various parts of the country showed up to 14% positive dermal reactions, with an overall average of almost 10%.

3. VECTOR BIOLOGY AND CONTROL

3.1 The great ecological changes that man is bringing about necessarily affect the breeding of insects and rodents and make their control increasingly complex; this applies with particular force to the effects of urbanization and irrigation. The Organization's vector biology and control programme is therefore based on a broad approach designed to evaluate the available methods of chemical, biological and genetic control and to ensure the proper technical application of the best of them under different environmental conditions. Since each potential method or control agent may itself entail certain hazards to human safety (see paragraphs 3.33 et seq.), emphasis is being placed on assessing the effect of vector and disease-reservoir control procedures and materials on the general population, on non-target organisms and on the environment. To accomplish this and at the same time to develop criteria for evaluating control programmes, it is essential to study the general biology and specific ecological association of the numerous and widespread vectors and reservoirs of human disease. It is also necessary continuously to assess the effects of changes in vector and reservoir population densities and distributions, and to be able to define the development of resistance in such populations to insecticides currently in use and the potential cross-resistance to newer insecticides that may come into use.

3.2 An important feature of the programme, which is largely conducted through seven field research units and with the collaboration of consulting laboratories and individuals, is that it serves as a focal point for many scientific disciplines and for industries concerned with the various aspects of vector control. The field research units provide a means by which materials, equipment and procedures can be tested under realistic field conditions; this is especially advantageous to those Member States which do not have the resources to carry out their own national trials. In addition, these units are often called upon to assist in meeting regional or national emergencies, and they serve to train national personnel.

3.3 Examples of the work of the field research units are given elsewhere in this chapter, according to the activities with which they are particularly concerned. These activities, however, may change over the years the better to deal with current problems, and mention may be made here of four units whose mission changed or whose activities expanded during the year.

3.4 Shortly after the former Aedes Research Unit moved at the end of 1972 from Bangkok to Jakarta, to become the WHO Vector and Rodent Control Research Unit, it was requested by the Government of Indonesia to initiate and supervise the ultra-low-volume aerial application of insecticides for the control of the mosquito vectors of a severe outbreak of dengue haemorrhagic fever in Java. The applications were carried out most successfully and resulted in an immediate reduction in Aedes populations. Later in the year it advised the Government of Malaysia on the aerial application of insecticides in certain areas to control outbreaks of the same disease that had occurred there. Development work is being carried out by the unit on new insecticide application equipment for emergency control programmes such as those described above, on the use of new insecticide compounds, and on biological control field trials. It has begun investigations on the vectors of dengue haemorrhagic fever and bancroftian filariasis in and around Jakarta and a study of the incidence of filariasis.

3.5 Soon after the establishment of the WHO Chagas' Disease Vector Research Unit in Acarigua, Venezuela, a meeting was held, in March, to review the available information on that disease, its vectors and reservoirs, and to plan the research programmes for the next two years. Surveys by the unit in study areas selected in consultation with the Venezuelan Government will cover the distribution and density of domestic, peridomestic and wild vectors and reservoirs, and the endemicity of Chagas' disease.

3.6 In July the former Japanese Encephalitis Vector Research Unit in Seoul was renamed the WHO Vector Ecology and Control Research Unit. At the request of the national authorities, its activities were broadened to include study of the mosquito vectors of filariasis as well as Japanese encephalitis, of the presumptive vectors and reservoirs of Korean haemorrhagic fever, and of fleas, houseflies and cockroaches. The unit has been strengthened so that studies on rodents and other mammals which may
serve as reservoirs of Korean haemorrhagic fever can also be carried out. Following up a small epidemic of encephalitis in the south-west of the Republic of Korea, the unit found *Culex tritaeniorhynchus* still abundant in September (it remains untraceable from November to April) and one of six pools of this species gave evidence of Japanese encephalitis virus. A study of the distribution of cases that had occurred in the Seoul area in 1972 showed that the greatest risk is where dwellings on the outskirts are spreading into the marshy areas along the Han river.

3.7 Early in 1973 the WHO East Africa *Aedes* Research Unit, which had completed its research programme on the distribution, population densities and methods of control of the known and potential vectors of yellow fever in the United Republic of Tanzania, was transferred to East Central State, Nigeria, where it now serves as the WHO Arbovirus Vector Research Unit. The new unit is conducting studies on the vectors of yellow fever and other arboviruses in the area and appropriate methods for their control. To start with, studies on the distribution and density of vector species and on the presence of potential mammalian reservoirs and general environmental surveys are being conducted in and around Enugu.

**Applied ecology**

3.8 Mapping of trends in the development of resistance to insecticides by certain species is necessary to ensure the proper selection of control agents. Approximately 9000 observations on the biology and distribution of ticks have now been entered into the WHO computer data store—along with the extensive data available on localities and habitats for Malaysia, Pakistan and the entire USSR—as well as some 12 000 observations on the distribution and density of *Aedes* (*Stegomyia*) mosquitoes. New data from extensive surveys show the density of *Aedes aegypti* to be particularly high in northern Cameroon, Northern Nigeria and the Republic of Viet-Nam, moderate in the Congo, and light in Maharashtra State, India, and in Madagascar. Work was initiated to coordinate the mapping of disease reservoirs, especially rodents, with the vector mapping in progress in order to develop a uniform programme of vector and reservoir surveillance. The mapping is based partly on the published literature and quite largely on the work of the field research units and of cooperating institutions. For example, a survey is being conducted in West Africa by the Office de la Recherche scientifique et technique outre-mer (ORSTOM), Bobo Dioulasso, Upper Volta. In the area running north from Ivory Coast into Mali, it has shown a progressive change in the complex of the feral *Stegomyia* vectors from a preponderance of *Aedes africanus* in the south to a preponderance of *Ae. vittatus* when the Sahel zone is reached in the north.

3.9 During 1973 the ecological study of vertebrate, especially mammalian, reservoirs of disease was intensified. This has included the development of methods to analyse the population structures and densities of vertebrates, their role in disease transmission and the appropriate means for their control. These methods are being used by the field research units concerned with such diseases (i.e., the Chagas’ Disease Vector Research Unit, and the Vector Ecology and Control Research Unit studying Korean haemorrhagic fever).

3.10 The role of rodents in transmitting traditionally important diseases (plague, murine typhus, etc.) and newly emerging ones (Lassa fever) remains important in the developing countries; and increasing resistance to the anticoagulant rodenticides is being reported from many parts of the world. In November-December a WHO Scientific Group on the Ecology and Control of Rodents of Public Health Importance met to recommend a base for the Organization’s programme. It also summarized present knowledge in the field. The geographical distribution of rodent-borne diseases was surveyed and the growing problem caused by rapid and unplanned urbanization received attention. A survey conducted during the year on the methods used and the operation of rodent control programmes in three large Asian port cities brought out, *inter alia*, how established ecological principles may to advantage be applied for the improvement of control measures.

**Resistance to insecticides and rodenticides**

3.11 The Organization acts as a depository and distribution centre of the latest information on the degree to which vector insects are resistant to the chemical insecticides. Over the years it has collected and analysed the results of more than 8000 susceptibility tests, and 850 of these were computer-stored in 1973. The maps plotting the susceptibility levels of the larvae of *Culex fatigans* and *Aedes aegypti* were revised and distributed.

3.12 As has been stressed before, resistance to insecticides continues to increase and, in some countries, it has now severely affected control both of many vector species and of the diseases they carry. The flea vector
of plague, *Xenopsylla cheopis*, has now been reported resistant to dieldrin as well as to DDT in the Republic of Viet-Nam. To a great extent the organochlorine compounds have had to be replaced by organophosphorus insecticides (Abate, Dursban, fenthion and malathion) and by carbamates (propoxur), but resistance is building up to these as well. Among recent reports are those of resistance to Abate by *Culex molestus* in Israel and by *Anopheles sergenti* in Jordan (although the latter requires confirmation). *Culex fatigans* has developed resistance to a number of organophosphorus compounds (e.g., Dursban, fenthion and malathion in Egypt, and malathion in Cameroon). As noted in earlier reports, resistance has even developed to propoxur, the most recent compound to pass through all stages of the WHO system for evaluation of new insecticides—*An. albimanus* showing decreased susceptibility to it in two countries in Middle America.

3.13 One of the principal problems involving the use of new insecticides for public health purposes is that most of them have already been applied extensively in agriculture, and disease vectors that breed in waters contaminated by them have therefore already been exposed to them and may have developed resistance. To overcome this difficulty, the industry continues to synthesize new compounds, but their usefulness remains unproven until it can be demonstrated that there is no cross-resistance to other insecticides. WHO collaborating laboratories carry out cross-resistance studies on all promising new compounds, on mosquitos (University of California, Riverside, USA) and on other arthropods (School of Hygiene and Tropical Medicine, London). The Riverside laboratory has discovered outstanding larvicidal activity in a derivative of propoxur, which is of a group (the carbamates) hitherto not generally found very effective as larvicides. Interestingly, a series of tests has shown almost complete absence of cross-resistance to this derivative in a strain of *Culex tarsalis* which is highly resistant to organophosphates but susceptible to carbamates, whereas there was cross-resistance in the organophosphate-resistant *C. fatigans* and *An. albimanus* strains tested.

3.14 In contrast to this encouraging finding, a substantial degree of cross-resistance to the so-called “third-generation” pesticides, the juvenile-hormone mimics (insect-growth regulators), has been discovered in a multiresistant strain of the common housefly (*Musca domestica*), and it has been shown that resistance to chemosterilants can be induced in houseflies and *Aedes aegypti* as well as to a bacterial control agent, *Bacillus thuringiensis*, in houseflies.

3.15 The resistance of rodents to the anticoagulant rodenticide warfarin continues to spread in *Rattus norvegicus* populations in Europe and the USA, and instances of resistance of other rodent species have been reported (*Rattus rattus* in the United Kingdom and Jamaica and *Bandicota bengalensis* in Bombay, although the latter result has still to be confirmed).

**Evaluation of new insecticides and development of chemical control methods**

3.16 The programme for evaluating new insecticides for use in vector control has continued in collaboration with the six WHO international reference centres and the field research units. During 1973, a total of 72 compounds were tested in Stage I trials and 29 of these were carried to Stages II and III. About half of these were judged suitable to be recommended for evaluation on one or more vectors at Stage IV. Many of the compounds submitted have shown fairly high insecticidal activity combined with low mammalian toxicity and high biodegradability in the environment; this reflects the response of research workers to the need for insecticides which do not accumulate in wildlife and the general environment. A number of the compounds showed insect-growth regulator activity and several were analogues of pyrethrin.

3.17 A Stage VII trial is being conducted, with USAID support, by the WHO Anopheles Control Research Unit No. 2, Kisumu, Kenya, to evaluate the effect of fenitrothion against *An. gambiæ* and *An. funestus* (see also paragraph 2.27). The results after the first of eight three-monthly cycles of insecticide application were highly encouraging, both target species being greatly reduced.

3.18 Evidence is growing that in the Guinea-savanna area of West Africa there is considerable movement of *An. gambiæ* from hut to hut during the night and that its flight range is longer than has previously been supposed. Stage VI trials are now designed to cover larger areas than hitherto in order to take these factors into account, and one such trial—of Landrin, a promising mixture of carbamates—was begun during 1973 by the WHO Anopheles Control Research Unit No. 1, Kaduna, Nigeria.

3.19 The Vector Ecology and Control Research Unit, Seoul, has performed trials with a large ultra-low-

---

1 The stages in the evaluation programme are: Stage I, initial screening tests; Stages II and III, laboratory and simulated field tests; Stage IV, field tests; Stage V, village-scale trials; Stage VI, operational field trials; Stage VII, large-scale epidemiological trials.
volume (ULV) generator for dispersal of fenitrothion from the ground as an alternative to the ULV aerial application already found effective in reducing the numbers of *Culex tritaeniorhynchus*. So far, applications at sunrise have given better control of adults than at sunset. When applied as a *Culex* larvicide, fenitrothion proved less effective than Dursban and Abate, the latter obtaining 97-99% control when applied at sunset. Larvicidal trials with an insect-growth regulator are also in progress.

3.20 Research on the larvicides for use in the onchocerciasis control programme in West Africa (see paragraph 2.42) has been concentrated on determining the physical factors governing the behaviour of the currently used Abate emulsion concentrate in rivers and streams and on developing formulations that might be more effective or that could be used if resistance to Abate is encountered. In collaboration with the WHO International Reference Centre for the Evaluation and Testing of New Insecticides, in Atlanta, Ga., USA, the Onchocerciasis Service of the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases (OCCGE) at Bouaké, Ivory Coast, and pesticide manufacturers, WHO has established requirements that larvicide formulations must satisfy in order to have the effectiveness and long “carry” required in rivers where *Simulium* breeds. These requirements will be included in the specifications drawn up for procurement purposes. Tests during the year with the compound chlorphoxim showed it to be about equal to Abate in effectiveness for *S. damnosum* control when it was applied from a helicopter to an Ivory Coast river in high-water conditions during the rainy season; research continues to evaluate its effectiveness in dry-season conditions.

3.21 In developing larvicidal formulations for this and other onchocerciasis control programmes, it is important to ensure their safety for non-target organisms. Four candidate compounds are being screened in laboratory and field tests at the Institute for Aquatic Biology, Accra, and the Hydrobiological Laboratory of ORSTOM, at Fort-Lamy. The Department of Entomology, University of Illinois, Urbana, Ill., USA, is assessing the rate of degradation of compounds and their possible accumulation in a series of test organisms in a model laboratory ecological system; this work entails the use of radio-labelled insecticides, which have been provided by the Organization.

3.22 It is estimated that for about half of the watercourses needing insecticide treatment in the West Africa onchocerciasis control programme, the applications can be made from a light aeroplane; the remainder are in gallery forest and for these a helicopter is necessary. A performance specification was drawn up during the year for the specialized application equipment required, and a prototype was constructed, given preliminary trials in Europe, and fitted to a light aeroplane. This was tested in Ivory Coast and shown to be most effective in controlling *Simulium* larvae. Helicopter application (already proved useful against this vector) was also tested against the *Glossina* vector of trypanosomiasis in gallery forest. As the two vectors occur in the same area it is necessary to take control measures against both. The use of the helicopter was made possible by a grant from the Federal Republic of Germany.

3.23 The Organization has also been engaged in the development and testing of other pesticide application equipment. A vehicle-mounted spraying machine is needed that is suitable for making ultra-low-volume insecticide applications in urban situations and for rapid domiciliary application of residual insecticides for malaria control. Although no available equipment has proved ideally suited for these purposes, a great deal of experience has been gained and specifications provided to manufacturers should lead to the production of more suitable equipment in the future. With respect to aerial control operations, WHO has drawn up a first list of operators throughout the world who have suitable aircraft. This list, which also gives specifications of the available equipment, is available to Member States and professionally interested persons.

3.24 Developments since 1967 have necessitated revision of the manual *Specifications for pesticides used in public health*, the fourth edition of which was published during the year.1 This publication aims to provide both manufacturer and purchaser with a set of specifications designed to meet the requirements of public health programmes, and covers all the pesticides in widespread use in this field.

**Biological control**

3.25 A conference on the safety of biological agents for arthropod control was held in April at Atlanta, Ga., USA, under WHO auspices with the financial support of the Center for Disease Control of the USA. This conference, attended by 49 international workers in biological control, reviewed recent developments and the extent to which biological control agents are

---

now used (largely in forestry and agriculture) or might be further used against disease vectors. The potential hazards to man and the environment of the bacteria, fungi, protozoa, nematodes and fish used or being developed for control of insects and acarines were considered. It was concluded that the use of such agents, like that of chemical insecticides, must be regulated by rigid protocols and that the use for insect control of living systems capable of replication must not be encouraged to proceed faster than does the basic work needed to determine their efficiency and safety. (See also paragraph 1.53.)

3.26 In investigations performed with WHO support by the New York State Museum and Science Service, USA, it was found impossible to infect Simulium larvae by any of three species of microsporidan protozoan, but a new parasite of those larvae was discovered in the nematid nematode genus Isomeremis. Similarly assisted work at the Memorial University of Newfoundland, Canada, showed that the difficulty in obtaining germination of spores of the fungal parasite of mosquitoes, Coelomomyces psorophorae, could be overcome by treating them with indolylbutyric acid. The WHO International Reference Centre for the Diagnosis of Diseases of Vectors, Columbus, Ohio, USA, added more than 500 lots of diseased insects to its accession list and isolated three promising bacterial agents from material collected near Delhi by the Research Unit on the Genetic Control of Mosquitoes. Successful control of the larvae of certain mosquito species has been obtained in laboratory tests, but field trials await the completion of basic ecological research.

3.27 Investigations on the use of larvivorous fish for mosquito control continue, and in Bangkok the Aedes Research Unit and the medical entomology laboratory of the Thailand Government found that the unsatisfactory results obtained when using the guppy fish Poecilia reticulata against C. fatigans in drains can be remedied by simple manual clearing of the restricting debris; the degree of control is thereby increased from 60% to 99%. Work on other candidate biological control organisms has proceeded by trying them in the field, exposing the difficulties, and setting out to correct them. The candidate agent Bacillus sphaericus was found to have its effectiveness reduced against An. gambiae larvae at the high water temperatures prevailing at Kaduna, Nigeria. A trial release of Toxorhynchites brevipalpis against Aedes aegypti at Dar es Salaam was heavily handicapped by the difficulty of producing sufficient numbers of this mosquito predator on time in a small laboratory. Basic ecological studies are in progress in preparation for field tests with the fungus Lage nidium culicidum to be applied against C. fatigans in Jakarta.

Genetic control

3.28 The Research Unit on the Genetic Control of Mosquitoes, in New Delhi (jointly sponsored by WHO and the Indian Council of Medical Research), has completed the first phase of its programme by carrying out detailed studies on the ecology and population dynamics of C. fatigans and Ae. aegypti and pilot-scale experiments on the control of these species by different genetic methods. In a final experiment with the "sterile male" technique in 1973, more than 300 000 chemosterilized males were released daily in a village, leading to infertility in 87% of the eggs laid by the wild mosquito population. A higher degree of infertility over an extended period would have been desirable but was not attained, and, owing to the massive infiltration of mosquitoes from adjoining areas, there was no reduction of the mosquito population. A mosquito-free barrier zone 3 km deep had been set up around the target area, but it seems that a much deeper barrier zone (7 km or more) may be required, and this raises serious questions of practical feasibility and cost.

3.29 The unit also has developed other methods of genetic control. The C. pipiens species complex is unique in showing a cytoplasmic incompatibility whereby many crosses between populations from different geographical locations are sterile owing to failure of sperm and egg nuclei to fuse. The present pupal sexing methods do not give perfect separation of the sexes and the cost of removal of all females at the adult stage from a population intended for male release is prohibitive. To overcome this, an integrated strain of C. fatigans that is both cytoplasmically incompatible with Indian strains and carries a male-linked translocation complex causing 70% sterility in mating within the strain was developed in collaboration with the WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of the Culex pipiens Complex, in Mainz, Federal Republic of Germany. The release of males and a few females of this strain together is expected in the early stages to cause sterile matings due to incompatibility and subsequently to result in the replacement of the wild by the released strain. The partial sterility of the latter may be sufficient to complete the process of population suppression in
the absence of infiltration from adjacent areas. Releases of this strain have already begun and integrated strains of C. fatigans with even higher sterility are under development by the Delhi unit. Tests were carried out before release to ensure that the integrated strains were not more susceptible than the local ones to filarial infection.

3.30 The development of strains of Ae. aegypti with chromosomal translocations has progressed. Four viable translocation homozygotic stocks with the Delhi genetic backgrounds were produced at the unit in collaboration with the WHO International Reference Centre for Maintenance and Distribution of Standardized Strains of the Aedes Complex, Notre Dame, Ind., USA. These stocks are propagated as pure breeding colonies and then crossed to give double translocation heterozygotes with a sterility of about 80%. Releases will be made in an area where there is a high Ae. aegypti population breeding in domestic water containers. A translocation linked to a meiotic-drive factor may be expected to have an effect for a longer time than one or two translocations alone; the unit is conducting computer simulations to test this hypothesis.

Vector control in international traffic

3.31 The International Health Regulations (1969) require that the area within the perimeter of every airport be kept free from Aedes aegypti, and the mosquito vectors of malaria. For this purpose active antimosquito measures have to be maintained within 400 metres around the perimeter. A trial to determine the feasibility of keeping a typical airport in the tropics free from Ae. aegypti was performed at the international airport of Dar es Salaam. It was concluded that highly organized and thoroughly supervised efforts are necessary to establish the level of control required by the International Health Regulations and that administrative and technical procedures alike need to be further strengthened. From this trial, and from observations made over a long period of time at numerous airports, it appears that the effective disinsecting of aircraft remains a vital line of defence in preventing the transport of dangerous species of mosquitoes from one part of the world to another. On the recommendation of the Committee on International Surveillance of Communicable Diseases, the Twenty-sixth World Health Assembly, in May, approved for such disinsecting the use of aerosol formulations of two new synthetic pyrethroids—resmethrin and bioresmethrin.

3.32 A comprehensive report on aircraft disinsecting with the dichlorvos system was prepared, based on extensive tests carried out in the USA on the safety of the system to passengers, crew and the aircraft. Preliminary information on airworthiness and toxicity is so favourable that the Committee on International Surveillance of Communicable Diseases at its seventeenth meeting recommended the adoption of this system. Later, ICAO found that the use of dichlorvos in aircraft as recommended appeared to present no problems, although long-term observations should be made to ensure that no problem of corrosion occurs. It recommended that the system should be used on a trial basis and that the effect of its use in service should be monitored. Animal tests on the long-term inhalation toxicity are still in progress.

The safe use of pesticides

3.33 Study of the toxicological effects on man and other mammals of pesticides applied for public health purposes has long been a regular feature of WHO's activities, and some instances of such work in 1973 are given below. In an expansion of the programme with a view to assessing the overall environmental effects of pest control—whether for public health or other purposes—work was begun during the year on developing protocols for determining the effect of both chemical pesticides and biological control agents on non-target organisms. This will be closely coordinated with other international and national efforts to the same end.

3.34 Acute accidental poisoning by pesticides is becoming a health problem of some magnitude among those who apply such products in agriculture and among the general population in some developing countries. So that the extent of the problem may be estimated with some accuracy, countries in a position to do so have been invited—pursuant to a request of the Executive Board in May (resolution EB52.R11)—to submit to WHO annual returns on pesticide poisonings from the year 1974.

3.35 An outbreak of poisoning occurred early in the year in the Syrian Arab Republic, and—as often happens—this was at first thought to be due to an insecticide. At the request of the Ministry of Health and in cooperation with it, the outbreak was investigated epidemiologically by WHO and samples of suspect foods and oil were investigated toxicologically and chemically by the Toxicology Research Unit of the Medical Research Council, Carshalton, United King-

---

dom, which serves as a WHO International Reference Centre for the Evaluation and Testing of New Insecticides. The poisoning, which caused more than 100 cases of paralysis, was found to be due to the contamination of a drum of cooking oil with tri-o-cresyl phosphate.

3.36 Discussions have been held with agricultural organizations and the chemical industry to promote studies on the minimum acceptable safety measures required for the agricultural application of pesticides of moderate or high mammalian toxicity. However, the prevention of poisoning by pesticides cannot be achieved unless there is adequate control of the more highly toxic compounds at the national and local levels. The interest of governments of developing countries in establishing such control has considerably increased, and plans for long-term assistance in this respect for Bangladesh, Burma, Indonesia, Sri Lanka and Thailand were elaborated during the year. For these countries, it has been proposed that a team of experts be established to train nationals in epidemiology, toxicology, pesticide analysis and, in collaboration with FAO, in plant protection. Equipment was also provided for the establishment of toxicological facilities at the Central Agricultural Pesticides Laboratory, Cairo, being established under an FAO/UNDP project with which WHO is associated. In a similar project at the Biological Institute, São Paulo, Brazil, staff engaged in pesticide toxicology have been undergoing training abroad. The Organization also collaborated in a seminar on the safe and effective use of pesticides organized in Bangkok by FAO in conjunction with its Industry Cooperative Programme.

3.37 Toxicological assessment of compounds included in the WHO programme for the evaluation and testing of new insecticides begins at the earliest stages. Thus a number of compounds tested during the year were rejected at Stage II, because they were found too toxic in the animal tests. The remainder received different kinds of additional safety evaluation depending upon their proposed method of application for vector control.

3.38 In the Stage VI trial of Landrin being carried out in Nigeria (see paragraph 3.18), the appropriate measures were taken to ensure the safety of spraymen and inhabitants of the trial area. A few minor reactions (e.g., irritation of the exposed skin areas) were found among some of the workers, but none among the villagers. However, the water-dispersible powder formulation used in this trial was found in a laboratory test to be considerably more toxic in rats than the formulation tested at Stage II some years ago, and the cause is being investigated. For the Stage VII trial of fenitrothion in Kenya (see paragraph 3.17), collaboration was established with a local hospital for carrying out cholinesterase determinations in exposed workers. During the two rounds of spraying completed in 1973 several spraymen had to be temporarily withdrawn from exposure to the insecticide because of lowered cholinesterase activity. No complaints attributable to the insecticide were recorded among either the spraymen or the residents exposed to fenitrothion.

3.39 Investigations on the possible effects of long-term exposure to DDT have continued, both in Brazil where the study is being carried out by the Biological Institute of São Paulo with WHO support, and in India where WHO is organizing the study in collaboration with the Indian Council of Medical Research. A follow-up survey was carried out in the Indian study and the spraymen and controls first examined in 1971 were re-examined. Although high blood levels of DDT and its analogues are still found among the exposed men, no other effects attributable to DDT exposure have been identified. Attempts to find other groups of men who have been exposed for a minimum of five years to DDT only have been unavailing since the use of DDT for malaria eradication in India has been diminishing, partly owing to the development of DDT-resistance by insects. By the middle of 1973, the exposure of the groups under surveillance in Brazil and India totalled more than 1200 man-years.

3.40 IARC experiments on the long-term exposure of mice to technical DDT have been terminated (see paragraph 4.68). The preliminary results were reviewed in 1972 by the WHO Expert Committee on Insecticides, the report of whose meeting has now been published. 1

3.41 In other IARC investigations into the possible carcinogenicity of two of the main metabolites of DDT (p,p'-DDE and p,p'-DDD), it has been found that lifetime exposure of mice to p,p'-DDE is followed by a very high incidence of liver tumours, while lifetime exposure to the same level of p,p'-DDD has a lesser effect on the liver in males but is followed by a marked increase in lung tumours in both sexes. The relevance of these data to the possible risk in man remains uncertain, however. Assays of tissue-mediated mutagenicity are also being carried out in respect of the various metabolites of DDT.

4. NONCOMMUNICABLE DISEASES

4.1 Efforts in the field of noncommunicable diseases have been concentrated mainly upon cardiovascular diseases and cancer (the principal causes of death in this group), and upon mental health and dental health. Interest in other conditions is increasing, however. Not only are these other diseases a growing source of morbidity and mortality but several of them are linked with cardiovascular diseases and cancer. The associations between diabetes and atherosclerosis and between chronic liver disease and hepatoma may be cited as examples.

4.2 During 1973, the Organization drew up a programme for studies of the impairment of the large and small blood vessels in diabetes. Affecting the heart, kidneys, eyes and extremities, such impairment is of social and economic, as well as of public health, importance. There is some evidence that the prevalence and incidence of vascular complications in diabetics may vary from place to place. A primary aim of the programme, therefore, is to determine the extent of these complications in different geographical groups in order to shed light on the diabetic syndrome and ways of dealing with it. Another aim is to develop standardized procedures for research on diabetes. The draft programme has been circulated to a number of Member States, 14 of which have indicated their interest in taking part. In May and June, a WHO-assisted diabetes survey was conducted in Tonga. The prevalence of the disease was found to be higher than the world average; 65% of cases were among women and the disease mainly affected persons over 35 years of age. A preliminary survey of metabolic and degenerative diseases, including diabetes, obesity and gout, as well as cardiovascular diseases, was carried out in French Polynesia with WHO assistance.

4.3 Programmes to elucidate factors involved in chronic rheumatoid arthritis, chronic non-specific lung diseases and endemic nephropathy are also in preparation.

Cardiovascular diseases

4.4 Cardiovascular diseases—in particular, ischaemic heart disease—are the most important cause of death and disability in the more developed societies. Although coronary heart disease seems to be rare in countries that are not yet highly industrialized, hypertension and cerebrovascular disease, as well as pulmonary heart disease due to chronic respiratory illnesses, and rheumatic heart disease, constitute problems of worldwide importance. Other cardiovascular conditions, such as those due to Chagas’ disease, affect very large population groups, even though they are restricted to certain parts of the world.

4.5 At a meeting convened by WHO in Geneva in May, leading specialists in cardiology drew up guidelines for a worldwide cooperative effort for the control of cardiovascular diseases. They reviewed the work of WHO in this field, and laid particular stress on the Organization’s role as a coordinator. Recommendations were made for general preventive action, and the need for positive approaches to cardiovascular health was emphasized. Stress was also laid on the importance of stimulating government action on public health measures for both the prevention and management of cardiovascular diseases; the coordination of studies on the control of cardiovascular diseases in different environmental settings and health service structures; research on the aging process, with special emphasis on physical and mental well-being; and epidemiological studies of risk factors in children, to find ways of achieving primary prevention of atherosclerosis. It was also considered that a central information service on national health education programmes should be established.

4.6 At a European regional conference on the prevention and control of major cardiovascular diseases, held in Brussels in June, representatives of nearly all Member States of the Region discussed ways of introducing community cardiovascular disease control programmes into the existing systems of medical care. Priorities were defined, and stress was laid on the need for the responsible public health authorities to maintain the closest possible collaboration in the implementation of control measures.

4.7 With WHO assistance community programmes for the control—in the broadest sense of the term—of ischaemic heart disease, hypertension, stroke and rheumatic heart disease have been established on an experimental, pilot basis in limited population groups,
to try to ascertain the ecology of these diseases in order to establish the optimum control strategies.

4.8 Registers constitute an important tool for these programmes. They range from simple hospital case-registers to complex population-based information systems; some merely collate information, while others also serve to monitor the operation of the programme, providing information for its improvement and evaluation (for example, in programmes for the control of arterial hypertension).

4.9 The results of a WHO-coordinated cooperative study on the registration of acute myocardial infarction in the community were analysed and are being prepared for publication. Twenty centres (18 in Europe, and one each in Australia and Israel) were involved in this project, covering communities with a total population of some 5 million. The aim of the study, which was started in 1968, was to obtain information on the true incidence of myocardial infarction, on the natural history of ischaemic heart disease in a defined area, and on current ways of handling this health problem. Among a total of more than 13,000 registrations, 9,000 cases of myocardial infarction were observed. Nearly 30% of these patients died within 24 hours of the onset of the heart attack, of whom more than half died within the first half-hour; only 4% of these had received any treatment—which shows the importance of rapid medical intervention, known to be effectively life-saving. On the other hand, a quarter of those who survived were not admitted to hospital even 24 hours after the onset of symptoms, and half of these had not even called for medical aid. Only about 30% of the patients had called for a doctor within one hour of the onset of symptoms. These findings show that measures to improve medical care for myocardial infarction in the community should be directed both at the emergency health services and at the general public, who need to be taught how to recognize the condition and utilize the available services.

4.10 The registers have proved to be useful in connexion with other studies. For example, seven of the European centres taking part in the project are participating in a study on premonitory symptoms and signs of acute myocardial infarction and sudden death. WHO is providing data-processing facilities for this study, which should facilitate early preventive action. Similarly, the experience gained from the registers was applied in the planning and implementation of a comprehensive programme for the control of ischaemic heart disease, cerebrovascular diseases and hypertension in North Karelia (Finland).1 The Organization helped to evaluate the work being carried out in this project, which is the first WHO-assisted study of its kind, covering several aspects of cardiovascular disease control in a defined population in a large territory. The project is yielding valuable experience on the operational aspects of large-scale community programmes for the control of chronic diseases.

4.11 A number of trials are under way in the European Region to evaluate primary preventive measures against ischaemic heart disease, taking into account the fact that persons considered to be at high risk often carry several risk factors simultaneously. Data obtained by centres in Belgium, Italy, Poland, Sweden and the United Kingdom were reviewed by a working group that met in Innsbruck, Austria, in March, and discussed the methodology of intervention regarding high serum lipid concentrations, obesity, hypertension, physical inactivity, glucose metabolism disturbance and smoking.2

4.12 Another cooperative study, on the control of stroke at the community level, is being carried out by 15 centres in Denmark, Finland, Ireland, Israel, Japan, Mongolia, Nigeria, Sweden, USSR, and Yugoslavia. A preliminary analysis has been made of data collected during a 12-month period in 1972-73 and this was reviewed at a meeting of investigators in December 1973. The annual incidence of stroke varied from 1.3 to 3.2 per thousand inhabitants, and the incidence rate increased sharply with age. About half the 2067 patients had hypertension prior to stroke, and only about 60% of these hypertensives had been treated. A considerable difference was noted in the management of stroke patients: while almost 90% were hospitalized in some centres, 70% received home treatment in others. About a quarter of the patients died within one week, and about one-third within three weeks. One-third of the surviving patients were able to resume some work after three months, but more than half required assistance in daily activities. Preliminary findings demonstrate the need for more research on the prevention and better care of stroke at the community level.

4.13 In various populations all over the world, between 10% and 15% of adults have been found to have arterial hypertension, which is by far the commonest cardiovascular disorder. However, even in societies with an advanced level of medical care, about 50% of the hypertensives are not aware of

---

2 Reference is made in paragraph 7.35 to a WHO-assisted study on the methodology of ischaemic heart disease intervention programmes.
Fig. 2: Diagnosis and treatment of hypertension in the community

1. The whole community
2. Normotensive subjects
3. Hypertensive subjects
4. Undiagnosed hypertension
5. Diagnosed hypertension
6. Diagnosed but untreated
7. Diagnosed and treated
8. Inadequately treated
9. Adequately treated

The surfaces are proportional to the actual findings in several population-based studies.

4.15 The concept that atherosclerosis of the adult originates in early childhood is being increasingly widely accepted, and it seems that the focus of preventive action might need to be shifted to youth if primary prevention of atherosclerosis is to be achieved. However, there is a need for intensive research in this field, on an international cooperative basis. A WHO-assisted pilot study on selected atherosclerosis risk factors in schoolchildren aged 10-11 has therefore been made in the Netherlands, and on the basis of this a protocol has been elaborated for an international collaborative study.

4.16 Some findings indicate that certain trace elements play a role in the pathogenesis of atherosclerosis and hypertension, and WHO is coordinating an international cooperative study on this subject. Collaborating institutions in 21 countries are collecting specimens or analysing trace element concentrations by neutron activation techniques. Surveys are being carried out in six areas of research: analysis of trace elements in autopsy specimens of the heart, liver and kidney from subjects accidentally killed and persons who have died of myocardial infarction; evaluation of the cadmium content and cadmium/zinc ratio in autopsy specimens of the liver and kidney from both hypertensive and non-hypertensive subjects; correlation of blood pressure, electrocardiograms and blood cholesterol levels in population groups in industrialized and non-industrialized areas with trace element concentrations in blood, toenails, hair, food and water; analysis of samples of refined and unrefined sugar and of polished and unpolished rice from 17 countries, to evaluate the chromium content; studies on the hypothesis of a correlation between softness of water supplies and cardiovascular mor-
tality; and the relationship between trace elements in rock and soil and the geographical distribution of cardiovascular diseases. Cadmium, chromium, copper, selenium, zinc, as well as calcium and magnesium, are being studied as being of primary interest in relation to cardiovascular diseases. Other elements, including lithium, fluorine, silicone, vanadium, manganese, molybdenum, iodine, mercury and lead, are also being studied. The studies in the first two areas mentioned are being carried out in collaboration with the International Atomic Energy Agency (IAEA), which coordinates the analytical aspects. At a meeting held in Vienna in February the analysts collaborating in these studies found that the use of reference material provided by the US National Bureau of Standards and distributed by IAEA had served to ensure comparability of analytical methods in most cases. The collaborating epidemiologists, pathologists and biochemists met in Geneva in April to discuss the results obtained and further research to be undertaken.

4.17 WHO-assisted studies on basic mechanisms of lipid metabolism are being carried out in the USSR, at the Laboratory for Lipid Metabolism of the Institute of Experimental Medicine, in Leningrad, and the Mjasnikov Institute of Cardiology, in Moscow. They include studies on the biosynthesis of cholesterol, the lipoprotein content of the human vessel wall, and the immunological factors involved in the development of atherosclerosis. Other experiments have confirmed that immunization of newborn rabbits by homologous beta- and pre-beta-lipoproteins isolated from the serum or the aortic wall of adult animals with experimental atherosclerosis is followed by the emergence of resistance to the development of the atherosclerotic process subsequent to cholesterol administration. In comparison with the non-immunized animals, the immunized ones had a low level of cholesterol and beta- and pre-beta-lipoproteins in the serum; a low content of cholesterol in the aorta wall, liver and kidney; an increased capacity of the liver mitochondria to oxidize cholesterol; and an increased excretion of cholesterol and bile acid with faeces.

4.18 The Organization continued to support comparative studies on various aspects of cardiovascular diseases. In studies on blood coagulation, at the Nuffield Institute of Comparative Medicine, London, attention was focused on the relationship between blood catecholamine levels and changes in coagulation and fibrinolysis in experimental animals and humans. The results are throwing light on the cause of deep vein thrombosis, and indicate possible ways of preventing it following major surgery. With the aim of comparing closure of the ductus arteriosus with stenosing atherosclerosis, an extensive study was made at the Institute of Animal Pathology, University of Berne, on the physiology and morphogenesis of the closure of the duct in 60 bovine animals from the fetus to adult. It was found that proliferation of smooth muscle cells and their products plays the same fundamental role in closure of the duct as in the development of atherosclerotic lesions. Thus the processes involved in closure of the duct may serve as a model for studying certain events in atherogenesis. The functions of smooth muscle cells of the tunica media were also studied, pure cultures of these cells being established in vitro. Ground substance, collagen and elastin were produced in cultures that were maintained up to 50 days.

4.19 WHO-supported studies on the effects of high altitude on the cardiovascular system were continued in collaborating institutes in Bolivia, France, Peru and Switzerland. Changes of altitude may lead directly to pathological phenomena; on the other hand, some conditions, arterial hypertension in particular, are rare at high altitudes. Constant exposure to low oxygen levels induces adaptation phenomena that may be of general interest for the understanding of cardiovascular diseases. Studies have been carried out on various aspects of exposure to high altitude, including both the haemodynamic aspects and cellular adaptation mechanisms. They seem to indicate that particular changes occur in several enzyme activities in the myocardial cell, as well as in its metabolism. (See also paragraph 4.124).

4.20 Rheumatic heart disease, although preventable, constitutes a major cardiovascular problem in many parts of the world, particularly in tropical and sub-tropical countries. Pilot studies are being carried out in different population groups of limited size in Cairo, Dakar, Kingston, Lagos, Nicosia, Teheran, and Ulan Bator, with a view to the eventual establishment of broader programmes, covering larger populations. Screening for rheumatic fever and rheumatic heart disease, registration and regular prophylactic follow-up are being conducted according to an operating protocol adopted during a WHO consultation in 1972,¹ and data are being processed by WHO. Following a WHO-assisted survey, a rheumatic heart disease register was established in Tonga.

4.21 Pulmonary hypertension, leading to chronic cor pulmonale—an often severe and intractable condition—may be due to a variety of causes, and in some instances its etiology is unknown. A WHO group that met in October identified areas where

research is most needed, and drew up plans for cooperative studies coordinated by the Organization.

4.22 With the aim of achieving greater uniformity in the interpretation of electrocardiograms in collaborative epidemiological studies, a set of 250 electrocardiographic tracings has been distributed to a number of centres; the results have been analysed by computer and the information obtained has been returned to the cooperating centres.

4.23 With regard to the rehabilitation of patients with myocardial infarction, a project was started in 23 centres in the European Region, using a common operating protocol drawn up in 1972, with the aim of carrying out a comprehensive and objective assessment of the impact of rehabilitation programmes on the rate of short-term recovery and on the long-term prognosis.

4.24 In a survey carried out in Uganda by the WHO interregional team for field research on cardiovascular diseases, hypertension has been found to be the main cardiovascular disorder among the middle-aged and elderly groups studied, occurring in one-third of those examined. Cardiomegaly of undetermined origin and gross dilatation of the aorta were also relatively frequent. The clinical study of idiopathic cardiomegaly and hypertensive heart disease was continued, but a combined prospective and retrospective study is now being undertaken in view of the low numbers of new cases and the poor attendance for follow-up. The team also collaborated in analysing material from the Kasangati cardiac clinic, including data on the natural history of cases of rheumatic heart disease.

4.25 In its work on cardiovascular diseases WHO continued to maintain close cooperation with the International Society of Cardiology. In particular, the two organizations collaborated in a review of ongoing studies on the prevention of atherosclerosis, and an enquiry on the concept of sudden death as used in surveys, epidemiological studies and intervention projects in various countries.

Cancer

4.26 Following a recommendation by the Executive Board in January 1973, international cooperation in cancer research was considered by the Twenty-sixth World Health Assembly. In its resolution WHA26.61 the Assembly recognized that work on cancer absorbs a substantial part of the resources of Member States, and that, although the main effort in cancer research should be made by national research organizations, coordinated international action is essential for the elucidation of the complex problems involved. Such coordination can best be achieved through an integrated and comprehensive programme, that would include the standardization of methods and terminology, epidemiological studies, and the development of methods for the early diagnosis, prevention and treatment of cancer.

4.27 With the collaboration of the International Agency for Research on Cancer (IARC) and the International Union against Cancer, the Organization has therefore started elaborating a long-term programme of international cooperation on cancer research. The future role of WHO in this field appears to be threefold: the continuation of the present programme of support, service, training, and dissemination of information; the development and maintenance of a nucleus of expert knowledge in order to assess and utilize new developments in diagnosis, therapy, and causation; and the coordination of research on cancer and in allied fields including genetics, virology, immunology, biochemistry and comparative medicine.

4.28 WHO-supported investigations carried out since the publication of a proposed standardized system of reporting human lymph node morphology in relation to immunological function have shown both the importance of such studies for clinical oncology and the need for further research. In this connexion, the Organization made arrangements in 1973 for studies to be carried out in different countries on geographical and ethnic variations in normal lymph node morphology.

4.29 The efficacy of mass screening and early detection programmes is limited by the fact that the population at risk has not yet been clearly defined. WHO is therefore directing efforts to research in this field and to developing methods of evaluating the efficacy of treatment.

4.30 With regard to the promotion of standardized data-recording, copies of the form devised by WHO in 1972 for the collection of information for hospital-based cancer registries were distributed to 20 cancer institutes in 16 countries for testing in practice. The form provides for the collection of data on 49 criteria and allows for retrieval of information either manually or by computer. The aim is to achieve comparability of data on hospitalized patients in order to provide a baseline for the evaluation and planning of cancer.

control measures at cancer institutes and, later, nationally and internationally. This represents an important first step in the development of an international standardized system for the reporting of results of cancer therapy. In this connexion, the Organization arranged during the year for specialists in four countries to collaborate in establishing unified test systems for evaluating end-results.

4.31 Although only a few of the many drugs tested have found acceptance, chemotherapy remains the treatment of choice for certain cancers and is particularly appropriate in those parts of the world where surgical and radiotherapeutic facilities for the treatment of cancer are inadequate. A review by WHO experts of widely applicable, reasonably effective and safe current methods served as a basis for the preparation of Drug Therapy of Cancer, a manual in which the emphasis is on the practical aspects of treatment and which is designed for use not only as a reference work by practitioners but also in undergraduate and postgraduate education.

4.32 The work of the Organization regarding cancer in the various WHO Regions may be illustrated by the following examples.

4.33 There are indications that cancer may be as great a problem in Africa as in many other parts of the world; indeed, in some areas as many as 40% of adult surgical beds are occupied by cancer patients. At a consultation held in April in Geneva it was considered that the best approach to cancer control in Africa was through multidisciplinary teams at cancer centres, and it was suggested that a network of national and regional centres be established. The principal function of the latter would be to promote the training of the personnel needed for the organization of national cancer control programmes.

4.34 In the Region of the Americas, where malignant neoplasms of the uterine cervix account for the largest number of cancer deaths in women, a large part of the Organization's support for country activities in the field of cancer is devoted to the strengthening and expansion of programmes for the control of cervical cancer, and the guidelines provided in a manual prepared in 1972 are proving very useful in this connexion. The Organization is also supporting epidemiological research on cancer of the stomach in countries with very different mortality rates from this cause (such as are found in Canada, Chile, Colombia and Venezuela), and cancer registration activities in Brazil, Costa Rica and a number of other countries for the determination of site, sex, age-specific incidence rates and the improvement of follow-up procedures. In the South-East Asia Region WHO, IARC and the Indian Council of Medical Research jointly sponsored a regional seminar on patterns of cancer morbidity and mortality and the organization of control measures; data collected in WHO-assisted surveys in Bangladesh, Burma, Indonesia, Nepal, Sri Lanka, and Thailand were discussed. The first phase of the pilot project for the control of cervical and oropharyngeal cancer in Kancheepuram, near Madras, India, has been completed; registration and follow-up systems have been established; health education at the community level has been carried out through group meetings; and diagnostic and treatment facilities are being developed. Under the Organization's UNFPA-supported interregional programme for training in exfoliative cytology and gynaecological and obstetrical pathology in relation to family planning programmes, a workshop was organized in Indonesia to consider the establishment of cytological services and the training of cytotechnicians, and the first training course for cytotechnicians was held. In the Eastern Mediterranean Region a questionnaire was sent to investigators to obtain data on all new cases of gastrointestinal lymphoma recorded during the year. Assistance was also provided for a symposium on carcinoma of the thyroid in Iran and for a national six-month cytotechnology course in Israel.

4.35 During 1973 the number of institutions collaborating with the WHO International Reference Centre for the Evaluation of Methods of Diagnosis and Treatment of Melanoma, Milan, Italy, was further increased, and the Centre now has what is probably the largest existing registry of well-documented melanoma cases—more than 2500. It is carrying out clinical trials on prophylactic surgery, combined chemotherapy and prophylactic chemotherapy, and a study has been made to establish whether exposure to sunshine is related to the incidence of melanoma.

4.36 The WHO International Reference Centre for the Evaluation of Methods of Diagnosis and Treatment of Female Genital Tract (Ovarian) Cancer, Leningrad, USSR, established in 1973 a system for the standardized recording of follow-up data concerning cancer at this site, and continued a number of

---

clinical studies. In particular, a comparative study is being made of two widely used systems of recording the clinical stages of ovarian cancer, which are closely correlated with the prognosis.

4.37 The WHO International Reference Centre for the Evaluation of Methods of Diagnosis and Treatment of Stomach Cancer, Tokyo, also elaborated a system for recording follow-up data. This system, together with that already established for recording cases, will allow a multidisciplinary and multifactorial approach in defining future collaborative clinical studies. It will also make it possible to evaluate a standard procedure that has been accepted for the clinical staging of stomach cancer in relation to its prognosis.

4.38 The Organization’s programme for the histological classification of tumours was continued, much of the work being financed by a donation made to the Voluntary Fund for Health Promotion in 1972 by the National Cancer Institute, USA. With a view to promoting uniformity within the programme, the Institute and WHO jointly sponsored a meeting in February 1973 to elaborate guidelines enabling the international reference centres to use more uniform terminology, definitions and forms of classification; the meeting was attended by the heads of most of the centres.

4.39 In August, those participating in the work of the WHO International Reference Centre for the Histological Classification of Uterine and Placental Tumours met at the Centre’s premises in Copenhagen to finalize the classification on which they have been working since 1969 and which is being prepared for publication. In September, the group working with the WHO International Reference Centre for the Histological Classification of Male Urogenital Tract Tumours, Washington, D.C., met in Geneva to finalize the classification of tumours of the testis; and in October those working with the WHO International Reference Centre for the Histological Classification of Eye and Orbit Tumours, Washington, D.C., also met in Geneva to review the work carried out in testing their tentative classification. In November, the WHO International Reference Centre for the Histological Classification of Intestinal Tumours, London, held in Rouen, France, its final meeting on the classification, which has been tested since 1968 and it is now being prepared for publication. Also in November, a review meeting was held in Hong Kong by the WHO International Reference Centre for the Histological Classification of Tumours of the Liver, Biliary Tract and Pancreas.

4.40 The group working with the WHO International Reference Centre for the Histological Classification of Oral Precancerous Conditions held a review meeting at the Centre’s premises in Copenhagen in May. Representatives of the international reference centres dealing with the histological classification of tumours of the eye, upper respiratory tract and uterus also attended the meeting, at which precancerous lesions occurring at these sites were compared and contrasted. Pending further follow-up studies, it was agreed to prepare a classification of the precancerous lesions of the oral cavity that are under consideration.

4.41 Three more volumes in the International Histological Classification of Tumours series were published during the year, dealing with nomenclature in cytology of the female genital tract,1 and the histological typing of ovarian tumours 2 and of urinary bladder tumours.3

4.42 A major project in the Organization’s work on comparative oncology is a collaborative study on the histology of tumours of domestic animals in comparison with that of tumours of man, and the development of internationally agreed classifications of tumours of various body sites. With financial assistance from the Federal Republic of Germany, the sixth informal meeting of collaborators was held in Munich in July, jointly by WHO and the Institute of Animal Pathology of the University of Munich. Classifications of tumours of 9 body sites have now been agreed and prepared for publication, and progress has been made on the remaining 10 sites which will complete the project.

4.43 A meeting of investigators on animal models for research on immunity to cancer was held in Geneva in September, when a review was made of recent developments in specific immunoprophylaxis, immunodiagnosis, and immunotherapy of naturally occurring tumours of domestic animals. Preventive vaccination is now successfully practised against two neoplastic diseases of domestic animals. It was considered that the concepts and techniques arising from the work on animals have important implications for research on cancer in man, and that further research with these models is indicated.

1 Riotton, G. et al. (1973) Cytology of the female genital tract, Geneva, World Health Organization (International Histological Classification of Tumours, No. 8).
2 Serov, S. F. et al. (1973) Histological typing of ovarian tumours, Geneva, World Health Organization (International Histological Classification of Tumours, No. 9).
4.44 The knowledge gained from a registry of tumours in dogs that is being maintained with the support of WHO at the Cambridge Veterinary School, in the United Kingdom, is providing a basis on which to plan clinical trials of chemotherapeutic, immunotherapeutic and radiological procedures.

4.45 WHO-supported studies on the possible role of bracken fern (*Pteridium aquilinum*) in the etiology of cancer in cattle and other animals are being carried out at the Glasgow Veterinary School and the University College of North Wales, in the United Kingdom.

*International Agency for Research on Cancer (IARC)*

4.46 The International Agency for Research on Cancer continued its research into the etiology of cancer in man and the factors in the environment that may be involved. During the year most of the programmes previously reported were continued and some new ones started, all of them involving coordinated projects with national organizations. During this period 69 research agreements were concluded between the Agency and national organizations. Some of the salient developments are covered in the following paragraphs; for a more complete account of the Agency's work, the reader is referred to the Agency's own report.1

4.47 **Classification.** In close collaboration with WHO, the Agency has completed proposals for the neoplasms chapter of the ninth revision of the International Classification of Diseases. These were recommended for inclusion in the Classification by a WHO study group that met early in 1973, which also endorsed a recommendation that provision be made for coding the histology of neoplasms in the Classification by a four-digit code.

4.48 **Cancer monitoring.** The Agency has carried out a feasibility study to investigate the possibility of devising a system for monitoring changes in the patterns of cancer incidence, in the hope of identifying the entry of new carcinogenic factors into the environment. It was clear from the study that, taking into account the long time-lag between cause and effect in the development of neoplastic disease, the establishment of a practical monitoring system for cancer would involve very serious difficulties. Moreover, the study showed that variations in cancer incidence year by year are much greater than had been anticipated. However, cancer monitoring may have possibilities in, for instance, the study of childhood cancers, with their relatively short latent period.

4.49 **Oesophageal cancer.** The hypothesis that oesophageal cancer may be caused by the consumption of alcoholic beverages or tobacco has been tested by the Agency in studies in Jamaica; these have now been terminated without it being possible to establish any etiological relationship with these factors. In Singapore, the study of the incidence of oesophageal cancer among Chinese population groups, in which 174 persons suspected to have oesophageal cancer and 665 controls were interviewed, brought to light three factors strongly associated with risk—birth in China, membership of the Hokkien (Fukien) and Teochew (Taochow) language groups, and the claim to consume beverages at very high temperatures. Here, too, the use of western-type cigarettes and strong alcoholic drinks did not appear to be linked with the occurrence of oesophageal cancer. In Brittany, France, in collaboration with the Institut national de la Santé et de la Recherche médicale, the case-control study to test the hypothesis of a link between oesophageal cancer and the use of strong alcoholic drinks (and the alcohol-associated conditions cirrhosis of the liver and delirium tremens) has continued, with more than 350 patients, of whom 100 had oesophageal cancer, having been interviewed to date. The study has been extended to the city of Caen.

4.50 In the oesophageal cancer study on the southern littoral of the Caspian Sea in Iran, the first two "seasons" of the sociomedical survey have been completed by the teams that successively visit selected villages to record data and take environmental samples. In the first "season", 14 villages were visited by these teams, and completed general or household questionnaires were obtained from 1273 individuals and 101 families; clinical questionnaires were completed and laboratory tests carried out for 314 individuals. Food samples were collected and sent for analysis for polycyclic aromatic hydrocarbons, nitrosamines and aflatoxins to the laboratories of the Agency and of its collaborators.

4.51 **Cancer of the colon and rectum.** Cancer of the colon and rectum is a major cause of morbidity in most industrialized states. The Agency is undertaking a programme to study the differences in incidence of cancer of the colon and rectum in populations in Scandinavia and Singapore, and later in New Zealand, hoping that a comparative geographical investigation may give some clue to the etiological factors involved.

4.52 **Liver cancer.** The first study of the role of aflatoxins in the etiology of liver cancer in Africa, carried out by the IARC Research Centre at Nairobi,
has been completed. The results show a significant correlation between the level of aflatoxin ingestion and the incidence of liver cancer in the study area in Kenya. Similar studies are continuing in Ivory Coast, Singapore and Swaziland. To date nearly 6000 aflatoxin analyses have been carried out at the Research Centre. All results so far from these and similar studies, including those from earlier studies in Thailand and Mozambique, indicate a relationship between aflatoxin ingestion and liver cancer, even though the etiology may prove multifactorial.

4.53 The prevalence of hepatitis B (HB) antigaemia has been determined in the general population of the study area in the Ivory Coast and in patients with liver disease, including hepatocellular carcinoma. By the radioimmunoassay method, 60% of the patients with hepatocellular carcinoma were shown to be HB antigaemic. Attempts are being made to develop more sensitive methods for antigen and antibody testing.

4.54 The Agency has organized a series of collaborative studies, at the request of the National Institute on Alcohol Abuse and Alcoholism in the USA, to conduct cohort studies of alcoholics in Scandinavia and the United Kingdom in order to investigate among them the incidence of cancer of the liver and of the oesophagus.

4.55 Immunology of cancer. At the IARC Research Centre, Nairobi, investigations have been started on the immunological factors associated with the natural history or response to treatment of cancer patients in East Africa; these factors include cell-mediated immune reactions, carcinoembryonic antigens and auto-antibodies. The results so far suggest that a general impairment of cell-mediated immunity observed both in cancer patients and in other hospitalized African patients may be the result of malnutrition or chronic parasitic disease. This may mask immune defects associated with cancer and must be taken into account in any investigation of cell-mediated immunity and its relationship to cancer. A cell bank of lymphocytes, derived from patients with a variety of cancers and stored in liquid nitrogen, has been established at the Research Centre for future study.

4.56 In collaboration with the WHO Immunology Research and Training Centre in Nairobi (see also paragraph 5.12) a project has been initiated to assess whether Kenyan patients with chronic aggressive hepatitis have auto-antibodies of the nuclear smooth muscle and mitochondrial type reported from Europe and North Africa.

4.57 Respiratory system. The study of the incidence of lung cancer among Chinese females in Singapore has been continued by the IARC Research Centre there. The preliminary results are consistent with those from studies elsewhere in suggesting that cigarette smoking does not explain the high rates in Chinese women.

4.58 In northern Thailand, the study of the incidence of laryngeal-hypopharyngeal cancer has reached the stage where it is possible to implicate the local cigars, keeyo and trakai, which are made of home-grown tobacco and are smoked by both men and women.

4.59 In the collaborative study on asbestos and cancer directed by the Pneumoconiosis Research Unit of the Medical Research Council of the United Kingdom, a number of investigations are proceeding following recommendations made in 1972 by the Agency's advisory committee on environmental carcinogens. A method is being developed whereby magnetic fields are used to align airborne amphibole asbestos fibres to facilitate sizing, counting, and analysis; similar methods are being investigated for chrysotile. A standardized technique is being developed to identify asbestos fibres from the lungs of mesothelioma patients. Experimental studies in animals have shown that mesotheliomas can be produced by the intrapleural inoculation of very fine glass fibre. This confirms findings previously reported from the National Cancer Institute, USA, and implies that the fibre size and shape of inhaled asbestos may be the essential carcinogenic determinants.

4.60 A preliminary study has been undertaken on the immunological changes in men exposed to asbestos in naval dockyards in the United Kingdom. Four different groups of patients—those with mesothelioma, parenchymal asbestosis, pleural plaques, and diffuse pleural thickening—are compared with men with long service in the dockyards who show no radiological changes and with controls. A group working in the Netherlands has shown a clear association between the occurrence of mesotheliomas and the occupation of shipbuilding, and a definite correlation with the presence of amphibole asbestos in the lung tissues of patients.

4.61 Breast cancer. In collaboration with the Cancer Registry in Iceland and other Icelandic investigators, a study has been started in Iceland to test whether there is in fact an increased risk of breast cancer among the first-degree relatives of breast cancer patients. The study will cover the whole population of the country, where the existence of the nationwide cancer registry and the availability of genealogical
trees for the entire population should make it possible to examine the risk for each category of relative separately.

4.62 A study has also been started in Tunisia, in collaboration with national scientists and the Netherlands Cancer Institute, of an inflammatory type of breast cancer that is uncommon elsewhere but is found in about 50% of breast cancers seen in Tunisia. In view of the pathological similarity to the inflammatory type of breast cancer in mice, which is known to have a viral etiology, the investigation is intended to determine whether there is any viral association with human inflammatory breast cancer.

4.63 Virus-associated cancers. The prospective seroepidemiological survey begun in 1971 among African children in West Nile District, Uganda, to investigate the association between Epstein-Barr herpesvirus (EBV) and Burkitt’s lymphoma in African children, has continued to the point where blood samples have now been drawn from over 22 000 of the 35 000 children in the whole study area. EBV is also associated with nasopharyngeal carcinoma that is common among the Cantonese Chinese in Hong Kong and Singapore, and the Uganda study on Burkitt’s lymphoma is therefore linked with other seroepidemiological studies to try to correlate the behaviour of EBV in different populations in Asia with the occurrence of nasopharyngeal carcinoma, and in France with that of infectious mononucleosis (also EBV-associated). As part of this investigation, genetic studies of nasopharyngeal carcinoma patients have been carried out by the WHO Immunology Research and Training Centre in Singapore, and by laboratories in France. A significant difference has been found between the HL-A genetic profiles of nasopharyngeal carcinoma patients and controls.

4.64 Environmental carcinogens. Pursuing its studies of the N-nitroso compounds, the Agency has now developed combined gas chromatographic and mass spectrometric analytical methods, which are being used in a collaborative analytical study, involving 16 laboratories, to improve and standardize the analytical techniques for determining the presence of nitrosamines in foodstuffs.

4.65 The metabolism of dimethyl- and diethyl-nitrosamine has been studied in rat and hamster organs and compared with their metabolism in tissues from human fetuses. The studies are being continued to identify the possible metabolic pathways and, by increasing understanding of metabolism, to propose better model systems for carcinogenicity testing.

4.66 In December, the Agency organized a workshop in Brussels on approaches to assess the significance of experimental carcinogenesis data for man. The workshop dealt with comparative metabolisms of chemical carcinogens, chemical carcinogenesis in vitro, and mutagenicity tests with chemical carcinogens.

4.67 Transplacental carcinogenesis. The Agency has reached an agreement with the public health authorities in Lombardy, Italy, and with the Institute of Bio- metry and Medical Statistics and the National Institute for the Study and Treatment of Tumours, both in Milan, Italy, to undertake an investigation of the incidence of cancer in children and the possible role of prenatal factors. As a first step a registry of cancers in children is to be created.

4.68 Pesticides. The multigeneration study of the effect of DDT exposure on CF-1 mice has been completed. A total of 3987 mice were involved and the results show that all animals exposed to 2, 10, 50 or 250 ppm showed a significant increase in incidence of hepatomas. As against 29.5% in control mice, the rates were 50-55.9% for the three lower levels of exposure and 86% in the group with the highest dose level. In an experiment in which DDT was administered for limited periods only, there was no evidence that the hepatomas induced by DDT regressed when its administration was suspended. (See also paragraph 3.40.)

4.69 Evaluation of potential carcinogens. The working groups of internationally recognized experts in the field of chemical carcinogenesis have continued their work on the preparation of monographs summarizing the data on, and attempting to evaluate the carcinogenic hazard of, a number of chemical substances. Two additional volumes were published during the year—one on some inorganic and organometallic compounds, the other on polycyclic aromatic hydrocarbons and heterocyclic compounds. A total of 90 substances have now been dealt with in the first three volumes.

4.70 Training programme. Sixteen research training fellowships and 11 travel fellowships were awarded in 1973 in the Agency’s fellowship programme.

Mental health, drug dependence and alcoholism

4.71 WHO has reorganized its mental health programme and extended it to include work on the behavioural sciences and neurosciences, while more...
emphasis is being given to the study of psychosocial factors in health. The programme now also embraces drug dependence and alcoholism, in recognition of the psychosocial nature of these conditions.

4.72 With the improvement in general health care in many countries, more resources are becoming available for mental health services. The majority of psychiatric conditions can now be treated, with good symptomatic response and considerable improvement in personal and social functioning. WHO is emphasizing the widest possible application of all the forms of effective therapy available. However, much is still unknown of the frequency and nature of the most common and disabling mental disorders, and one of the Organization’s tasks is therefore to stimulate and coordinate clinical, biological, psychological, and epidemiological research.

**Mental health services**

4.73 An interregional seminar on the organization of mental health services, held in Addis Ababa in November and December 1973, brought together some 50 participants from all WHO Regions. Its purpose was to define the mental health services needed in developing countries and to consider how they should be planned and evaluated in specific national and local situations.

4.74 In the African Region, the Technical Discussions during the meeting of the Regional Committee in September were devoted to the theme “The place of mental health in the development of public health services”. Later, the first stage of a survey of mental health facilities and manpower in nine African countries was initiated, with emphasis on the development of mental health training programmes for local personnel. A new project was established for rehabilitating the mentally ill and for promoting national mental health services, Swaziland being the first country to benefit from this help; and assistance was provided to Zambia for the development of mental and social rehabilitation within physical rehabilitation programmes.

4.75 In the Region of the Americas, assistance was provided to Brazil, Ecuador, Guatemala, Honduras, Jamaica, and Nicaragua in the planning, development, and evaluation of mental health programmes. The organization of services for the mentally retarded was considered during a seminar in Colombia in December. Assistance was provided to Argentina in evaluating and reorganizing its services for the mentally retarded and to Mexico in the development of a centre for children with multiple handicaps.

4.76 In the South-East Asia Region, a seminar on psychiatric patient care was held in July-August at Bangalore, India, in which both doctors and nurses from most countries in the Region took part. In October-November another intercountry seminar, on community action for mental health, was held in the same town. The participants, comprising public health administrators, psychiatrists, medical educators, nurses, sociologists, and religious leaders, considered the magnitude of the problems to be faced and the means of mobilizing the community to deal with them. The Organization has assisted Burma, India, Indonesia, Sri Lanka and Thailand in drawing up priorities in mental health services and teaching.

4.77 In the European Region, WHO is sponsoring the establishment of programmes in pilot areas where more precise data on the deployment and utilization of resources by different patient groups can be collected and analysed with respect to ecological, socioeconomic, and administrative variables. A working group on mental health services in pilot study areas, held in February, brought together directors of community mental health services in compact areas with populations of 300 000–600 000 in Czechoslovakia, Finland, the Federal Republic of Germany, the Netherlands, Norway, Switzerland, and the United Kingdom. Its purpose was to discuss the feasibility of mounting an operational research project to evaluate the effectiveness of mental health services.

4.78 Also within its long-term programme for mental health services in the European Region, WHO convened a working group on psychiatry in general medical practice in April. The great majority of milder forms of mental illness are dealt with by the general practitioner without referral elsewhere. Moreover, psychiatric cases represent a considerable part (as much as 25–30% according to some estimates) of his case-load. Besides considering the training requirements for the “primary physician”, the working group reviewed his role in the prevention of mental disorders in the community and in the treatment and rehabilitation of the mentally ill.

4.79 In August a multidisciplinary symposium on deviant behaviour and delinquency (including drug dependence) held in Bratislava, Czechoslovakia, discussed the possibility of dealing with juvenile delinquents in other ways than by bringing them before courts of law—for example, by making greater use of the social services—thus avoiding the danger of social stigmatization at an early age. This is especially pertinent because those who are brought to justice are
probably a minority of the total number of delinquents. The problems of this "hidden" delinquency were also discussed, as were such issues as definitions, prevalence, etiology and prevention and treatment. Deviant social behaviour was also one of the topics considered in May by a working group whose discussions concentrated upon the part played in the mental health services by psychologists, who in some countries are helping greatly in the psychotherapeutic management of patients with such problems and are contributing significantly to psychiatric research. Consideration was therefore given to the function of psychologists in diagnosis and treatment and to the requirements for their training.

4.80 In the Eastern Mediterranean Region, WHO assisted in promoting mental health work and improving psychiatric services in Iran, Kuwait, and Qatar.

4.81 In the Western Pacific Region, assistance was provided to the Republic of Viet-Nam to prepare an outline for a national mental health programme coordinated with the general health service.

Psychiatric epidemiology and standardization of diagnosis, classification, and statistics

4.82 An amended section on mental disorders for the ninth revision of the International Classification of Diseases, based on experimental evidence from and experience in a large number of countries, was considered by a study group on the International Classification of Diseases in January-February and circulated to Member States for comment. The new proposal makes more adequate provision for the classification of depressive disorders and for mental disorders in childhood, and the section on organic brain syndromes has been reclassified according to syndrome. A glossary has been prepared to accompany this section of the Classification and studies are under way to test its usefulness in everyday practice and its effect on improving the utilization of the Classification.

4.83 At a consultation held in Paris to discuss plans for future work on the standardization of psychiatric diagnosis, classification systems, and statistical methods, it was agreed that the main objective should be the development of methodologies and of manpower. Collaborative research has been started in several countries to test new classification models. In order to assess the extent of agreement on diagnoses among psychiatrists and to study determinants in the diagnostic process, diagnostic exercises are being carried out using case-histories, video-tapes and films of patients' behaviour. A protocol was prepared for studies concerning the classification of psychosocial factors influencing mental health. Work was started on the standardization of terms used in the description of mental health services, statistical reporting, and psychiatric practice. Another consultation was held to prepare a comparative study of available mental health statistics in seven countries in all WHO Regions.

4.84 Collaborative research on specific mental disorders was continued. The first volume has been published of the report on the international pilot study of schizophrenia, which is supported by the National Institute of Mental Health in the USA, WHO, and collaborating centres in eight countries. Two main findings are that it is possible to develop internationally applicable and acceptable procedures for the assessment of psychiatric patients, and that there is a considerable amount of similarity in the psychopathology of major functional psychoses such as schizophrenia in spite of vastly different cultural and socioeconomic conditions.

4.85 The data collection in the first phase of a comparative study of some 500 patients with depressive disorders in Canada, Iran, Japan, and Switzerland was completed. The aims of the study are to develop an instrument for assessing depressive conditions in various cultures and to explore the influence of sociocultural factors on the occurrence, course, and outcome of depressive disorders.

4.86 Two consultations were held in June on the mental health aspects of family planning. The first was a general review, which inter alia identified the need for research on the psychiatric and psychological consequences of practising contraception; the second outlined methods of carrying out this research, the ultimate aim being to assess the prevalence of mental disorders arising from this cause and to develop ways of predicting them.

Biological psychiatry

4.87 Psychopharmacology is one of the most rapidly developing branches of medicine. At a symposium on advances in the drug therapy of mental illness held in Geneva in November, participants reviewed the major research trends in experimental and clinical psychopharmacology, discussed the mechanisms of action of psychotropic drugs on the central nervous system, and considered the research needed for developing new psychotropic drugs. A number of the

---

heads of the 24 centres making up WHO's international reference network in psychopharmacology met in Geneva in November to review the work of the centres; special emphasis was given to training, to the evaluation of the effectiveness and safety of psychoactive drugs, and to the promotion of multidisciplinary research in experimental clinical psychopharmacology.

Suicide

4.88 A report on investigations in 25 countries in all WHO Regions on procedures for ascertaining suicide was completed. It was considered in October by a European working group on suicide and attempted suicide in young people. The participants discussed the feasibility of further international collaborative studies and techniques for the evaluation of preventive measures.

Neurosciences

4.89 Since malnutrition is widespread in almost all developing countries (see paragraph 9.28), attention has been given to its effect on brain maturation and mental development. A workshop on this topic took place at the beginning of the year in Ibadan, Nigeria, and a second was held in Stockholm in August.

4.90 The first part of WHO's Dictionary of Epilepsy has been published in English, French, and Spanish. It will be periodically reviewed in collaboration with the International League against Epilepsy. In order to promote the use of this dictionary, special sessions were devoted to it at the Tenth International Congress of Neurology held by the World Federation of Neurology and the Twelfth International Congress of the International League against Epilepsy. At both meetings the participants agreed that the dictionary would be very useful to them in their everyday practice, would permit them to standardize diagnosis and therapy, and would improve comparative epidemiological studies.

4.91 WHO's Advisory Committee on Medical Research recommended in 1972 that "increased attention should be given to research in the neurological sciences and in mental functioning, in order to better the understanding of human behaviour, both normal and abnormal, in view of the problems arising in a rapidly changing society." In order to facilitate this work, WHO established an Expert Advisory Panel on Neurosciences and organized a consultation on the outstanding needs for further research in the neurosciences, with particular reference to the development of WHO's programme.

Drug dependence and alcoholism

4.92 The Twenty-sixth World Health Assembly in resolution WHA26.52 expressed its grave concern at the serious public health problems resulting from the self-administration of dependence-producing drugs and stressed anew the need for WHO to encourage and assist the development of improved programmes for prevention, treatment, rehabilitation, and training. It emphasized the importance of developing means for the international collection and exchange of data on the prevalence and incidence of drug dependence and associated factors; and it accepted, subject to the availability of funds, the invitation of the Economic and Social Council to assist the United Nations Commission on Narcotic Drugs "by preparing timely reports on the epidemiological patterns of drug abuse".

4.93 In August, a working group was convened to assist in the development of guidelines to be used by selected collaborating centres and members of WHO Expert Advisory Panels in preparing from already available data descriptive and analytical reviews relevant to the patterns of use of dependence-producing drugs (outside medical practice) and to the associated individual and sociocultural factors.

4.94 In the same month, another working group met to consider means by which WHO might foster an increase in facilities and other resources for the acquisition of knowledge and the training of personnel. It also discussed ways of improving epidemiological planning and monitoring and the comparability of studies. The group considered that, as an initial step, it would be helpful for WHO to designate a limited number of WHO drug dependence research and training centres that could work collaboratively on a variety of important research projects related to the nonmedical use of dependence-producing drugs, including alcohol. They would include both established centres with well developed programmes and newer centres possessing the potentiality of undertaking broad programmes.

4.95 A WHO Expert Committee on Drug Dependence, meeting in October, assessed various approaches to the prevention of problems associated with the nonmedical use of different types of dependence-producing drugs (e.g., alcohol, amphetamines, barbiturates, and opiates). The problems arising from such drug use vary with the characteristics of the users,

---

the social, cultural, and economic environment in which drug-taking occurs, and the properties of the drugs and the amount, manner, and frequency of their use. The Committee pointed out that in most parts of the world, problems associated with the use of beverage alcohol far exceed those associated with nonmedical use of less socially accepted drugs. Recognizing the complexity of the problems, the Committee stressed that there were no simple solutions and that the attempt to formulate such "solutions" could be counterproductive. Any approach, to be useful, must consider not only the drug-taking behaviour itself but also the problems arising primarily from man-drug interactions (e.g., accidents while intoxicated; lung or liver pathology), from man-society interactions (e.g., social stigmatization; imprisonment for drug use), or from a combination of these and other factors (e.g., theft; infections due to contaminants). Preventive measures may be directed to the drugs themselves, existing and potential users, and the environment in which drug-taking occurs, and these measures should be coordinated or integrated with other educational, health, and social services. The Committee emphasized the need to evaluate the effectiveness of preventive programmes and the assumptions on which they were based and recommended that WHO also give special attention to the prevention of alcohol-related problems.

4.96 The United Nations Fund for Drug Abuse Control (UNFDAC), in addition to supporting three continuing WHO projects initiated in 1972, assisted a new study in Iran on the effectiveness of various methods of treating narcotic-dependent persons. A work plan was completed and initial programme activities were undertaken with respect to the UNFDAC-supported project in Thailand that concerns, inter alia, treatment and rehabilitation.

4.97 In the Region of the Americas, a centre for the study of alcohol and alcoholism was opened in San José, Costa Rica, with the support and advice of the Organization. In February, a training course on alcoholism, conducted in the same city, was attended by some 40 health and social workers from 12 Central and South American countries. A conference on the epidemiology of drug dependence in Latin America, meeting in Mexico in February-March, proposed several lines of action with respect to a multinational study of drug dependence in some Latin American countries. A working group, meeting in Rio de Janeiro, Brazil, in March, discussed the strategy that might be followed in carrying out research on attitudes towards alcoholism and on the frequency and intensity of drinking in six Latin American cities.

4.98 In the South-East Asia Region, assistance was given in assessing the extent of problems associated with the nonmedical use of dependence-producing drugs in Indonesia and Sri Lanka. Assistance was also given to Burma in developing its treatment and rehabilitation programme.

4.99 In the European Region, a working group on comparison and evaluation of methods of treatment and rehabilitation of drug-dependent persons was held in Frankfurt, Federal Republic of Germany, in March. It was attended by psychiatrists, social workers, psychologists, and public health administrators from 15 countries. The group discussed the principles of treatment, using examples of national patterns and experience, and the staffing and organization of services in the different countries. (See also paragraph 4.79.)

4.100 Efforts to deal with growing problems of drug dependence are continuing in the Eastern Mediterranean Region. Advice was given in Iran, Sudan, and Yemen. Increasing recognition is being given to the socioeconomic and health hazards of opium dependence, hashish smoking, khat chewing, and alcoholism in certain countries of the Region.

4.101 Support was obtained through the National Institute of Mental Health, USA, and a private foundation to assist national health authorities in Malaysia and the Philippines to determine the epidemiology of drug abuse, assess the available resources for combating the problem, and make proposals for future activities. This will form the basis of a long-term programme covering other countries in the Region and is in line with the resolution on drug dependence adopted in 1972 by the Regional Committee for the Western Pacific.

Dental health

4.102 The collection of epidemiological data on the global distribution of oral diseases continued to be one of the major activities in the Organization's dental health programme in 1973. The range of the data, which are being stored on computer tapes, is being extended to cover more age-groups than hitherto and to include information on decayed tooth surfaces, periodontal diseases, tooth mortality, dentofacial anomalies, the need for dental prostheses, and certain oral mucosal conditions.

4.103 In September, WHO's programme in dental epidemiology was reviewed by investigators who have been participating in the WHO-supported epidemi-
logical surveys. They made recommendations for the revision of the WHO manual on basic methods for oral health surveys; reviewed indices for the measurement and recording of oral diseases and treatment requirements; discussed the use of dental epidemiological information in planning dental care services; and outlined the possibilities of using patients' treatment records as an additional source of dental epidemiological data.

4.104 The Organization provided advice on survey planning and performed statistical analysis of dental epidemiological data relating to studies carried out in France, Kenya, Haiti, Indonesia and Thailand. In conjunction with a nutritional study being carried out by the Institute of Nutrition of Central America and Panama, a survey was made of dental caries among children in four villages in Guatemala, while in Colombia investigations continued regarding two communities with a high and a low prevalence of dental caries.

4.105 The recent publication of a manual on the application of the International Classification of Diseases to dentistry and stomatology, enumerating more than 500 oral diseases, abnormal conditions and oral manifestations of systemic diseases, should assist oral pathologists and dentists in the classification of data from dental records, and facilitate standardization.

4.106 The Organization continued to assist research on various aspects of dental health. In the study in Papua New Guinea on the etiology of dental caries, which is being supported by the United States National Institutes of Health, the data obtained on trace elements identified in tooth enamel and in main food items were analysed. The relationship between the prevalence of dental caries and certain trace elements in soil and food was defined more clearly, and is being tested in a further stage of the project in which data obtained in oral examinations are being studied in relation to microbiological and trace element analyses of tooth enamel, dental plaque, saliva, food, water, and soil.

4.107 The Organization also provided assistance for the development of studies on oral health conditions in adults in Malaysia, and for the field testing in Australia of periodontal disease criteria as outlined in the manual Oral Health Surveys: Basic Methods. The WHO-supported study by the Central Research Institute of Stomatology, Moscow, was continued, and a report was made on the results obtained in combined oral and general health surveys in the extreme north-eastern regions of the Soviet Union. In the Region of the Americas the Faculty of Dentistry of the University of Zulia, Venezuela, studied the preliminary results obtained in the tooth sealant studies for the prevention of dental caries being carried out by the Organization in Colombia, Jamaica, Mexico and Peru.

4.108 Countries and territories that received the Organization's assistance during the year for the planning and strengthening of dental health services included the Dominican Republic, Ecuador, Guyana, and Venezuela in the Region of the Americas, and Fiji, Hong Kong, Laos, Papua New Guinea, Republic of Korea, Tonga and Western Samoa in the Western Pacific Region. Advice was also given to Indonesia on the development of laws and regulations for the strengthening of dental health services.

4.109 In the international collaborative study of dental manpower systems in relation to oral health status, which is being carried out with the cooperation of WHO and the Division of Dental Health, National Institutes of Health, USA, the collection of dental epidemiological and sociological information was completed in four of the six participating countries—Australia, the Federal Republic of Germany, New Zealand and Norway. In areas designated by the national health authorities, oral examinations were made on 1000 children aged 8-9, 1000 adolescents aged 13-14, and 1000 adults aged 35-44, to ascertain the prevalence of various oral diseases and the dental treatment received or required. In addition, sociological and behavioural data on attitudes to and the utilization of dental health services were obtained through interviews with the same samples of adolescents and adults, and with a sample of 100 dentists. In New Zealand, school dental nurses were also interviewed.

4.110 In the African Region, where an increasing number of countries are becoming concerned at the prevalence of oral diseases—particularly dental caries among school-age children—and at the lack of qualified dental personnel to provide treatment, a new intercountry project has been started to assist countries in developing dental health services as an integral part of the general health services. Togo is the first country to have received assistance under this project.

4.111 In the Region of the Americas, as part of a project to improve the communication of information
on dental health, data were obtained on the availability and use of new types of dental equipment. Twenty-five dental units consisting of simplified equipment developed by the Organization have been made available for testing and evaluation in 11 countries in the Region. The unit provided to Barbados has been used in a project for improving dental services through the use of dental auxiliary personnel, and in Argentina and Venezuela work was continued on the further development of simplified equipment. The performance of new upflow saturators installed for the fluoridation of drinking-water in towns in Costa Rica, Mexico and Panama was examined. Assistance was also given to Brazil and Mexico in connexion with fluoridation and to Argentina for the installation of defluoridation equipment.

4.112 In the European Region, where a broad programme of studies is being carried out on various aspects of the management of dental care, two further studies were started in 1973—on the training and use of auxiliary dental personnel; and on organizational patterns of dental services, including legislation, the delivery of services, administration, and financing. These follow previous studies on child dental health, with particular emphasis on the major problems, individual and community preventive measures, research, and educational approaches applicable to the various age-groups.

4.113 A special issue of World Health was devoted to oral health, with particular emphasis on the major problems, individual and community preventive measures, research, and educational approaches applicable to the various age-groups.

4.114 In the implementation of its dental health programme, WHO continued to work in close collaboration with the International Dental Federation, and at the Federation’s annual session, held in Sydney in July, accounts were presented of various aspects of the Organization’s work—in particular, dental epidemiological activities and research on different organizational patterns for the delivery of dental care.

Human genetics

4.115 The Organization is supporting projects in cytogenetics in India, Mexico, and the USSR. It has long been postulated that the relatively low incidence of chromosome aberrations, particularly Down’s syndrome, in the Indian population may be more apparent than real, because of difficulties of ascertainment. Investigations carried out by the Indian Institute of Genetics, Bangalore, have not, however, invalidated the hypothesis of a reduced incidence. Studies on X-chromosome inactivation are being supported at the same institute, as well as research on chromosome aberrations and mother and child incompatibility as a factor in the non-disjunction of chromosomes.

4.116 The Institute of Medical Genetics, Academy of Medical Sciences, Moscow, is investigating the cytogenetic effects of chemicals and radiation and the frequency of chromosome aberrations in the cells of newborn infants with multiple malformations. A correlation between phenotype and karyotype anomalies in embryogenesis is also being sought by means of detailed morphological, autoradiographic, immunochemical, and cytochemical studies of human cell strains derived from the products of spontaneous abortions showing chromosome aberrations.

4.117 New projects on haemoglobinopathies and allied disorders were initiated, with WHO support, in Iran, Lebanon, and eastern Turkey; they are being carried out in geographical areas where there is a high frequency of glucose-6-phosphate dehydrogenase (G6PD) deficiency and thalassaemias. The principal aim is to ascertain the frequency of these conditions in populations of different ethnic groups living in similar environmental conditions.

4.118 It has been reported from the WHO Regional Reference Centre for Glucose-6-phosphate Dehydrogenase in Ibadan, Nigeria, that the type of G6PD deficiency associated with African ancestry is due to the rapid conversion of normally active G6PD to an inactive form, probably as the result of oxidation.

4.119 The distribution of G6PD variants and haemoglobin S and C was studied by the same Regional Reference Centre in populations living in the plains and in the mountains of southern Togo. It was found that abnormal haemoglobins are less frequent in the mountains than in the plains, and that abnormal haemoglobins are less frequent in the mountains than in the plains. A new variant of G6PD—G6PD Union (Thai)—was identified at the Siriraj Hospital, Thailand, during a WHO-supported study the aim of which is to correlate the clinical severity of accidental haemolysis in G6PD deficiency with the type of variant.

4.120 WHO-supported studies at the Institute for Medical Research, in Kuala Lumpur, have yielded information on the distribution of α-thalassaemia and on methods for the diagnosis of β-thalassaemia. It was found that the frequency of the α-thalassaemia
trait in newborn babies differs between ethnic groups in Malaysia, being highest in the Chinese, less high in Malays, and lowest in Indians. The diagnosis of the carrier state for β-thalassaemia is often based on the level of Hb A₂ in erythrocytes; this level is increased, however, in persons with malaria. It was found, in a Malaysian population sample, that the Hb A₂ level in malaria patients who were not carriers for β-thalassaemia overlapped with the level in carriers, so that, in assessing the frequency of the β-thalassaemia trait in malarious regions, the estimation of the Hb A₂ level alone might be misleading. This confirms findings in other populations.

4.121 In Cyprus, where thalassaemia affects a significant proportion of the population, WHO is providing the initial supplies and equipment for a genetic counselling bureau that is being established in Nicosia with the advice of the Organization.

4.122 In biochemical genetics, research on molecular biology is being carried out with WHO support at the Institute of Experimental Medicine, Leningrad, USSR. The project includes studies of hepatolenticular degeneration and muscular dystrophy and of nuclear-mitochondrial interrelationships in the process of transcription and translation of genetic information. At the National Institute of Biology, Mexico City, WHO-supported studies are in progress on the hybridization of cells from mammals of different species. The aim is to elucidate the genetic control of the biosynthesis of some amino acids, through the induction and isolation of mutant cell strains.

4.123 In the field of population genetics, WHO has continued to support investigations of genetic adaptation to different environments, through studies of isolated population groups. The National Institute of Demographic Studies, Paris, has obtained data on group polymorphisms of the Bedik people of the western Sahara and the Kel-Kummer people of the south Sahara. Genealogical studies showed that the gene pool in these peoples has remained remarkably stable for many generations. Studies of the Chukchi Eskimos of the Aleutian Islands and the Bering Straits, carried out at the Institute of Anthropology of the University of Moscow, have shown that they are intermediate between American and Siberian Eskimos as regards common genetic markers.

4.124 The oxygen dissociation curves of Sherpas and Europeans living at high and low altitudes in Nepal have been studied, with WHO support, by the Institute of Genetics, University of Rome. No difference was observed between the curves in the different groups investigated. A shift of the curve to the right was, however, observed in Peruvian Amerindians living at high altitudes, as compared with Europeans living in the same environment. This shift, which is interpreted as a possible genetic adaptation, was not found among the Nepalese, who differ from the Peruvian group in the mechanisms whereby they adapt to high altitude.
5. IMMUNOLOGY

5.1 By stimulating and—within limits—carrying out research into the immunological basis of disease, the Organization seeks a triple goal: more effective diagnostic tests, more soundly based immunization procedures, and, consequently, better control of the parasitic and infectious diseases in particular. Most of the fundamental immunological research is being carried out in the more developed countries. The Organization strives to apply this to the diseases that severely affect the developing countries and at the same time, largely through its research and training centres, to increase the numbers and improve the capabilities of immunologists in those countries. Other training activities in immunology are also pursued, either directly by WHO or in collaboration with others; for these the reader is referred to Chapter 10.

Research projects

5.2 Two important factors have influenced the selection of research projects—first, a reasonable expectation that practical results for the control of a disease can be brought about by immunological investigation; and, second, the realization that WHO needs to lead the way in order to increase efforts in this field by the more developed countries, which are not affected by many of the diseases of the less developed. Quick results are not to be expected from all of these studies. Some which yielded results during the year or which are beginning are outlined below.

5.3 In trypanosomiasis a good deal of work has been done in cattle and in man to document the antigenic variation that occurs—and that may constitute a formidable obstacle to the development of a vaccine—but little to study the role of the immunopathological mechanisms that lead to tissue lesions and often to death. Research on this subject has begun in the United Kingdom and the USA with WHO support, and studies on the localization of the soluble antigen-antibody complexes in the renal glomeruli and on the mechanisms of anaemia in trypanosomiasis have been started by WHO at the Cantonal Hospital in Geneva, in collaboration with the WHO Immunology Research and Training Centre in Nairobi.

5.4 Research on the immunology of schistosomiasis has been begun by the same centre in Nairobi in conjunction with the laboratory and baboon colony established there by the Wellcome Trust. To start with, studies are being made of antibody-mediated and cell-mediated immune responses in kidney and liver lesions of man and the baboon. As part of WHO's effort to promote an understanding of the immunopathology of the parasitic diseases, a special session on this subject—with particular reference to schistosomiasis, as well as to leishmaniasis and malaria-associated nephritis—was held at the Organization's request during the Seventh International Symposium on Immunology (at Cavtat, Yugoslavia, in October).

5.5 The first results of the WHO-coordinated collaborative research in Bangkok into the mechanisms of the shock syndrome in dengue haemorrhagic fever were published during the year. Unexpectedly, activation of the alternative as well as the classical complement pathway was observed. The levels of the inhibitors of the anaphylactogenic split products of complement components were found to be depressed—to a degree correlated with the severity of the disease—and it is suspected that these fragments also activated the clotting system to produce intravascular coagulation.

5.6 The present state of knowledge of the immunology of leprosy, as summarized at a meeting of investigators in 1972, was also published. Recently developed methods have made possible the in vitro measurement of cell-mediated immunity to Mycobacterium leprae, and the defect in lepromatous leprosy has been shown to be a failure of thymus-derived lymphocytes to respond to Myco. leprae antigens. Clinical trials (according to a WHO protocol developed at the above-mentioned meeting) have begun in the United Kingdom and the USA to determine whether the administration of transfer factor increases cellular immunity in lepromatous leprosy and whether any such increase is specifically directed against antigens of Myco. leprae. For this purpose, transfer factor has been prepared both from donors specifically sensitive to the mycobacterium and from others who are not.

5.7 In the collaborative international study of the interrelationships between nutritional states and the

--- 75 ---
immune response described in a previous Annual Report,\textsuperscript{1} sera collected in many parts of the world were received for testing by the London School of Hygiene and Tropical Medicine. Further evidence has accumulated that T-cell function is more severely impaired in malnutrition than is antibody production.

5.8 The Organization took advantage of an international symposium on primary immunodeficiencies (held in St. Petersburg, Fla., USA, in February) to convene a WHO meeting of investigators on this subject, who prepared for publication a review of the knowledge recently acquired on the nature and treatment of these conditions.

5.9 The WHO International Reference Centre for the Use of Immunoglobulin Anti-D in the Prevention of Rh Sensitization, London, has completed its international collaborative study of quantitation in assay methods for antibodies to red-cell antigens and now has a working standard available for those who need to prepare pools of immunoglobulin Anti-D for the prevention of intrauterine isoimmunization.

5.10 WHO and the International Union of Immunological Societies are collaborating closely in research leading to the development of standards for reagents for immunodiagnostic purposes. An informal meeting of experts took place in November to plan collaborative assays of immunofluorescent conjugates, complement components and the serum proteins that are increasingly being measured in clinical laboratories by automated immunoprecipitation tests. This activity benefited from financial assistance from the Federal Republic of Germany. The Union and WHO also collaborated in organizing an international symposium on the differentiation and function of lymphoid cells in Sinaia, Romania, in September.

Research and training centres for immunology

5.11 Over the better part of a decade, WHO has built up a network of regional research and training centres in established universities or research institutes in developing countries; they offer initial training in immunology in the trainee’s own Region and related to the diseases of his Region or country. Prolonged training abroad and the problems associated with it are therefore avoided. Advanced training may then be taken at annual courses supported by the Swiss Government at the WHO Immunology Research and Training Centre in Lausanne or at the centres for advanced training in Basle (Switzerland), Rehovot (Israel), or Melbourne (Australia). Visiting immunologists from abroad who teach in some of the courses frequently take up research of the immunology of tropical diseases when they return to their countries, often in collaboration with participants in the developing countries.

5.12 The newly-designated WHO Immunology Research and Training Centre at the University of Nairobi began its research programme on the immunopathology of tropical nephropathies, studying soluble antigen-antibody complexes circulating in blood, the conditions for their deposition in the kidney, and related interactions of complement. These studies are based on experience gained at the immunology centre in Ibadan \textsuperscript{2} and are done in collaboration with the University of Geneva and the Nuffield Institute of Comparative Medicine, London. Studies on possible competition for antigen between immunoglobulin G and immunoglobulin M antibodies in malaria have been started in collaboration with the East African Institute for Malaria and Other Vector Borne Diseases in Amani, United Republic of Tanzania, and the WHO Immunology Research and Training Centre in Lausanne. Examination of auto-antibodies in liver diseases, which have a high incidence in Kenya, has been started in collaboration with local institutions.

5.13 The WHO Immunology Research and Training Centre at the University of Singapore continued research in collaboration with the International Agency for Research on Cancer (see paragraph 4.63). The first results of the histocompatibility (HL-A) antigen typing of nasopharyngeal cancer patients appear to lend support to the hypothesis that the Chinese in Singapore have an apparent genetic predisposition to develop this form of cancer. A Western Pacific intercountry course on immunology was organized at the Walter and Eliza Hall Institute of Medical Research, Melbourne, Australia, which has been newly designated as a WHO Immunology Research and Training Centre for Advanced Studies.

5.14 Research is continuing at the WHO Immunology Research and Training Centre in Lausanne on the basic mechanism operating in leishmaniasis. As reported previously,\textsuperscript{3} in experimental infections with Leishmania enrietti, macrophages from immune guinea-pigs appeared incapable of destroying ingested Leishmania. It has now been shown on the other hand that

\textsuperscript{1} Off. Rec. Wld Hlth Org., 1973, No. 205, paragraph 5.18.


\textsuperscript{3} Off. Rec. Wld Hlth Org., 1973, No. 205, paragraph 5.11.
activated mouse macrophages can destroy a *Leishmania* parasite which is non-pathogenic for mice, but not another form of *Leishmania* which is pathogenic for mice. Antibodies present in the serum of guineapigs with healing lesions have been shown to react with surface antigen of living parasites, and to modify the surface membrane. The significance of this finding in relation to protective immunity is being studied. It seems paradoxical that macrophages should provide a refuge for some parasites rather than a means of defence for the host. The defence mechanism is complicated, however, and may involve collaboration between humoral antibodies, perhaps naturally occurring leishmanicidal substances, and macrophages.

5.15 In a study performed by the Lausanne centre in collaboration with the WHO Immunology Research and Training Centre for Advanced Studies at Basle, immunoglobulin D, present in only trace amounts in the serum, has been demonstrated to be present on the membranes of lymphocytes of peripheral blood. IgD has been shown to be synthesized by the cells and usually to be present in association with IgM. These immunoglobulins on the cell membrane provide the “recognition molecules” for the induction of the immune response by antigen. They also provide markers for characterization of the altered lymphocyte population which occurs in diseases such as lymphatic leukaemias and the immunodeficiencies.

5.16 A training course for students from 13 countries was organized in Lausanne on the immunology of infectious diseases. The Centre also functions as the WHO International Reference Centre for Immunoglobulins, and in conjunction with the Standardization Committee of the International Union of Immunological Societies, it continued work on the standardization of human and animal immunoglobulin.

5.17 The course due to be held at the WHO Immunology Research and Training Centre in Beirut in June-August was postponed, but research continued. This bears, *inter alia*, on the pathological response of immunosuppressed chickens to *Mycoplasma gallisepticum*; antibody purification; cutaneous leishmaniasis; cell-mediated immunity in reticulosis; and an immunosuppressant from group A streptococci.

5.18 The PAHO/WHO Immunology Research and Training Centre in São Paulo, Brazil, in addition to continuing with training and with the research reported for 1972, began work to test the hypothesis that the injection of allogeneic lymphocytes can convert the lepromatous form of leprosy to the tuberculoid.

5.19 In Mexico City, the PAHO/WHO Immunology Research and Training Centre organized a week-long symposium on mechanisms of immunopathology. It also collaborated with the Organization in a meeting of investigators on the immunology of Chagas’ disease, at which the present knowledge on the immunological mechanisms that operate in this American trypanosomiasis were reviewed and collaborative research projects were elaborated by which it is hoped to determine whether the cardiac and other lesions stem from immunopathological causes.

5.20 In collaboration with the Indian Council for Medical Research, a new WHO Immunology Research and Training Centre was designated during the year in New Delhi, at the Department of Biochemistry, All India Institute of Medical Sciences. In November it organized a course on the chemistry, structure, functions and clinical applications of immunoglobulins for students from India and other countries in the South-East Asia Region. Research was conducted on the mechanism of action of mitogens, the immunology of leprosy, immunoreproduction, and nutrition and the immune response.

6. ENVIRONMENTAL HEALTH

6.1 One of the world’s major health problems is the increasing amount of waste containing hazardous biological, chemical and physical agents that is deposited in the environment. A survey completed by WHO in 1973 has shown that most people in the developing countries are without sanitary facilities suitable for removing biologically hazardous human wastes from where they live. According to this survey, at least 75% of the population in 61 developing countries lack or have inadequate sanitary wastes disposal facilities, while in the rural areas the proportion rises to 92%. The sustained effort required in this field needs to be coupled with programmes for community water supply and water pollution control, which are now under way in many countries.

6.2 Following the United Nations Conference on the Human Environment, held in Stockholm in June 1972, WHO developed a number of new programme proposals to implement some of the Conference’s recommendations relating particularly to human health. After reviewing a progress report, the Twenty-sixth World Health Assembly reiterated in its resolution WHA26.58 that it attached high priority to WHO’s long-term programme in environmental health. It considered that WHO should make a substantial contribution to the coordinated environment programme of the United Nations system, by assuming leadership in the health aspects of the programme and by assisting governments in the improvement of environmental quality through the provision of adequate and safe water supply and wastes disposal facilities, the monitoring of pollutants harmful to health in air, water, food, soil and the working environment, the development of criteria and guides or primary standards for the protection of man’s health from harmful environmental influences, and the promotion and coordination of appropriate research.

6.3 The Organization, together with Member States, is accordingly embarking on an expanded programme for the assessment of the effects on man of biological, chemical and physical agents in the environment, including new and potentially hazardous substances used in the home, in industrial production and in agriculture. These activities will lead to the issue by WHO of documents on the health effects of these agents and thus provide a scientific base for the planning, implementation and evaluation of governmental programmes concerning the human environment.

6.4 Simultaneously, WHO’s approach in environmental monitoring has been designed to help countries to establish national programmes; to develop methodology and recommendations for programme planning and implementation; and to generate information for use in assessing the trends of certain pollutants in the environment and their predictive value. In collaboration with 14 countries, WHO has initiated a pilot study for the monitoring of a few important pollutants in the urban air and prepared programmes for the monitoring of selected contaminants in food, water, and the working environment. This work forms part of a coordinated international programme for monitoring the environment within the United Nations system’s Earthwatch Programme; WHO and the United Nations Environmental Programme (UNEP) are collaborating in this activity, and WHO is establishing environmental health criteria. High-risk occupational groups are of particular interest in this respect and WHO has made recommendations to governments, and proposals for research in environmental and health monitoring for preventive occupational health practice.

6.5 Another area of great concern to WHO is the safety of food to the consumer. It has reviewed its activities relating to food safety information and evaluation, and further scientific information has been disseminated. The food standards and other recommendations of the Codex Alimentarius Commission have been applied in WHO’s technical assistance to countries in food sanitation and food control.

6.6 Both the biomedical and the environmental aspects of radiation and radioactivity have been the subject of further research and technical assistance. New technologies in radiation medicine are being explored, biological indicators of the effects of radiation on man and the environment have been used in research projects, and the Organization’s programme to reduce radiation exposure through improved radiation protection has been expanded.

6.7 However, the prime environmental problem is still the lack of sanitation in developing countries,
where a large part of the world's population is exposed to biological pollution resulting from insanitary wastes disposal that reaches man through unsafe drinking-water and food. In addition to providing technical assistance in environmental sanitation to 93 Member States during 1973, WHO undertook research, in collaboration with its two international reference centres, three regional reference centres and 75 collaborating institutions in this field, over a third of which are in developing countries, in order to obtain more information and devise more suitable and less costly technology and methods of intervention. The need for such technology was highlighted during the first session of the Governing Council of UNEP, held in Geneva in June 1973; again, WHO is cooperating with UNEP in an effort to strengthen its activities and provide additional assistance to countries. Collaboration with UNICEF, UNDP, IBRD, the regional development banks and bilateral assistance agencies continued, with the aim of assisting governments to make the maximum use of available external assistance, particularly for community water supply, a sphere in which a survey completed by WHO in 1973 indicated that the situation in most of the developing countries continues to be grossly inadequate.

Basic community sanitation

Community water supply and wastes disposal

6.8 The 1971-72 survey of water supply conditions in 90 developing countries summarized in last year's Annual Report was revised, and information on wastewater and excreta disposal was added. Information on water supply in urban and rural areas of 91 developing countries, and on sewage disposal in 61, at the end of 1970, presented by countries and WHO Regions, appeared in a special article in the Organization's statistical publications.

6.9 In the Region of the Americas, activities to expand water supply and sewerage facilities continued in line with the targets approved at the III Special Meeting of Ministers of Health of the Americas held in Santiago, Chile, in October 1972. Considerable progress was made towards the adjustment of programmes to these new goals and the development of national environmental plans, of which water supply and sewerage are the most important components.

<table>
<thead>
<tr>
<th>Population</th>
<th>Population not served in 1970</th>
<th>Estimated population increase 1970-1980 (millions)</th>
<th>Estimated total population in 1980 for which sewage disposal services will be needed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. (millions)</td>
<td>% of 1970 population</td>
<td>No. (millions)</td>
</tr>
<tr>
<td>Urban</td>
<td>114</td>
<td>29</td>
<td>214</td>
</tr>
<tr>
<td>Rural</td>
<td>962</td>
<td>92</td>
<td>247</td>
</tr>
<tr>
<td>Total</td>
<td>1076</td>
<td>75</td>
<td>461</td>
</tr>
</tbody>
</table>

* sewage disposal service is here considered to be service through house sewer connections to public sewerage and/or excreta disposal through sanitary household systems (pit privies, septic tanks or conservancy systems).

It was estimated that, at the end of 1972, 40% of the urban population was provided with sewerage services. Besides pre-investment planning projects, small-scale UNDP projects for water supply and sewerage systems are in progress or preparation in Belize, Chile, Dominican Republic, El Salvador, and elsewhere in the Caribbean area.

6.10 Following the survey of water supply conditions and needs made by WHO in 1971-72, a first detailed global survey was carried out in 1972-73 on sewerage and excreta disposal. Table 1 shows the number of people estimated to need this kind of service in 1970 and 1980 in the 61 developing countries that responded. Support to sewerage projects is lagging far behind that to water supplies.

6.11 Of the total population of the reporting developing countries (1435 million) about 75% (1076 million) have no sewage disposal facilities. The highest proportion with adequate services is in the Region of the Americas (46%, or 122 million people), while the lowest is in the South-East Asia Region (16%, or 140 million people).

6.12 Of the total urban population of 391 million people in the 61 countries, 29% (114 million) are without adequate sewage disposal facilities. Of the 71% that are served, 28% (108 million) are connected to public sewerage and 43% (169 million) use household systems. The highest proportion of the population with sewer connections (34%) is again found in the Region of the Americas, and the lowest proportion (8%) in the Eastern Mediterranean Region.

6.13 Basic planning principles and objectives for the development of national programmes, and design criteria and technical solutions appropriate to develop-

---

6.14 Four new documents in the WHO series of guidelines on the disposal of industrial wastes were circulated to Member States during the year. These pertain to metal finishing, tannery, brewery and textile (cotton) wastes. The purpose of the series is to help developing countries to plan and execute programmes to control wastes that are becoming a serious problem.

6.15 In the Americas, work has begun on the implementation of programmes to attain the objectives for solid wastes disposal set for the Region in 1972 (see paragraph 6.9). National planning is in progress in four countries and plans for a number of urban areas in the countries have been completed. The Organization provided technical assistance to six countries. As a result of a regional course on solid wastes management held in Spanish at West Virginia University, Morgantown, W.Va., USA, a manual on the subject has been produced for distribution throughout the Region.

6.16 In the South-East Asia Region, consideration has been given to the most appropriate means of developing training courses in the disposal of industrial and other wastes, and India was advised on the waste disposal problems of Bangalore and Delhi.

6.17 In the European Region, the Organization issued a model code of practice for the disposal of solid wastes on land as part of a manual on solid wastes management. It also prepared a draft model agreement on collaboration between municipal authorities and research institutions for the establishment of pilot zones for controlled landfill with solid wastes in accordance with the model code. The draft agreement will serve as a basis for pilot landfill schemes in countries in the Region. The problems of petrochemical and other toxic wastes were reviewed by a WHO working group in West Berlin in November.

6.18 In the Eastern Mediterranean Region, interest in better solid wastes management was reflected in an increase in the number of requests for WHO assistance in 1973. Wastes management plans or recommendations were prepared for Cyprus, Ethiopia, Lebanon and the United Arab Emirates.

6.19 In the Western Pacific Region, WHO is the executing agency for two small-scale UNDP projects on solid wastes treatment: the first, in Hong Kong, relates to the disposal of livestock wastes, while the second concerns municipal solid wastes in the Republic of Viet-Nam.

6.20 Rural water supplies and sanitation. A survey of rural water supply completed in 1973 showed that in 1970 only 14% of the total rural population of 1249 million in 91 developing countries had reasonable access to safe water. The survey on sewage disposal (see paragraph 6.10) indicated that out of a total rural population of 1044 million people in the 61 reporting developing countries 962 million (92%) were without sanitary excreta disposal services in 1970. The highest estimated coverage of the rural population with sewage disposal facilities (22%, i.e., 26 million people) was in the Region of the Americas, as against only 3% (23 million people) in the South-East Asia Region.

6.21 In 1973, WHO and UNICEF provided joint assistance to nearly 100 developing countries through rural water supply and sanitation projects. In order to produce a greater development impact, most programmes are being formulated and implemented on a nation-wide scale.

6.22 Epidemiological assessment of control measures instituted in 13 selected countries during the seventh cholera pandemic has caused greater attention to be paid to simple methods of basic sanitation, with particular emphasis on community water supply and excreta disposal and food sanitation. A draft guide on surveillance of drinking-water quality and another outlining interim measures in the control of enteric diseases have been prepared (see paragraph 1.143).

6.23 In the European Region outbreaks of cholera in 1970, 1971 and 1973 have shown that basic environmental sanitation still requires marked improvement, even in some highly developed areas. Meanwhile, new problems, such as those associated with the growth of industry, are taxing the capabilities of newly established environmental health organizations. With UNICEF support, WHO provided technical assistance in basic sanitation to Algeria, Morocco and Turkey.
In the Western Pacific Region two new projects were started, in Papua New Guinea and the Cook Islands. The latter project, with UNDP funds, was the first in the Region to make use of the United Nations Volunteers Programme. In the Republic of Korea the Organization is assisting a programme aimed at supplying the entire rural population with water by means of piped systems or sanitary wells, with aid from UNICEF, WFP and a voluntary agency. An evaluation of the intercountry project for the South Pacific, based in Suva, indicated that this eight-year-old project, funded by UNDP and strengthened by material assistance from UNICEF, has been successful, particularly in its water supply component.

WHO is assisting countries in the African Region in the development of basic community sanitation through projects in basic health services. Twenty-three of these projects serve Burundi, Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon, Guinea, Kenya, Lesotho, Mali, Niger, Nigeria, Rwanda, Sierra Leone, Swaziland, Togo, Uganda, Upper Volta, Zaire and Zambia, with technical support from four intercountry projects.

In the Region of the Americas assistance was focused on the implementation of national environmental plans, in the light of the objectives of the Second United Nations Development Decade and the ten-year health plan for the Americas. Particular attention was given to water supply and sewage disposal.

Of the rural community water supply projects assisted by WHO and UNICEF in six countries in the South-East Asia Region, special mention should be made of those in Bangladesh and India. In the former, a programme based mainly on sinking tubewells equipped with handpumps is designed to meet the major sanitary needs of the entire rural population. In the Indian project, water was shown to be present in large rocky areas and the best sources of groundwater for future piped water schemes were located. Interest in piped water supplies was kindled among the rural population, and the programmes in several states are being expanded.

In the Eastern Mediterranean Region Ethiopia, Pakistan and Yemen made notable progress in community water supply through projects assisted by WHO, which also gave technical advice on problem identification and programme planning in Democratic Yemen, Oman, and Southern Sudan.

An example of the increasing interest of governmental and nongovernmental organizations in the promotion of rural water supplies and sanitation was an interdisciplinary seminar on the subject held in Lausanne, Switzerland, in May-June 1973, which was sponsored by the International Development Research Center, Ottawa. WHO assisted and participated in the seminar, during which its approach was critically reviewed.

WHO pre-investment assistance to Member States may take three forms. The first of these is assistance in national planning, which is provided through sector surveys, sector reviews and reports. The studies aim to gather information on water supply and sewerage facilities in urban and rural areas, and include an evaluation of the reliability of statistical information and the quality of installations and services to the public. Technical and institutional factors hampering the development of satisfactory services are analysed and recommendations for overcoming them are made. The sector survey reports include proposals for national sector planning, development goals, and project priorities, and provide data for use in UNDP country programming. In collaboration with IBRD, a guide was completed in 1973 to assist governments and international agencies in planning sector surveys for community water supply and wastes disposal.

The second form of WHO pre-investment assistance is in the planning of projects. The projects may relate to water supply or sewerage facilities for one or more cities, but the trend is to plan on a metropolitan or regional scale and to include both water supply and wastes disposal. In project planning the Organization lays stress on the use of technology that is simple and suited to each country's cultural, geographical and climatic conditions.

This type of WHO assistance to Member States includes the preparation and execution of studies, financed by UNDP or other sources, and arrangements for consulting engineering and management services. In the course of the studies, the Organization helps to evaluate the planning and design options, and reviews the final master plans and the feasibility studies of any optional programmes proposed.

Among the countries or territories to which WHO provided assistance during 1973 for sector surveys or reviews and for pre-investment project studies were the following:
6.34 A third form taken by WHO’s pre-investment assistance is that of investment planning. Close contact is maintained from an early stage of project planning with international investment organizations and agencies providing bilateral assistance in order to observe their organizational and financial requirements. WHO consults IBRD or other interested financing agencies on the choice of consulting engineers, on terms of reference for studies, and on planning and design criteria developed in the course of the studies. At critical points in the project studies, it arranges and coordinates discussions with the government and potential sources of finance. Every effort is made to orient the project studies so as to benefit to the maximum from investment planning decisions and to concentrate on the development of schemes that are likely to be realized.

6.35 As a means of improving investment planning, the IBRD/WHO cooperative programme that came into effect in 1971 has been extended by common accord until the end of 1975. This programme, the activities of which are reviewed annually by the two organizations, provides sector surveys and, in addition, supplements IBRD’s lending programme and project appraisal activities. The Bank meets three-quarters and WHO one-quarter of the costs of the programme.

6.36 Advancement of knowledge and transfer of technology. A major obstacle to the more rapid improvement of basic sanitation is the cost and difficulty of maintaining conventional equipment ill-adapted to conditions in the developing countries. As part of the Organization’s programme for the preparation of suitable technical publications and guidelines to help reduce costs and simplify sanitary technology, a course manual on the routine maintenance of water distribution systems was produced by the Central Public Health Engineering Research Institute, Nagpur, India.

6.37 The thesaurus of terms in solid wastes prepared by the WHO International Reference Centre for Wastes Disposal, Dübendorf, Switzerland, was published early in 1973; the thesaurus permits easy reference to the Centre’s documentation system, which has now been expanded to contain more than 2000 entries.

6.38 Over 4000 copies of each issue of the monthly newsletter produced by the WHO International Reference Centre for Community Water Supply, The Hague, Netherlands, are distributed all over the world. The network of 31 institutions that collaborate with the Centre was reinforced by the designation as Regional Reference Centres of the Central Public Health Engineering Research Institute, Nagpur, and the Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS), Lima.

6.39 In February the International Reference Centre at The Hague organized meetings on the toxicity of plastic pipes and of polyelectrolytes (used as coagulant aids in water treatment) in community water supply. The participants considered that the International Organization for Standardization’s draft standards for permissible levels of lead and tin in polyvinyl chloride pipes stabilized with these metals, and for extraction procedures for lead and tin used in these pipes, are generally acceptable, with certain minor modifications, but that use of cadmium as a stabilizer should be prohibited. They drew attention to the danger of toxicity from residual unpolymerized monomers in synthetic polyelectrolytes. While many industrialized countries have established test procedures and approval mechanisms, countries that lack such controls should avoid the use of these substances. There is also danger from the presence of polyelectrolytes of non-potable water grade in raw waters abstracted for community supplies.

6.40 The Centre arranged a meeting of directors of collaborating institutions at Bilthoven, Netherlands, in April, which was also attended by representatives of IBRD, the Asian Development Bank, the International Development Research Center of Canada, and the European Development Bank. The participants considered the Centre’s work of great value and its activities of importance to all countries that lack comprehensive data on their waste problems. They expressed their appreciation for the Centre’s work and its continuing and increasing role in the gathering of useful information.

1 WHO International Reference Centre for Wastes Disposal (1973) Solid wastes thesaurus, Dübendorf.
USAID and the US Environmental Protection Agency. Policies on research in community water supply were reviewed and topics requiring urgent attention were identified; UNEP support has been sought for the projects with the highest priority.

6.41 The Pan American Centre for Sanitary Engineering and Environmental Sciences, Lima, gave technical assistance in water and wastewater treatment and water resources development and published a manual in Spanish on water treatment, entitled Teoría, Diseño y Control de los Procesos de Clarificación del Agua. It helped to design water treatment plants in Bolivia and Peru, while methods it has proposed were utilized in 20 plants in seven other countries.

6.42 In India, the Central Public Health Engineering Research Institute at Nagpur gave technical support to water supply and wastes disposal programmes in the country and collaborated with institutions and governments in the South-East Asia Region. In order to improve the logistics of supply and to reduce foreign exchange expenditure, it has developed products that can be manufactured locally.

Sanitation in international travel

6.43 To match the expansion of international travel, and particularly the growth of tourism, health facilities and measures must achieve the highest possible standard. During the year the Organization drew attention to the need to improve the quality of drinking-water on international flights, and the World Health Assembly, in resolution WHA26.54, stressed the importance of a high quality of drinking-water and food in international traffic.

6.44 The potential health hazards of poor hygiene and sanitation in international aviation, both at airports and aboard aircraft, were emphasized by WHO at a meeting of the IATA Facilitation Advisory Committee in Bangkok. Informal discussions were held with members of the IATA Medical Committee concerning steps to ensure a high quality of food and water in international civil aviation as well as to promote sanitary wastes-handling practices. These discussions stressed the relevance of sanitation to the health protection of passengers and crew and thus ultimately to air safety. At an ICAO meeting on facilitation in Dubrovnik, Yugoslavia, WHO urged better implementation of the provisions of the International Health Regulations (1969) on sanitation at airports, and at the thirteenth Congress of the International Civil Airports Association, held in Tunis, called for due attention to sanitary considerations in the selection of airport sites.

6.45 In the Western Pacific Region a questionnaire on the quality of food on international flights was sent to all countries and territories. The conclusions drawn from the study were that few attempts have been made to assess the risk of food-borne disease on such flights, and that wider use of the WHO guide to hygiene and sanitation in aviation is desirable. Following a recommendation by the Regional Committee for the Western Pacific at its twenty-fourth session, in 1973, steps have been taken to update the guide.

Housing and human settlements

6.46 In the Region of the Americas the Organization continued to participate in the Inter-Institutional Committee on Housing and Urbanization and issued several documents, including the final report of a pilot project on low-cost housing construction on Central America and a revised document on minimum standards for urbanization. Together with USAID and the Organization of American States, it gave assistance to determine interest in a possible pilot project on slum improvement, while through the Pan American Centre for Sanitary Engineering and Environmental Sciences it advised Peru on the preparation of development plans for selected forest areas and Ecuador on the planning of an irrigation settlement project.

6.47 In the European Region, in collaboration with the Federal Republic of Germany, WHO organized a seminar on health aspects of urban development in Stuttgart in December. The seminar paid particular attention to the relation between health administration in cities and urban planning.

6.48 The Organization participated in the eighth session of the Economic and Social Council’s Committee on Housing, Building and Planning, in Geneva in October, at which research into low-cost technology in water supply and wastes disposal was among the subjects discussed.

Environmental health criteria

6.49 A WHO Scientific Group on Environmental Health Criteria met in April to examine research needs in order to improve the basis for developing criteria and providing guidance on exposure limits. The list of priorities suggested by the Scientific Group

---

includes some 70 substances and physical factors, the highest priority being accorded to oxides of nitrogen; nitrates, nitrites and nitrosoamines; cadmium, lead, mercury, manganese and their compounds; polychlorinated biphenyls; mycotoxins; and noise.

6.50 National and international efforts are needed to improve the scientific basis for establishing environmental health criteria. As pointed out by the WHO Advisory Committee on Medical Research at its fifteenth session in June, human toxicological information is the best basis for estimating risks from environmental exposure and every effort should be made to improve this data base by careful epidemiological studies. Similarly, although this is a difficult and costly task, the predictive value of animal experiments should be improved; international co-ordination and more effective exchange of information could save much effort and expenditure.

6.51 All Member States have been invited to collaborate in WHO’s environmental health criteria programme by providing periodic national reviews of epidemiological, clinical, experimental and environmental studies on major pollutants. Under a detailed work plan for 1973-75, the preparation of national reviews and draft criteria documents has begun for nine groups of substances. The programme has UNEP’s support.

6.52 In the European Region, a WHO working group that met in Stockholm in November examined the behaviour of heavy metals and metalloids in the environment, routes of human exposure to them, and methods for the safe handling, transport and disposal of organomercurials and mercury-containing wastes. Polychlorinated biphenyls and their effects on health, their level in the environment, analytical methods and the evaluation of future trends, and the risks connected with chemicals used to replace them were discussed by a working group convened in Brussels in December.

6.53 In developing maximum permissible concentrations and other types of derived working limits, national authorities should weigh the risks against expected benefits, taking into account their country’s circumstances, technological feasibility, and the cost of applying environmental quality standards. These topics were discussed at a WHO interregional symposium on the use of air quality criteria in national air pollution control programmes, held in Geneva in December, which also reviewed air quality management standards in Member States, including standards limiting the emissions from sources of pollution, standards for the quality of fuels, equipment perform-ance standards, protective zoning standards, and ambient air standards.

6.54 A WHO Study Group on the Public Health Aspects of Noise met in Geneva in November to evaluate the available information on levels, nuisance potential, and possible health effects of exposure to occupational and community noise. On the basis of this review, the Study Group prepared draft criteria on these categories of noise. With the Union of Medical Associations of Yugoslavia, the US Environmental Protection Agency, and the American Speech and Hearing Association, the Organization cosponsored an international congress on noise as a public health problem in Dubrovnik, Yugoslavia, in May. It participated in a meeting of national experts on noise convened by the Commission of the European Communities in November in Luxembourg with a view to improving coordination between the two organizations in their work on noise criteria.

6.55 Following the recommendations of a WHO meeting on health criteria for coastal recreational waters held at Ostend, Belgium, in 1972, a draft document on criteria for coastal water quality was prepared. A manual on beach sanitation in the European Region was drafted and sent to experts in Member States for comment.

Evaluation and control of specific exposures and conditions

6.56 A WHO Expert Committee on the Planning and Administration of National Programmes for the Control of Adverse Effects of Pollutants met in October 1973 to review the health and administrative aspects of these programmes, and particularly the role of health authorities in the establishment of national and environmental quality standards, enforcement of legislation, provision of surveillance, and inspection of services. The Committee made a number of recommendations on policy formulation and the planning, implementation and evaluation of preventive and control measures, including the management of air and water pollution control and the control of toxic chemicals, environmental radiation and noise. It also tried to delineate the role of health agencies, in collaboration with the many other authorities concerned, in programmes to improve the environment.

6.57 In the European Region, in cooperation with the Government of Poland, WHO organized a symposium on the rational design of environmental
information systems in Katowice in January. Over 100 specialists from Europe and the USA discussed the type, quantity, quality and form of data needed for making environmental health decisions.

6.58 The Pan American Centre for Sanitary Engineering and Environmental Sciences, Lima, provided technical assistance on environmental pollution in the Region of the Americas. Studies in the Region have shown a need to strengthen present environmental monitoring systems and establish new ones. A regional project for the monitoring of air, water and soil was formulated; the objectives are to establish demonstration and advisory services and to devise methods that will be useful in developing national monitoring systems. In order to promote environmental health research in the Region, a project was initiated for the establishment of a centre for human ecology. The centre, to be located in Mexico, will identify and monitor environmental health problems in the Region; make the information obtained available for use in control programmes; train personnel in this field; and prepare guidelines for the application of environmental health criteria to national control programmes.

6.59 Modern management techniques are being used in the preparation of pollution control plans for a number of model areas under a UNDP-supported project in Czechoslovakia, and in the UNDP/WHO water quality management projects in Hungary and Romania. Computerized mathematical atmospheric dispersion models form an integral part of the air pollution components of environmental projects in Czechoslovakia, Greece, Poland and Romania; the Greek project provides for a computerized inter-industry waste generation model that will enable the level of industrial activity in the Athens region to be related to the types and quantities of wastes generated and the resultant degree of pollution. UNDP-supported projects on environmental pollution control are in progress in the Brazilian states of São Paulo and Guanabara, and Mexico has requested assistance to develop a project for the improvement of the environment. A comprehensive project on environmental sanitation and pollution control has been included in Chile’s country programme, while Argentina has prepared a plan for comprehensive environmental control in the Greater Buenos Aires area and in important river basins. A UNDP-supported project to establish an environmental centre in Venezuela has begun. In the Eastern Mediterranean Region, WHO helped Pakistan to prepare a programme for a public health engineering research institute, with UNDP assistance. The institute will train staff, undertake applied research and provide technical advisory service in all fields of environmental sanitation, control and improvement.

Air pollution monitoring and control

6.60 Fourteen countries continued to collaborate in the WHO air pollution monitoring programme, which UNEP has agreed to support, by supplying data on sulfur dioxide and suspended particulate matter for analysis by the WHO International Reference Centre on Air Pollution Control, at Research Triangle Park, North Carolina, USA. Each participating country is taking air samples from each of three urban sites, in “inner city-commercial”, “inner city-industrial”, and “suburban-residential” areas. A meeting on trends and levels in air pollution convened at the Centre in November proposed the extension of the pilot project by increasing the number of monitoring stations in different countries and including other pollutants. A programme for inter-laboratory comparison of analytical data was worked out, and it was decided to review the siting of the monitoring stations.

6.61 Automated air quality monitoring networks and data analysis were examined at an international symposium on air quality held at the National Institute for Public Health, Bilthoven, Netherlands, in June 1973. The symposium, which was cosponsored by WHO and the International Reference Centre on Air Pollution Control, agreed to set up a study group in which national institutions working on automated air quality monitoring will be represented; the National Institute for Public Health is to provide the group’s secretariat.

6.62 A WHO/WMO technical conference on the observation and measurement of air pollutants was held in Helsinki in July-August to consider requirements, observational techniques and instruments for the measurement of air pollution, and methods for the analysis of air pollutants.

6.63 In addition to the programme described in paragraph 6.60, the Pan American Air Pollution Monitoring Network continued to function through air sampling stations throughout the Region of the Americas. A report on the data collected by these and other national air sampling stations up to the end of 1972 showed the levels and trends of air pollution in the main cities of Latin America. The results will be used in preparing a programme to reach the goals for air pollution control set by the III Special Meeting of Ministers of Health of the Americas in 1972.
6.64 In the European Region, a WHO working group convened in Rotterdam, Netherlands, in February reviewed the results of the pilot studies on respiratory diseases in children in relation to air pollution conducted in 1972 and discussed the effectiveness of the work protocol, questionnaire and examination form used in the studies.

6.65 Following further studies in Czechoslovakia, Denmark, Netherlands and Romania, a meeting was held to draw up a programme for a longitudinal study of the effects of air pollution on children.

6.66 The first WHO seminar on air pollution control in the Western Pacific Region, convened in Manila in May, examined air quality criteria and standards, control technology, legislation and planning. It was attended by participants from 14 countries and territories of the Region.

6.67 Technical advice on specific air pollution problems was given to a number of countries in the Region of the Americas, the Western Pacific (Republic of Korea, Republic of Viet-Nam, Singapore), the Eastern Mediterranean (Iran, Israel, Jordan), and South-East Asia (India).

Water pollution monitoring and control

6.68 WHO has built up a programme of assistance to Member States in establishing and developing water quality monitoring systems in areas where there may be a risk to health from pollution. In the European Region, a group met in Copenhagen in August to discuss procedures for the assessment of the reliability of water quality data through interlaboratory comparison and calibration. The Organization held technical discussions with water quality experts from Czechoslovakia, Hungary, and Romania with a view to coordinating those parts of UNDP-supported national projects that deal with the Danube river basin.

6.69 WHO and UNESCO provided the technical secretariat for the second meeting of an International Hydrological Decade working group on water quality that was held in Geneva in March to review progress in the preparation of a handbook on hydrological aspects of water quality monitoring and management.

6.70 The Organization also participated in the fifth session of the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), held in Vienna in June, which discussed the identification and control of marine pollutants of international significance, scientific problems of marine pollution monitoring, and the environmental effects of activities on the sea-bed and ocean floor.

6.71 In the European Region, pilot studies on the health hazards and ecological effects of coastal pollution began in the Oslo Fjord, Norway, the Firth of Clyde, United Kingdom, and the Wadden Sea, Netherlands; detailed programmes were worked out at meetings in Oslo in February and East Kilbride, United Kingdom, in September.

6.72 Direct technical assistance in solving water pollution problems was provided to Colombia, Guam, India (to assess the water pollution control measures in force in different parts of the country and give advice on the use of analytical techniques), the Philippines (through participation in the Laguna de Bay Water Resources Development Studies, a UNDP project executed by the Asian Development Bank), Singapore (on coastal water quality and aspects of control of industrial pollution), and Yugoslavia (through a UNDP-supported project in the autonomous province of Kosovo-Metohija).

Food additives and contaminants 1

6.73 In line with the recommendations of the United Nations Conference on the Human Environment in 1972, and because of WHO's concern at the substantial quantities of environmental contaminants entering the human body through food, the Organization has widened the focus of its work, for many years centred on the evaluation of the health hazards of chemicals used in the production of foodstuffs, to encompass the contamination of food and its possible effects on health.

6.74 Toxicological evaluation. The Joint FAO/WHO Expert Committee on Food Additives, which met in Geneva in June-July, revaluated, in the light of new information, 110 food additives including compounds used as anticaking agents, antimicrobials, antioxidants, emulsifiers, stabilizers, and thickening agents. Some of these substances required no change in the acceptable daily intakes allocated to them at earlier meetings; for others, the level was either increased or, in a few cases, decreased. The Committee revoked its previous acceptance of diethyl pyrocarbonate, a preservative, because of doubts about the significance of the presence of a wide-spectrum carcinogen, urethane, in beverages treated with it. In view of the possibility of nitrosamine formation when nitrates

---

1 See paragraphs 1.196-1.205 for other aspects of food hygiene.
and nitrites are used as food additives, the acceptable daily intake previously fixed for nitrites was lowered. The Committee recommended that in the present state of knowledge the use of forms of carrageenan of low molecular weight should be avoided in food.

6.75 The Committee proposed considerable modifications in the way in which acceptable daily intakes should be expressed and decided to abandon the somewhat confusing practice of ascribing conditional acceptable daily intakes. It also considered the principles governing the assessment of flavouring substances in the light of the approach adopted by the Council of Europe, which has classified these substances as permissible, temporarily permissible, and not permissible, according to their toxicity, chemical structure and occurrence in nature. It pointed to the need for more information on the chemical fate of additives in foods, their interaction with food components, and the formation of toxic substances. Among the Committee's recommendations, special emphasis was placed on the systematization of means of identifying food additives whose safety has come into question as a result of new data and on natural constituents in food that are harmful to human health.

6.76 Data continued to be collected to estimate the potential daily intake of food additives and pesticide residues, using a computer procedure suggested by a previous Joint FAO/WHO Expert Committee on Food Additives. Following the suggestions of a meeting of experts involved in similar estimates at national level, additional food consumption data are being incorporated into the original study of four countries. In addition, for those compounds whose estimated potential intake showed a significant theoretical possibility that the acceptable daily intake might be exceeded, refined calculations were made taking new information into account.

6.77 The WHO Expert Committee on Pesticide Residues met jointly with the FAO Working Party of Experts on Pesticide Residues in Geneva in November-December. A number of pesticides were evaluated for the first time, at the request of the Codex Alimentarius Commission, among them being the organophosphorus compounds azinphos-ethyl, demeton-S-methyl and its sulfoxide and sulfone derivatives, disulfoton, and vamidothion; and the carbamates propoxur and thiophanate-methyl. Twelve other pesticides were reevaluated.

6.78 A WHO Scientific Group on the Assessment of the Carcinogenicity and Mutagenicity of Chemicals met in Geneva in August. The significance of exposure to very low levels of substances that have been shown to be carcinogenic or mutagenic in laboratory investigations is not well understood, although the possible mutagenic action of food chemicals poses an obvious health hazard. Among the important points discussed were the mechanism of mutagenesis and carcinogenesis, the threshold and no-effect levels of chemicals having mutagenic or carcinogenic activity, and testing procedures. While the association between mutagenicity and carcinogenicity of many compounds is sufficiently evident to justify the use of mutagenicity tests as prescreening procedures for possible carcinogens, the relationship requires further investigation. The group considered that threshold levels exist for secondary carcinogens. On the other hand, for primary carcinogens, although the existence of a threshold may be implied from observations on DNA repair, immunological surveillance mechanisms, and findings on the initiation of events, no suitable method for its determination is yet available. The group recommended that, since a knowledge of the level of carcinogens in the environment is essential in assessing the risk they present, WHO should promote more research into methods for their detection and coordinate and support international monitoring of the levels of certain of them.

6.79 A Joint FAO/WHO Conference on Food Additives and Contaminants was held in Geneva in October. Following earlier conferences on food additives held in 1955 and 1963, the third Conference widened its scope to include both biological and chemical food contaminants. The Conference delineated additional areas where international action is desirable and suggested priorities for future work on food additives and contaminants. The proposed internationally coordinated monitoring programme for food contaminants received special attention.

6.80 In pursuance of the Twenty-third World Health Assembly's resolution WHA23.50, establishing a food additive information service similar to that in operation for drugs, eight information sheets concerning the prohibition or limitation of the use of food additives were received by WHO and distributed to governments in the course of 1973.

6.81 In October, the Organization arranged a European regional meeting in Bremen, Federal Republic of Germany, at which the direct and indirect health hazards of the use of antibiotics in animal feed were discussed.

1 See paragraphs 4.26 et seq. and 6.108 for other activities concerning cancer and carcinogenesis.
6.82 During the year, WHO supported research studies designed to provide data for toxicological evaluation. The subjects of the studies include certain persistent pesticides, irradiated food, and methyl mercury.

6.83. Food standards. The Codex Alimentarius Commission, which is the principal organ of the Joint FAO/WHO Food Standards Programme and has 101 countries as members, is responsible for the preparation of food standards. During the year, 10 Recommended International Standards on pesticide residues, fruit juices, fish, and quick-frozen foods were sent to Member States, to which five replies were received indicating various degrees of acceptance. In addition, two Recommended International Methods of Analysis, on procedures for thawing and cooking quick-frozen fruits and vegetables, and an International Code of Hygienic Practice, on desiccated coconut and dehydrated fruits and vegetables, including edible fungi, were dispatched for information.

6.84 The Executive Committee of the Commission met in Geneva in July for its nineteenth session. One of the topics discussed was the agenda for the Joint FAO/WHO Food Standards Regional Conference for Africa held in Nairobi in October. In preparation for the Conference WHO circulated to the African countries a questionnaire on existing food legislation and regulations, facilities for food control, and commodities of significance in trade. The Regional Conference examined these subjects and emphasized the need for WHO, in conjunction with FAO, to initiate an international monitoring programme on food contaminants and to assist Member States to develop monitoring services.

6.85 Proposals jointly made by FAO and WHO for assisting developing countries in food control, in keeping with Recommendation No. 82 of the United Nations Conference on the Human Environment, have been accepted by UNEP for financial support. These proposals concern preparatory work for the development of microbiological standards and standards regarding pollutants in foods as well as the preparation of a food control manual.

6.86 In a number of Regions, WHO is assisting environmental sanitation programmes with a food sanitation component. In the Western Pacific, assistance was given to Brunei on food control legislation and food hygiene, and to Malaysia in conducting a training course on food hygiene. Under a UNDP-funded intercountry project for the South Pacific, food sanitation activities were conducted in Fiji, Tonga and Western Samoa, including courses to train health inspectors and food handlers.

6.87 Food monitoring. As part of the integrated WHO environmental monitoring programme, the Organization has formulated, with FAO, a proposal for monitoring a number of important chemical and biological agents in foods. It is envisaged that the data will be obtained from national monitoring programmes. Preliminary activities have included the selection of suitable contaminants for study, methods of analysis, and the design of an appropriate system for processing, appraising and storing data.

6.88 Food irradiation. The International Food Irradiation Project was launched in January 1971 jointly by IAEA, FAO and the Nuclear Energy Agency of the Organization for Economic Cooperation and Development. A meeting on safety evaluation and the roles of the international agencies in the project was convened by WHO in Geneva in October, in conjunction with FAO and IAEA. It was recommended that the informal relationship between WHO and the project should continue and that the project should search the literature on food irradiation, the data obtained being evaluated by WHO in order to advise on further studies. It was also recommended that the project continue its long-term feeding studies in animals and other investigations to establish the safety of irradiated food for human consumption.

Radiation exposure and radiation medicine

6.89 The exposure of patients to medical applications of radiation still contributes most to the man-made radiation exposure of populations. Hence any improvement in radiation medicine, and particularly in the use of radiation in diagnosis, will at the same time improve the quality of medical services and reduce medical exposure to radiation.

6.90 Diagnostic radiation medicine. A WHO review in a number of countries has confirmed that basic radiological services are widely lacking, particularly in rural areas, that much equipment, when available, is inadequately maintained or obsolete, that basic radiation protection requirements are frequently not met, that staff sometimes suffer from overexposure, with for example, radiation damage to their fingers, and that the minimum training needed is often not obtainable. Advice to improve this situation was given to Bangladesh, Khmer Republic, Laos, Papua New Guinea and the Republic of Korea. Assistance was also given in a number of Regions for the training of radiological technicians, a key factor in radiation protection.
6.91 Many countries are still hampered by the absence of efficient maintenance and repair services for medical equipment, particularly for X-ray diagnosis. To help remedy this situation in the Eastern Mediterranean Region, WHO assisted Afghanistan, Democratic Yemen, Egypt, Ethiopia, Iran, Iraq and Yemen in the maintenance of a wide variety of equipment including X-ray apparatus, laboratory instruments, autoclaves, and refrigerators, and new projects in this field are proposed for four of these countries.

6.92 In the Western Pacific Region, assistance in the maintenance and repair of medical equipment and the training of local counterparts was provided to Fiji, Western Samoa, American Samoa and the British Solomon Islands Protectorate. With advice from WHO, governmental services in this field in the Philippines are broadening their scope to include inspection of protection procedures.

6.93 A number of governments have asked WHO for specifications for equipment suitable for the establishment of basic radiological services in rural and district hospitals and health stations. In co-ordination with specialists and manufacturers of X-ray equipment and in the light of the recent recommendations of the International Commission on Radiological Protection (ICRP), WHO has issued interim specifications for a basic diagnostic X-ray unit, including accessories, darkroom equipment, the possible attachment of a camera for miniature radiography in order to save film costs, and advice on organization and the facilities needed. Manufacturers are being asked to produce prototype equipment based on these specifications for testing in a field trial similar to that carried out for general-purpose X-ray units from 1967 to 1971.

6.94 Therapeutic radiation medicine. The postal dose intercomparison service for radiotherapy centres started by IAEA in 1968 and with WHO's collaboration since 1970 was used by 115 radiotherapy centres in 1973-11 from the Americas, 11 from the Eastern Mediterranean, 37 from the European Region, 17 from South-East Asia, and 39 from the Western Pacific. There is still a more than acceptable deviation from the intended dose in many countries, and participating institutes have expressed strong interest in extending the service from cobalt-60 radiation to conventional X-ray therapy and high-voltage radiation.

6.95 The network of secondary standard dosimetry laboratories with calibration facilities now includes six laboratories designated as WHO Regional Reference Centres, in Argentina, Iran, Mexico, Romania, Singapore and Thailand.

6.96 Technical advice was given to Liberia and the Libyan Arab Republic to set up radiotherapy centres for cancer control and to promote medical education in this field. Expert advice was also given to Iran.

6.97 New methods in radiotherapy need to be brought into general use, particularly in developing countries. An example is the after-loading technique, which replaces the intracavitary application of radium, and so avoids the still relatively high radiation exposure of staff and may improve the accuracy of the application. To examine ways of improving the method, the Organization, in cooperation with the Government of Brazil, sponsored a working party on after-loading techniques in Rio de Janeiro in May and June in which 31 experts from 15 countries and representatives of IAEA participated.

6.98 Medical application of radionuclides (nuclear medicine). A further WHO Regional Reference Centre for Nuclear Medicine has been designated in Mexico in addition to the Regional Centre in India and the International Reference Centre in the Federal Republic of Germany. The centres have contributed to the study of training problems and the evaluation of monographs for different medical applications.

6.99 More than 300 scientists from 35 countries attended a symposium organized by IAEA and co-sponsored by WHO on new developments in radiopharmaceuticals and labelled compounds which was held in Copenhagen in March and April. An attempt was made to provide a coherent picture of research trends in radiopharmaceuticals and to summarize new developments in the beneficial use of short-lived radionuclides, new radiopharmaceuticals, and equipment. During the symposium, WHO arranged a consultation on regulatory responsibilities for radiopharmaceuticals.

6.100 Radiation exposure and protection. In the Western Pacific, a first regional seminar on radiation protection was held in Manila in February. The meeting emphasized the importance of establishing adequate health physics, engineering and radiation protection services if radiation medicine is to develop and radiation hazards are to be prevented. It also emphasized the need for training technicians in both the operation and the maintenance of radiation equipment. In the same Region, the Khmer Republic, Laos, Papua New Guinea, Tonga, and Western Samoa were advised on the organization of radiation protection services.

6.101 Film badge services for personnel monitoring continued to be provided free of charge to WHO by the Central Protection Service against Ionizing
Radiation, Le Vésinet, France, which supplied about 400 badges a month to Afghanistan, Egypt, Ethiopia, Iraq, Lebanon, the Libyan Arab Republic, Pakistan, and the Syrian Arab Republic in the Eastern Mediterranean Region. The Institute for Radiation Protection and Environmental Health, Neuherberg, Federal Republic of Germany, provided a similar service, also free of charge, for the Khmer Republic, Laos, Tonga, and the Gilbert and Ellice Islands in the Western Pacific, and began in 1973 to supply Burma and Nepal in the South-East Asia Region.

6.102 Standards and criteria, including non-ionizing radiation. WHO continued to cooperate with the International Commission on Radiological Protection (ICRP) and the International Commission on Radiation Units and Measurements (ICRU), which are primarily responsible for standards and criteria for ionizing radiation at the international level. Among the subjects discussed at a meeting of ICRP held in April in Brighton, United Kingdom, were such specific problems as radiation protection of patients and in emergencies, both topics of direct concern to WHO. At a meeting of ICRU in October in Madrid, which covered various technical aspects of radiation health, WHO was particularly involved in the discussions on special radiation units. During the year, collaboration was established with the Committee on Contrast Media of the International Commission on Radiological Education and Information (ICRE).

6.103 Although scientific knowledge of non-ionizing radiation is limited, there is general agreement on its potential health hazards. In Warsaw in October, WHO joined Poland and the USA in sponsoring an international symposium which discussed the influence of microwave irradiation on the nervous system and behaviour, the effects at the cellular and molecular level, and the quantitation of microwave fields in biological research.

6.104 Environmental radioactivity. Monitoring of environmental levels of some radionuclides was carried out in collaboration with the WHO International Reference Centre for Environmental Radiation, Le Vésinet, France. Four collaborating institutes in Canada, Sweden, USA and USSR were designated during 1973 to aid the Centre in this programme. The Centre's main activities were an intercomparison programme including population exposure to radiation, particularly from the diet, the collection of information on levels of strontium-89 and strontium-90, cesium-137 and some trace elements in milk, and the provision of facilities and training related to environmental radioactivity.

6.105 In collaboration with UNSCEAR and the Health and Safety Laboratory of the United States Atomic Energy Commission, New York, WHO continued the collection and evaluation of data on the strontium-90 content of human bone from tropical and rice-diet countries.

6.106 It is expected that the rate of increase in nuclear generating capacity will accelerate rapidly during the next five years and that by 1980 nearly all power stations ordered in many countries will be nuclear. At a symposium on environmental behaviour of radionuclides released in the nuclear industry—organized in Aix-en-Provence, France, in May, by IAEA, WHO, and the Organization for Economic Cooperation and Development's Nuclear Energy Agency—emphasis was put on developing models for the assessment of total radiation dose from the nuclear installations within each geographical area rather than from individual plants. A new concept of “environmental capacity” has been developed as a guide in keeping the annual input of radioactivity within the recommended annual regional dose limits. The meeting examined information on the behaviour and fate of radionuclides released into the terrestrial and freshwater ecosystems and pointed to areas where information is inadequate. Regional cooperation is essential to control radioactive pollution from nuclear power plants, as was stressed in the case of the Danube catchment area during the meeting of an IAEA/WHO study group on radiological and environmental protection held in Budapest in September.

6.107 Biological and epidemiological effects of radiation. Much remains to be learnt about the effectiveness of low doses of ionizing radiation, and the reaction to radiation of molecules in biological material. To further knowledge in this field, WHO supported research on the effects of radiation on the cell in relation to radiation exposure and particularly radiotherapy.

6.108 To study the carcinogenic effects of radiation, WHO cosponsored the third international meeting on the toxicity of thorotrast, organized by the Finsen Institute and Radium Centre, Copenhagen, in April. Patients who received thorotrast injections in the past, before its hazards were recognized, offer a unique opportunity for the study of biological indicators of damage and for epidemiological studies on the somatic-stochastic effects of radiological investigations. It was suggested that WHO might take further steps to coordinate the work of national groups on this subject.
6.109 Epidemiological studies on populations living in areas with high natural background radiation—up to 20 times the normal average of about 100 mrem per year—continued with WHO support during 1973. Chromosome aberrations in lymphocytes began to be used as biological indicators of possible radiation effects in a project in which WHO is cooperating with India in an area of high natural background radiation in Kerala State.

6.110 The analysis of chromosome aberrations is still the most promising method of detecting low-dose radiation effects and the WHO-coordinated programme in this field was intensified during 1973. The three WHO International Reference Centres (in Canada, the United Kingdom and the USSR) and 35 laboratories throughout the world are now participating in the organization of international intercomparison studies, the standardization of methodology and review of the results. In response to the recommendations of a meeting of investigators engaged in this programme, held in 1972, pilot studies were started in small population groups exposed to chemicals and other agents in the environment. A manual on chromosome aberration analysis was published by WHO to provide guidance on internationally agreed methodology. More effort is needed, however, particularly in the automation of procedures, before the method becomes routine for detecting radiation effects.

**Accident prevention and control**

6.111 In recent years WHO has extended the scope of its work from the treatment of accidental injuries to their prevention and control, and a programme using epidemiological techniques is being developed for this purpose.

6.112 The most frequent sites of accidental injury are the roads, the home and the place of work. The incidence of road accidents has reached epidemic proportions in many countries. While accident-caused injuries are a major problem, it is difficult to take effective counter-measures in the absence of adequate and reliable data. Difficulties have also been encountered in coordinating the large number of disciplines involved in accident prevention and in designing successful educational programmes in accident prevention. Only in industry have such programmes proved effective, in countries where in-plant services have been set up.

6.113 In the European Region, WHO has concentrated not only on coordination with the United Nations and other institutions to examine measures for traffic control and accident prevention, but also on specific activities to define high-risk groups and causal factors in road accidents, and to study their prevention, control and economic consequences in different countries. In June, it participated in an ECE meeting of experts on road traffic safety, in Geneva.

**Health of working populations**

6.114 In close collaboration with ILO, WHO expanded its work in occupational health in 1973, particularly in field investigations of health problems affecting the working populations in developing countries, the development of guidelines for environmental and health monitoring in preventive occupational health practice, and assistance to Member States in building up their service programmes.

6.115 *Occupational hazards.* The WHO Collaborating Institutions in Occupational Health and other institutions cooperating with WHO in research in this field, now numbering more than 20 altogether, are providing new knowledge for the setting of criteria to protect workers against exposure to specific agents, acting singly or in combination.

6.116 An epidemiological investigation of workers in the viscose rayon industry in Egypt and Yugoslavia centred on the association between exposure to carbon disulfide and changes in cardiovascular function, lipoproteins and endocrines. The data obtained from the Department of Occupational Health, University of Alexandria, Egypt (a WHO Collaborating Institution), and the Institute of Occupational and Radiological Health in Belgrade are being used to prepare draft criteria for occupational exposure to carbon disulfide.

6.117 In the Region of the Americas, research on the mental and neurological syndromes produced by chronic inhalation of dust containing manganese in mining began in 1972 with assistance from the United States National Institute for Occupational Safety and Health. In 1973 the study progressed to an investigation of the increased susceptibility of old miners to a disease similar to Parkinson's disease following such exposure to manganese dust and the determination of associated metabolic changes, with a view to the early detection of poisoning, which produces irreversible damage to the central nervous system.

---

6.118 In the European Region, research on exposure to combined hazardous conditions at work was carried out in Bulgaria and Finland with WHO assistance. There is evidence that certain organo-phosphates are less toxic when exposure at certain concentration levels occurs in hot climates. On the other hand, combined exposure to heat stress and organic industrial solvents such as trichlorethylene and carbon tetrachloride results at certain temperatures in a remarkable increase in toxicity.

6.119 Studies of the health effects of vibrating tools, particularly chain saws, and whole-body vibration in shipbuilding, wood-cutting, forestry, stone-crushing, chisel-hammering and agricultural activities have yielded data on the frequency and amplitude levels of vibration and the effects on vasomotor function in peripheral organs. At present no international recommendation on maximum permissible levels for vibration is available, and the National Institute of Occupational Health, Finland, is carrying out studies for this purpose with WHO assistance.

6.120 In Indonesia, Sri Lanka, Sudan and Thailand, WHO-supported studies were started or continued on the nature and extent of the health problem of the exposure of workers to dusts of plant origin in the agricultural and food-processing industries. The prevalence of chronic obstructive lung disease among rice-milling workers increases with the concentration of rice dust and the duration of exposure. In tobacco manufacturing, exposure to concentrations of tobacco dust exceeding 10 mg per m³ of air leads to acute bronchospasm associated with fever and, chronically, to obstructive lung disease and asthmatic bronchitis. In Egypt and Sudan the control of byssinosis among workers in the textile industry by reducing the amount of plant debris in cotton was investigated. In Sudan a study has started on the effects (which include respiratory disorder) of inhaling wood dusts, particularly dusts of mahogany.

6.121 The health problems of workers in small industries deserve special attention; work conditions are generally inadequate, legislation to protect labour does not cover most of them, and organized health services are often not available. WHO-assisted research to improve the health of these workers continued in Brazil, Jamaica, Nigeria, Singapore, Sudan and Thailand, and new projects began in Iran and Kenya. The study in Sudan has shown that cooperative health schemes between small-scale employers and workers may be effective means of dealing with the prevailing health problems. Sudan has recently launched a programme for health centres throughout the country to deal not only with specific factors in the work environment, but with all the health problems of workers and eventually also their families.

6.122 Promotion of workers' health. A WHO expert committee met in Geneva in July-August to discuss environmental and health monitoring in occupational health practice. The committee recognized that health planners are not sufficiently aware of the need to deal with the health problems of the gainfully employed, particularly in countries undergoing industrialization. Moreover, occupational health personnel in both developing and industrialized countries need further training in preventive occupational health monitoring and care, and fuller utilization should be made of health personnel already serving in manufacturing industries, plantations and mines. There are gaps in present knowledge of the early detection of precursors of disease resulting from different types of occupational exposure, though study in this field is likely to open up a new domain in preventive medicine as a whole. The committee asked WHO to help Member States to prepare national inventories of occupational health conditions that can be used in the planning and implementation of their occupational health programmes. In its report, the committee put forward guidelines for carrying out environmental and health monitoring schemes on a country scale, at the place of work, and for specific occupational risks.

6.123 In the European Region, as part of its study of organizational patterns in occupational health, WHO produced a guide for uniform description of the resources, functions and results of occupational health services which has been tested on small and large industries in Finland and Sweden. The results were considered at a regional meeting in October 1973 in preparation for a conference on the subject in 1976.

6.124 The pilot Health Centre for Seafarers in Gdynia, Poland, has obtained information on the health status of seamen calling at the port. In one year the centre handled almost 5000 cases of illness, including respiratory diseases, functional and organic nervous disorders, occupational injuries, poisoning, accidents, intestinal parasitic diseases, and peptic ulcer. A standardized medical reporting system has been put into use for the collection of information on the health of seafarers calling at Gdynia from different parts of the world. A similar centre at Auckland, New Zealand, started its activities in 1973.

6.125 The Joint ILO/WHO Committee on the Health of Seafarers held its fifth session in September to consider medical and first-aid training for seagoing personnel, the medical examination of crew members on tankers and ships carrying poisonous chemicals, and preventive dental care for seafarers. The Committee recommended that during their vocational training all seafarers should receive instruction on the immediate action that should be taken on encountering an accident or other medical emergency, including hypothermia; that crew members on tankers carrying chemicals in bulk should undergo pre-employment and periodic medical examinations; and that seafarers should receive dental care when entering the service and throughout their careers. It also recommended that WHO should review the contents of the International medical guide for ships for consideration at a future session of the Committee. During the year IMCO, in collaboration with WHO and ILO, published a guide for medical first aid in accidents involving dangerous goods on board ships.

6.126 Industrialized countries are giving more attention to the health problems of migrant workers, including both psychosocial aspects and the likelihood of exposure to hazardous conditions with which the migrants are not familiar. In the European Region, a survey was carried out on migrant workers in certain countries and a meeting was held in October in Algiers to review what is known and suggest further investigations.

6.127 In September, the East African Conference on Occupational Health in Agriculture was held in Addis Ababa under the auspices of the Confederation of Ethiopian Labour Unions and the African-American Labor Centre, with the participation of WHO. The participants, who represented health ministries and labour unions in Ethiopia, Kenya, Mauritius, Sudan and Zambia, resolved to initiate investigations of health problems in different occupational sectors, particularly agriculture, and to request health authorities in Africa to develop an occupational health infrastructure and train personnel.

6.128 To develop their occupational health services, nearly 40 countries requested WHO's assistance in areas ranging from the preliminary assessment of needs and problems in occupational health to advice in dealing with the health of particular working populations. The Organization helped Algeria, Bangladesh, Cyprus, Indonesia, Iran, Iraq, Ivory Coast, Liberia, Mali, Mongolia, Morocco, Nepal, Pakistan, Peru, Senegal, Sierra Leone, Togo, Uganda, Upper Volta and Zaire to carry out surveys of existing health conditions and to plan occupational health programmes.

6.129 Among the larger-scale projects, WHO assisted Argentina, with UNDP support, in the development of an occupational health institute, and Australia was helped to investigate sickness absenteeism. As a large UNDP-assisted project in Bulgaria approached completion, the Organization arranged a course in occupational toxicology and respiratory protection, while WHO helped Burma to carry out a study of physical fitness and work capacity. In Chile assistance was given to the Institute of Occupational Health and Air Pollution, Santiago, to study sickness absenteeism and to train staff from Latin America. Egypt and India received WHO assistance to study the long-term effects of heat exposure on the blood and circulatory system. In Indonesia, a UNDP-assisted project, for which WHO is the executing agency, has started, the aim of which is to develop the National Institute of Occupational Health and three regional occupational health centres. In Iran the School of Public Health in Teheran was helped to develop its industrial hygiene training programme and laboratory. A large-scale UNDP/WHO project on industrial toxicology started in Poland; the main purpose is to create at the Institute of Occupational Medicine, Lodz, a national centre for research, training, and health surveillance of workers exposed to toxic substances.

6.130 The Organization assisted Singapore in two projects, one to develop research in respiratory diseases among quarry workers and start a higher degree course in occupational health, and the second to survey skin diseases, particularly industrial dermatitis. Sri Lanka was helped to develop health services to small industries and to promote port health services, while Sudan was assisted in developing a department of occupational health with an occupational hygiene laboratory, carrying out research, and providing on-the-spot preventive medical services for workers. Thailand received WHO assistance to develop its health services for seafarers and Zambia to start a section within the Ministry of Health to deal with silicosis and fibrotic lung disease in mining.

Promotion of environmental services and institutions

6.131 Many countries, notably in the Eastern Mediterranean and South-East Asia Regions, are endeavouring to strengthen their central environ-
mental health services and to extend them in rural areas. In the African Region, this effort is being channelled, with varying degrees of success, through basic health services projects. In the Region of the Americas, where in many countries environmental health services are already fairly well established within central ministries of health, the emphasis in 1973 was on the development of national environmental planning and the strengthening of government departments and institutions concerned with such planning. Similarly, countries in the European Region sought to establish or strengthen institutions responsible for their national programmes of environmental pollution control.

6.132 In most countries several departments in addition to the ministry of health play a part in executing national environmental health programmes, but adequate institutional arrangements for collaboration are often lacking. During the year WHO initiated a study, using the systems approach, on the administration of these national programmes, with a view to preparing guidelines on such problems as the coordination of programmes carried out simultaneously by health and other ministries and the methodologies for programme planning, evaluation and control.

6.133 The role of environmental health administrators and specialists in urban planning and development, and possible administrative mechanisms for collaboration between them, were discussed at an interregional symposium on new towns, convened jointly by the United Nations and the United Kingdom in London in June. The solution of the problems inherent in such collaborative efforts seems to lie in the team approach, regulated by specific legislation or agreements between the different departments.
7. STRENGTHENING OF HEALTH SERVICES

7.1 In May, the Executive Board presented to the Twenty-sixth World Health Assembly its organizational study on methods of promoting the development of basic health services.¹ This important study, which was endorsed by the Assembly in resolution WHA26.35, represents an assessment of the limited successes of many countries and of WHO in developing health services in the past, and constitutes a strengthened mandate for action by the Organization in the future.

7.2 Five main principles are emphasized in the study:

(a) while health may be considered an individual matter, the organization of health services must be largely collective and thought of in both local and national terms;

(b) health services must be regarded holistically, embracing public and private, national and international, curative and preventive, peripheral, intermediate and central services;

(c) indicators for describing the problem and evaluating performance ultimately rest upon health status, but indicators in terms of operational factors, the degree of use of an accepted technology, cost, and consumer approval are also needed;

(d) health services development projects or programmes should be judged by such criteria;

(e) no international model for health services exists and each country needs to have available the special skills required for planning, programming and management.

7.3 The Board emphasized that WHO has a major part to play in selectively encouraging and participating in national endeavours for health service development, by acting as a world health conscience, and by developing, adapting and making available different alternative approaches.

7.4 The future programme for the strengthening of health services will attempt to follow these approaches at all levels of the Organization. The strategy evolved in 1973, as approved by the World Health Assembly, will be followed in selected countries ready for intensive and continued health service development. In each of these, a country health programme will be prepared by the Ministry of Health, with the assistance of the Organization, in which the problems and objectives will be presented in a holistic and intersectoral way. For priority areas requiring major effort, countries will be encouraged to go through a project formulation step using systems analysis techniques, and WHO will assist in the implementation, management and evaluation of the resulting programmes. This process must be largely a national one, specific to each country, but it may prove difficult without a suitable planning and executive structure, including national staff of the appropriate disciplines, within the Ministry of Health. In suitable countries, therefore, health service development institutes that can respond to these needs will be supported. In parallel, alternative systems and innovations already being applied will be described and evaluated for the information of countries, and field studies of promising structures will be conducted.

7.5 As a first step towards meeting the Twenty-fifth World Health Assembly's recommendation in 1972 (resolution WHA25.17) that WHO circulate the results of research on the organization of community health services to countries for them to use as appropriate, measures were taken to establish a register of research projects, results, and techniques, and this information will be made generally available.

Health planning

7.6 In 1973, as the first task under its health planning programme, WHO undertook a multidisciplinary study to formulate a manual or set of procedures the steps necessary to prepare a country health programme. These procedures were intended to be suitable for use by a country in working out a UNDP country programme, extending its national health plan, planning WHO and other external assistance to its health system, and embarking on project formulation as mentioned earlier in this chapter. Such a manual was drafted, tried out in Bangladesh in collaboration with the Government, and then revised; it is expected to be applied progressively in the years to come.

7.7 In support of country health programming, the development continued of an intersectoral simulation model that could be used to assess demographic and other changes in countries and to experiment with different possible ways of allocating resources. Initially data from the Philippines and Turkey were used as examples, followed by material from Bangladesh. The model will be further developed following an evaluation of its usefulness in Bangladesh.

7.8 Most countries in the African Region possess national health plans, although these do not always form part of the national development plan. During the year WHO assisted a number of projects specifically concerned with health planning in addition to 19 basic health services development projects of which national health planning is a component. Steps were taken towards establishing an African Institute of Health Planning, which will combine training activities with operational research on methodology and evaluation.

7.9 The Colombian/WHO/PAHO project for research in comprehensive health planning continued in one province of Colombia with a team that is now predominantly Colombian. The initial steps were completed and a programme of specific studies was developed with the object of identifying the innovations needed. The first study, a retrospective evaluation of the Department of Health Services’ plan for 1966-72, was completed in October, and another study was begun of present performance variables in order to determine what parameters and measures should be included in an information system to be used in the planning and evaluation of maternal and child health services. An interim evaluation of the project by its sponsors in 1973 showed that satisfactory progress was being made.

7.10 In the Region of the Americas as a whole, efforts were concentrated on starting to implement the ten-year (1971-80) health plan for the Americas approved at the III Special Meeting of Ministers of Health of the Americas in October 1972. A guide was prepared by the Organization to help governments to incorporate the ten-year goals into their national health policies. A working group on evaluation met in Washington, D.C., to work out a method to assist in evaluating progress under national health plans and the ten-year plan for the Americas and in analysing countries’ strategies and efforts. The Pan American Centre for Health Planning, Santiago, continued its assistance to countries in training, research and development.

7.11 In the South-East Asia Region the Organization advised Sri Lanka and Thailand on health planning and helped Bangladesh and Indonesia each to establish a health planning unit. Assistance continued to the Public Health Faculty of Mahidol University and Ramathibodi Hospital, Bangkok, in the teaching of health planning for the Master of Public Health degree, and to the Asian Institute for Economic Development and Planning, Bangkok, in the conduct of its various courses. Advice was given to Indonesia on the drafting of its second five-year health plan, and to Nepal on health planning; and training in health planning was organized with WHO assistance in Burma and Thailand.

7.12 In the European Region, WHO assisted various authorities in the province of Tyrol, Austria, to initiate a feasibility study to examine regional models of the health planning process in European countries with different socioeconomic systems. Similar studies are being planned in respect of Schleswig-Holstein (Federal Republic of Germany) and Lithuania (USSR).

7.13 Most countries in the Eastern Mediterranean Region now have health sector plans as a part of their socioeconomic development plans. Some have acquired considerable experience of planning techniques; for example, Iran has launched its fifth five-year plan. Others wish to assess their past achievements and shortcomings, and in 1973 WHO assisted the Governments of Ethiopia and Tunisia in reviewing earlier plans and provided guidance for developing future plans.

7.14 In the Western Pacific Region, WHO is preparing a manual on health planning for developing countries that will be tested in countries with WHO-assisted planning projects after review by a consultant panel. Assistance was given in the drafting of a health plan for the demonstration province of Rizal, Philippines; the plan will be used as a model in the courses on health planning arranged each year in the Region.

Functioning of health services

7.15 Initial work was done on the adaptation of the project systems analysis methodology to the strengthening of health services. Some previous exercises using this technique have been directed to problems en-
7.16 Many countries are now paying closer attention to the amount they spend on health services and the value they get in return, and WHO is seeking to stimulate awareness of health economics. An interregional seminar was held in Geneva in July to promote a dialogue between health service administrators and economists interested in health. The participants, who came from all WHO Regions, discussed the various ways in which economists can contribute to resource allocation and management in health activities, with special reference to the financing of health services, and to the cost and consequences of action affecting those services.

7.17 In view of the many different health requirements of the community, it is clear that in most countries no single institution can assume full responsibility for financing comprehensive health care. This problem affects practically all the countries of the Region of the Americas, but it is particularly serious in countries where, though the economy is predominantly rural, there are large population centres that cannot contribute directly to the financing of their health services. While improvements in the administration of health services may help to reduce high costs through better utilization of resources, coordination of the various financial sources under a single health service system will avoid duplication and waste, and it is along these lines that the Organization is assisting governments of the Region.

7.18 In the European Region, projects are being proposed that will examine the cost-effectiveness of services and attempt to define the basic economics of the services, attention being focused on the changing patterns of preventive services, the role of social insurance agencies in the preventive services, and the place of preventive services in primary health care.

7.19 An example of WHO's role in coordinating the activities of both donors and recipients was seen in the African Region, where a project has been launched that is bringing together a number of bilateral aid agencies, with the Organization as coordinator, for the benefit of some 20 countries in West and Central Africa. The project is designed to demonstrate a progressive systematization of health services activities, from simple and discrete measures for the control of disease, such as specific immunization, to training for service and management at different levels, and the prototype development of comprehensive networks of economical basic health services appropriate to each country's local conditions.

7.20 While WHO's assistance to Member States is increasingly designed to fit specific country situations, there are many features of similar projects that are common to different countries. In the Eastern Mediterranean, with this in mind, the Organization has embarked on a review of all its basic health service projects within the Region that is expected to lead to more effective formulation, management and execution, and ultimately to greater impact, through improvement in the international effort.

7.21 In the Region of the Americas, projects are under way in Barbados, Colombia, Costa Rica, Ecuador, Honduras, Jamaica and Uruguay to improve the operation and regular functioning of the decentralized systems of health services, or to establish them along lines suited to regions of these countries. Special attention was paid in 1973 to the critical areas of management, information systems, programme budgeting, control of operations, staff administration and supplies, and training of management at all levels. Progress was made in applying the principle of service unit management to hospital supporting services, as well as general services. The principle distinguishes two types of administration: the first coordinating medical care and focused on direct care of the patient; and the second, centred on the administrative process, coordinating supporting services and the flow of information. The harmonious interlocking of both elements should result in higher quality and efficiency. During 1973 more than 60 unit managers were trained, in addition to the 66 trained during 1972. The service unit management concepts are being utilized in five large teaching hospitals in Brazil (Belo Horizonte), Chile (Santiago), Colombia (Bogotá), Peru (Callao) and Uruguay (Montevideo). Because the same basic principles of health care administration should apply equally to health services provided by social security institutions, the Organization is attempting to provide adequate training in health administration for senior executives of these institutions together with officials of health services branches of ministries of health.

7.22 Research continued on two projects—in Iran and Yugoslavia—deriving from the desire of health administrations to analyse their existing health delivery systems and to devise new strategies that could be implemented using existing resources. WHO has also been able to use these projects to test what
The main objectives of this part of WHO's programme are to identify and study different health systems; to propose better ways of organizing the delivery of health services in developing areas at minimal cost, so as to extend health service coverage, particularly in rural and remote areas; to mobilize potential resources for the improvement of health; to improve the utilization of existing services; and to improve the satisfaction with health care of both consumers and providers.

As a first step, a large-scale study on alternative approaches to meeting the basic health needs of populations in developing countries was initiated by WHO and UNICEF. The aim is to identify and describe workable health services systems or projects, and to assess their adaptability to different sites with minimum resources. In addition to a review of earlier reports and studies, over 130 members of WHO expert panels, as well as other experts on the subject, were canvassed in 1973, and on-site reviews of the application of selected approaches were made.

A list of essential health needs and ways of meeting them was drafted, emphasis being laid on needs as perceived by both consumer and provider. Among the key aspects taken into account were: costs; how services are provided (e.g., village health posts, mobile units, two-way-radio doctor service); and by whom care is provided (e.g., indigenous healers, traditional birth attendants, auxiliaries, midwives, nurses, sanitarians, medical assistants, general practitioners). The study is expected to influence policies related to health services development and will have a bearing on WHO's technical advisory role in assisting Member States to develop health services that are both accessible and acceptable to the whole population.

In the ten-year health plan for the Americas (see also paragraph 7.10), the main goals of the programme of services for the period 1971-80 were defined in relation to the strengthening of the health services of the countries of the Region. During 1973 most countries of the Region reviewed their national health policies, strategies and programmes in the light of the proposals, with a view to developing the health sector infrastructure considered essential to achieve the plan's goals.

In the Eastern Mediterranean Region WHO assisted the Office of the United Nations High Commissioner for Refugees in the relocation and rehabilitation of over one million refugees returning to their homes in Southern Sudan from neighbouring countries; the Organization's contribution included not only the procurement of all medical supplies and equipment (see paragraph 15.33) but also public health advisory services under which field projects were initiated for the training of health auxiliary personnel, the control of trypanosomiasis and improvement of water supply.

A number of countries of the Region have encountered difficulties in providing health care for their substantial nomadic populations. The special factors involved were discussed at a seminar on the health problems of nomads held in Shiraz, Iran, in April.

In the South-East Asia Region, further steps were taken towards implementing Bangladesh's policy
of developing rural health services under its first five-year plan. In Indonesia, a health centre reference manual with sections on 14 different aspects of health care was prepared for the use of auxiliary workers following a descriptive study of the present operation of health centres, review of the expected functions of health centre staffs, and testing in the field of an advance draft. This project was complemented by a further project to provide a manual and other instructional and reference material for operational use by peripheral staff in maternal and child health services; this is now being tested in the country.

7.32 Most countries of the European Region have shown their concern to develop health structures to meet particular needs, either in specific areas (urban, rural and regional), or among special risk groups (migrant workers, tourists, seafarers). WHO assisted Algeria, Morocco and Turkey in their efforts to develop an integrated system of basic health services. Emphasis was placed on the organization of specialized campaigns against a single disease (e.g., malaria and trachoma) within the general health services. In Algeria, in line with the objectives of the national four-year plan, special attention was given to preventive services, to the establishment of dispensaries and polyclinics, and to the training of health personnel at the National Institute of Public Health in Algiers. In Turkey, where the Government pursued its scheme to nationalize health services and to provide free medical care, with emphasis on the development of rural health services, WHO provided assistance to develop the utilization of health centres, hospitals and dispensaries and to create better conditions for the recruitment and training of public health staff.

7.33 In the African Region, a collaborative research study on community involvement in local health problems was started to help Ghana to involve local communities and villages in the financing and control of health services within the context of national health services. This is a prototype study which should suggest ways of achieving the same objectives in a wide range of countries with similar problems. Efforts to include community participation in the delivery of health services are also an important element of the basic programmes in the Region of the Americas, as the selection of this topic for discussion at the twenty-fifth session of the WHO Regional Committee for the Americas testified.

7.34 One reason for the dysfunction of many health services, even in countries with an apparent excess of health personnel and ample financial resources, is the almost complete lack of communication and interdependence between training institutes for health workers and the health services themselves. To tackle this problem, one promising experiment has been the Regional University Centre for Health Sciences, Negev University, Beer Sheba, Israel, which was designated in 1972 as a WHO Collaborating Institution for Integrated Health Service Training and Development. In this provincial area the training of all health personnel and the administration of health service delivery were combined under a single structure in 1973. WHO is following with interest the decisions being taken, their impact on the selection and training of doctors, nurses and other health workers, and their influence on the health service structure and the cost, effectiveness and acceptability of the health delivery system. The results are expected to be apparent only over the long term, but WHO is seeking further examples that could be used to put to the proof the feasibility of the approach.

7.35 The ways in which preventive action among entire populations in urban communities can be justified and introduced to influence risk factors in noncommunicable diseases continued to be examined in the collaborative study on the methodology of the prophylaxis of ischaemic heart disease taking place in Kaunas, USSR, and Rotterdam, Netherlands. This study, largely financed through the Voluntary Fund for Health Promotion by the Fannie E. Rippel Foundation, USA, and using a standardized protocol in two contrasting medical delivery systems, started in the field in 1972 and is expected to be completed in 1975. The baseline survey and the screening examinations in both Kaunas and Rotterdam were carried out in 1973.

7.36 "Organization, structure and functioning of health services and modern methods of administrative management" was the subject of the Technical Discussions held at the time of the Twenty-sixth World Health Assembly. It was concluded that problems of management of health services could not be viewed in isolation, but must be considered in the context of the social, political, cultural and economic conditions of a country. The change from traditional to modern methods of administrative management involves a number of material and nonmaterial costs, which should be thoroughly examined beforehand. Change meets resistance from vested interests and human conservatism, and so it must be introduced

---

2 World Health Organization (1973) Modern management methods and the organisation of health services, Geneva (Public Health Papers, No. 55).
gradually, the strategy followed being worked out within each cultural context. The development of an information system hand in hand with the necessary managerial skills and aptitudes is essential. The required changes in skills, attitudes and behaviour of health manpower should be initiated very early, at the stage of education and training.

7.37 The conclusions and recommendations of the Technical Discussions, as well as the background paper, were used at the Technical Discussions held during the twenty-sixth session of the Regional Committee for South-East Asia and at an interregional course on planning, administration and management of health services organized in Manila in October and November for senior health administrators. In response to the desire of a number of governments in the Eastern Mediterranean Region to strengthen management skills in their health ministries, a seminar on modern management approaches in health administration was held in Cairo in October.

7.38 In the field of medical care, a discussion group met in New Delhi in April to advise WHO on its programmes and plans in the South-East Asia Region for assistance in the strengthening and development of comprehensive health services, especially the medical care component, so as to formulate guidelines for the future. Twenty-three participants attended a seminar on functional programming of hospital facilities in relation to basic health services held in November in Bandung, Indonesia; two guides were prepared for use by hospital and nursing administrators, one on functional programming of hospital facilities, and the other on the development of hospital designs and facilities for nurses.

7.39 Following a WHO consultation on the planning, programming, design and architecture of hospitals and other medical care facilities in developing countries, guidelines on all phases of hospital construction are being devised. The guidelines are intended to be flexible enough to be applied in widely differing contexts, while being sufficiently explicit to constitute a working tool that could be utilized by countries at various levels of development in any Region and in different climates and social environments.

7.40 In the field of hospital utilization, the Latin American Centre for Medical Administration, in Argentina, continued carrying out programmes for research into and the teaching of modern techniques of systems analysis as a means both of gathering data on the present organization of hospital administration and medical care, and of gaining experience in the methodology of health services. In keeping with the trend to stress progressive care of the patient from hospital admission to discharge and the ambulatory stage, a seminar on ambulatory care was attended by 17 participants from six Latin American countries in Belo Horizonte, Brazil. The 20 participants from 11 Latin American countries who attended a seminar on medical care and hospital administration held in Ottawa discussed modern techniques such as the use of quantitative methods for the programming and evaluation of activities and the application of behavioural sciences to decision-making.

7.41 During the year, WHO reviewed the problems affecting the elderly and the aged in order to assess the infrastructure needed for prevention of disability and for medical care and rehabilitation, taking into account the support afforded by social and welfare services. It contributed a paper on the health aspects to a report on the question of the elderly and the aged submitted by the Secretary-General of the United Nations to the General Assembly at its twenty-eighth session in the autumn of 1973. In November, the first WHO Expert Committee on Planning and Organization of Geriatric Services was convened in recognition of the growth in the population over 65 years of age and the many health and social problems that this especially vulnerable group faces. Recommending that WHO should devote greater attention to geriatrics, the Committee called for the integration of social and health services for the elderly, the introduction of geriatrics into medical curricula, the training of specialized manpower, environmental and ergonomic studies to make the environment more congenial to the elderly, comparative studies of different geriatric systems, and the setting up of international reference centres for the collection and dissemination of information on the aged. The Committee drew the attention of developing countries to the demographic trends indicating that geriatric services should be included in their long-term plans even though the problem may seem to warrant only low priority at present.

7.42 In view of the importance of the problem of disability and rehabilitation, WHO organized an informal consultation on its role and programme in this field. Estimates of the current magnitude of disability in the world's population indicate that higher priority should be given to the prevention of disability. On the other hand, it is not clear what is the most effective strategy to develop the necessary capacity within local health services. The Organization is therefore designing and will participate in tests of different approaches in various countries.
with a threefold aim: to identify the most effective and least costly methods of reducing mental and physical disability; to develop those methods that are most accessible and acceptable to the population at which they are directed; and to encourage the integration of disability and rehabilitation services into the general health services. As part of a joint United Nations/ILO/WHO comparative study on the organization, administration and legislation of rehabilitation services for the disabled, WHO submitted to the United Nations a comprehensive report, prepared from replies to a questionnaire, on services in selected countries. The report is expected to be useful in defining WHO’s expanded role in this field.

7.43 In the Region of the Americas, more countries began introducing overall rehabilitation services into their public health programmes, and the trend towards the provision of services for problems other than those of purely locomotor disability continued. In the South-East Asia Region, assistance was given to Burma, India and Thailand for rehabilitation services, while a team visiting Indonesia in connexion with medical rehabilitation gave lectures and demonstrations at a rehabilitation centre in Solo.

Health service development institutes

7.44 One of WHO’s intermediate objectives in the strengthening of health services is to help selected countries to acquire the capability to plan, decide, allocate and manage their resources effectively. This will require not only planning and executive branches in the ministries of health, but also staff specializing in the appropriate disciplines, and methods that have been evolved and tested within the country. This type of support to the ministries may be provided by what have been called health service development institutes; these also function as secondary training grounds and innovators, although without policy-making or executive power. The first such institute was formed at the Institute of Public Health Research in Teheran, and another is being developed in Indonesia.

Health services information systems

7.45 A health information system is a mechanism for the collection, processing, analysis, and transmission of information required for organizing and operating health services, and for research and training. Its main function is to indicate, through continuous analysis of the health situation and the performance of the health services, what actions or adjustments are needed in order to meet specified objectives. In practice, such systems, where they exist, are often out of date and poorly organized, the reasons for action are not clearly stated, and the objectives are not precisely identified. Hence WHO considered that a fresh look was needed, and that health information systems need to be designed afresh. At a regional conference on health information systems held in June in Copenhagen, emphasis was placed on the need for a critical assessment of users’ needs and on ways of improving the quality of data input, and alternative ways of developing such information systems were discussed. Attention was drawn to the need for specific measures to obtain the collaboration of clinicians in health information work, the development of multi-entry, multipurpose data bases, the identification of the specific items to be handled and estimation of the length of storage of each item in a data base, and the further standardization of definitions and classifications of the items handled by the health information system.

7.46 In the Region of the Americas, assistance for the development of national information systems was initiated in 1972. In the four countries involved so far, the orientation of the health planning processes was modified in 1973, with emphasis on the redesign of national health systems and the improvement of evaluation and information systems. Progress was made in the coordination of planning and management information through the national units of planning, administration and statistics.

7.47 In October, WHO sponsored an informal consultation on the evaluation of health services research and development projects, in which specialists in health statistics and public health from Chile, India, the United Kingdom and the USA participated, together with WHO staff. The purpose was to enable personnel involved in planning and implementing such projects to exchange their positive and negative experiences in order to formulate and illustrate principles. The discussion was mainly focused on the general concepts of evaluation, in particular when considered as a component of project formulation.

Health laboratory services

7.48 Assistance in the strengthening of health laboratory services was embodied during the year in various projects in more than 30 developing countries in five WHO Regions. The development and improvement of rural laboratories, from provincial down to small peripheral laboratories, were given
considerable emphasis, particularly with a view to supporting basic health services. Similar importance was attached to vaccine production and control projects in 18 countries in the same Regions.

7.49 The Organization continued to give first priority to the training of laboratory staff at all levels; further details appear in Chapter 10. Courses in pedagogy were also organized, and a WHO booklet on pedagogy for training technicians is at present being evaluated. In addition to the various courses, fellowships were provided to train personnel in more specialized aspects of laboratory technology.

7.50 In the South-East Asia Region, Salmonella reference laboratories were assisted in Bangladesh, Burma and Sri Lanka and advice was given in establishing a streptococcal reference centre in India. Burma, Nepal and Thailand were assisted by WHO in the field of laboratory animal science, particularly in the development of breeding facilities at central level. Work was completed on a directory of medical and allied laboratories in the Western Pacific Region, as well as a new edition of a similar directory for the European Region.

7.51 In the Region of the Americas, the fifth meeting of the working group on health laboratories of Central America and Panama was held in Panama in July. Many central laboratories in various Regions, and particularly the Western Pacific, are now participating in the proficiency testing programme on syphilis serology run by WHO in collaboration with the Center for Disease Control in the USA.

7.52 An international conference on standardization of diagnostic materials, jointly sponsored by WHO and the Center for Disease Control, was held in Atlanta, Ga., USA, in June. The conference, which was attended by 154 participants and observers from 27 countries and represented the first really international conference on this subject, had a broad and ambitious programme of work. It was generally accepted that many problems require urgent action and that much could be gained by international cooperation, agreement on terminology, investigation of techniques, and evaluation of suitable preparations for standards and reference reagents as well as requirements for their control. The conference suggested that the main functions of WHO in this field should be to promote and coordinate research, to disseminate technical information, to promote international cooperation and the acceptance of agreed methodology, and to establish and make available international standards, reference preparations and reference reagents developed in the course of the programme. In response to the Twenty-fifth World Health Assembly's resolution WHA25.47, and in the light of the conference's recommendations, a report has been prepared on this subject for submission to the Twenty-seventh World Health Assembly in 1974.

7.53 A disturbing development facing some countries and Regions is the fall in the number of voluntary blood donors resulting from the commercialization of blood and plasma supplies. The League of Red Cross Societies and WHO are studying the possible health implications of the frequent plasmapheresis practised in various countries. Assistance in developing or improving blood transfusion services was given to Burundi, India, Indonesia, Lebanon, Saudi Arabia, Thailand and Yemen.

7.54 WHO, together with the UNESCO/International Cell Research Organization Panel for Applied Microbiology, sponsored an international symposium on the development of rapid methods and automation in microbiology organized by the International Organization for Biotechnology and Bioengineering in Stockholm in June. Whilst automation in serology and the development of rapid methods in this field have proved possible, as they have in clinical chemistry and haematology, automation of the detection and identification of microbes has proved considerably more difficult, and much research is required before such methods can be utilized in routine work.
8. HEALTH STATISTICS

Development of health statistical services

8.1 Close collaboration between health administrators, planners and statisticians is now generally recognized as essential for the development of an integrated health statistics system, which is basic to the planning of any country's health service. However, owing to the shortage of qualified personnel, inadequate statistical training of administrators and health workers, and lack of coordination, many countries still do not have health statistical services of a satisfactory standard.

8.2 WHO has continued, often in collaboration with the United Nations and other specialized agencies, to assist countries in planning and developing national health statistical services by assessing the needs for, and priorities in, data collection; providing advisory services; and promoting training (see Chapter 10).

8.3 More than 60 WHO-assisted projects for the development of national vital and health statistical services were in operation during 1973, covering mainly the establishment of hospital in-patient statistics, the strengthening of basic statistical services, and statistical support for projects for the development of epidemiological and health services. The latter is an area that is now receiving increasing attention, in view of the urgent need to provide information that combines timeliness with relevance.

8.4 WHO has been operating an information service since 1950 to help countries keep abreast of new developments in health statistics. Altogether, some 310 documents on international work in this field and on the activities of the various national committees on vital and health statistics have now been issued; in 1973 the emphasis was on health manpower statistics, assistance in the planning and operation of national health information systems, and cost/effectiveness studies; and a directory of health statistics training courses offered in WHO Member States was issued.

8.5 In the European Region, countries are gradually developing health information systems integrating the data required for the management of health services at the local level with those needed for medium- and long-term planning, evaluation and research. More emphasis is being given to the collection of information concerning the organization and staffing of health services, and to combining this with epidemiological data so as to provide a basis for more rational health planning. General problems connected with the planning and management of health information systems were reviewed at a conference held in Copenhagen in June, and two working groups met, one in November to consider the application of epidemiology to the planning and evaluation of health services, and one in December to discuss the role of geographical factors in the planning of health programmes.

8.6 In the Region of the Americas the regional advisory committee on medical care statistics drew up proposals for the programmes that would be needed for the present decade in the field of medical records and hospital statistics in order to reach the goals established by the III Special Meeting of Ministers of Health of the Americas. The regional advisory committee on health statistics, at its biennial meeting, gave priority attention to the related roles of health statistics, information systems, and health planning. In Argentina the computing centre, which is assisted by the Organization, continued its national and international training activities, and hospital statistics were the first data to be entered in the newly established bank for health data.

8.7 The South-East Asia Regional Committee's subcommittee on health in the service of Asian development, when it met in February, reviewed the current status of health information systems in the Region. It recognized the weaknesses in current systems of recording vital statistics, and noted the experience of some countries in operating a continuous system of sample studies to overcome these deficiencies.

8.8 Following a consultation held in March 1972,1 the Organization arranged for teams to visit nine countries in the African and Eastern Mediterranean Regions to study the structure of the health statistics information systems, evaluate their adequacy, and assess their impact upon the health services. Data on training facilities, particularly with regard to family health programmes, were also collected. The teams tested various methods of assessing the need for sta-

---

tistical information, and suggested ways of improving the health statistical services in the countries visited. Their findings were discussed at a consultation held in Geneva in March 1973, when suggestions were made on ways of improving communication between producers and users of health statistics, on means of assisting in overall evaluation and in planning responsive health statistical information systems, and on the development of models and of a manual describing different systems.

8.9 The Second International Conference of National Committees on Vital and Health Statistics, convened by WHO in Copenhagen in October, reviewed the committees' activities and functions and defined more clearly their future role and objectives. More than 150 statisticians, health administrators, planners, and research workers, as well as teachers of public health and health statistics, attended the conference. They considered the utilization of health statistics in certain specific fields, and discussed new approaches, particularly with regard to population dynamics, and the planning and evaluation of health services.

8.10 A consultation on cost/effectiveness studies of family planning programmes within the context of public health activities, held in Geneva in April, represented the first undertaking of WHO in this field. The methodological and statistical requirements for this kind of evaluation technique, and its application to any type of health programme, were discussed.

8.11 As part of the Organization's long-term programme for the promotion of coordination between public health planning, health statistics and training in these subjects, a travelling seminar was organized during October in the United Kingdom and the USA. Participants studied new teaching methods and curricula, and considered their suitability to meet the needs of health planners and administrators of family planning programmes, particularly in newly developed health services. The need for a multidisciplinary approach was also emphasized at a UNICEF/WHO meeting held in Geneva in November to discuss problems in the collection, processing, interpretation and use of information on the health status of schoolchildren. Stress was laid on the need for a minimal set of information, consisting of data on educational and socioeconomic aspects and on the school environment, as well as on health.

Collection and dissemination of statistical information

8.12 Electronic data processing was used to a still greater extent in 1973 for the preparation of the World Health Statistics Annual, containing data on morbidity, mortality, health services and manpower. Statistics on the following subjects of current interest and public health importance were published in various issues of the World Health Statistics Report: the availability of statistics on patients admitted to psychiatric services; diphtheria, 1961 to 1971; suicides, by means used; homicides; cirrhosis of the liver; streptococcal sore throat and scarlet fever; malignant neoplasms; and community water supply and sewage disposal.

8.13 An international system for the monitoring of congenital malformations was started by the Organization, and the first batch of data was received for processing.

8.14 Many of WHO's activities on the statistical aspects of population dynamics and family health were supported by UNFPA. Test data were received from the six countries participating in the comparative study on the influence of various socioeconomic and biological factors on perinatal mortality; study protocols were drawn up for a similar study on infant mortality in Chile, Egypt, Hong Kong, Mauritius, Poland, Romania, and Yugoslavia, and for a study on the influence of changing mortality on the life-cycle of the family, starting with marriage and ending with death of the spouses. Ad hoc surveys on fetal, infant and early childhood mortality and on fertility patterns were started during the year in Afghanistan, Algeria and Sierra Leone, and Sudan and Trinidad and Tobago have also agreed to participate in these surveys. In Sri Lanka the existing system of recording and reporting health statistics was examined; and advice was provided on the application of modern statistical and demographic techniques in the planning and evaluation of the health aspects of human reproduction, family planning and population dynamics.

8.15 The report on the inter-American investigation of mortality in childhood was published in both English and Spanish, and excerpts were reprinted for use in teaching institutions in the Region of the Americas. The areas collaborating in this study were provided with additional information for local use in planning measures for improving maternal and child care, nutritional status, and vital and health statistics, and for guidance regarding further research.

8.16 The Organization's work in the field of health manpower statistics may be illustrated by reference to a project in Indonesia, where field studies were carried

out in almost all the provinces. In this connexion, a pilot study was conducted covering one large municipality and four outlying provinces to determine a basic list of categories for the classification of health personnel.

8.17 Data obtained in a survey carried out as part of studies on health demography in the African Region were included in two documents \(^1\) issued during the year, one on medical and other health personnel, and the other on training establishments in the Region for these personnel.

**Health statistical methodology**

8.18 There has been a considerable increase in recent years in the demand for statistical support for WHO-assisted projects, in line with the development of epidemiological and statistical field studies, and the Organization has continued to give careful attention to the methodological aspects.

8.19 In the field of communicable diseases, the main statistical problems tackled concerned monitoring of disease incidence, the evaluation of disease control programmes by longitudinal or repeated surveys, the statistical design and evaluation of controlled trials of prophylactic and therapeutic procedures, and operations research involving mathematical models and computer simulation of disease dynamics. Mathematical models developed in previous years for malaria, acute bacterial diseases and leprosy were further elaborated, and new models were developed for onchocerciasis and yellow fever. Through computer simulations the validity of these models was examined in the light of the data actually obtained in the field, and the possible outcome of alternative strategies was studied. Further work was done on the mathematical model of mosquito vector dynamics, and the results of computer simulation were used for determining a strategy for the optimum release of sterile mosquitos for the genetic control of malaria vectors in India.

8.20 With regard to noncommunicable diseases, particular emphasis was placed on the measurement of the magnitude of the problems in the community, clarification of the natural history of diseases, analysis of a wide range of etiological factors, and evaluation of intervention measures. Considerable statistical assistance was provided for projects concerned with cardiovascular diseases; a melanoma register at the WHO International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Melanoma, in Milan, Italy; a connective tissue disease register at the WHO International Reference Centre for the Study of Connective Tissue Diseases, in Paris; a study of schizophrenia; and oral health surveys. The methods of multivariate analysis, including regression, discriminatory and cluster analyses, were particularly called for in handling the large number of variables involved in the pathology of chronic diseases.

8.21 Substantial statistical support was also provided for programmes concerning family health, health services and health manpower. These included an epidemiological study of human reproduction; anthropometric assessment in relation to nutritional status of children; a study on the regional organization of health services in Serbia, Yugoslavia; a health manpower study in Sri Lanka; a study of dental manpower systems in relation to oral health status; and a study of international migration of physicians and nurses.

8.22 Most of the above-mentioned projects involved the collaboration of investigators in different countries, and considerable attention was therefore paid to developing appropriate working protocols, including standard record forms, in order to ensure a satisfactory degree of uniformity in the procedures of data collection and evaluation. The centralized processing and analysis of the data obtained in these international studies were done by WHO, maximum use being made of the computer facilities available at the International Computing Centre in the WHO headquarters building.

8.23 With a view to developing a methodology suitable for the provision of adequate statistical support for research activities in general, the Organization carried out work on the development and application of relevant multivariate statistical techniques, mathematical modelling and computer simulation. In addition, a manual that had first been issued in 1961 to assist research workers in determining appropriate sample sizes was brought up to date and expanded.

8.24 The use of sampling techniques is often necessary to obtain information that supplements routinely available statistics or to obtain data specifically required for the planning and evaluation of particular health programmes. An interregional seminar was held in New Delhi in December to discuss the practical and theoretical problems encountered in the application of sample survey methods, especially in the collection of health data in developing countries.

---

\(^1\) Available on request from the WHO Regional Office for Africa, Brazzaville.
International Classification of Diseases

8.25 The considerable volume of proposals received from Member States and international professional bodies for the ninth revision of the International Classification of Diseases—ranging from isolated comments on single categories to fully worked-out proposals for whole sections or chapters—was reviewed in Geneva by a study group early in 1973. The present Classification in general classifies conditions according to their underlying cause, since this has been regarded as the more important aspect for public health. For example, tuberculous meningitis is classified to tuberculosis (in the infectious diseases chapter), and not to meningitis (among disorders of the nervous system). Many of the revision proposals indicated the need for a classification in which this procedure would be reversed and conditions classified according to the particular manifestation for which medical care was being provided. It was claimed that such a classification would be more appropriate for use by clinicians and more informative in medical care statistics and in the planning and evaluation of health services. While recognizing the validity of this approach, the study group was also concerned to preserve the continuity of medical statistics based on the underlying cause (for example, in mortality statistics), and therefore proposed alternative classifications for diagnostic statements containing elements of information about both etiology and clinical manifestation. They would appear in the Classification twice, under both the etiology and the manifestation. These alternative categories, for use in different statistical applications, should be differentiated typographically.

8.26 This proposal was endorsed at a meeting of the heads of the four WHO International Reference Centres for the Classification of Diseases, held in Paris in April. As a result of this and other recommendations made at these two meetings, the Organization was able to complete the first draft of the ninth revision soon after mid 1973, and the revision proposals were later circulated for comment to all Members and Associate Members either in English or in French. In addition, a Spanish language version was prepared.

8.27 The International Classification of Diseases was introduced for data on both mortality and morbidity in a number of countries in the African Region, where an immediate objective is the training of health statistics personnel in its use, and in the Region of the Americas, where courses for coders and physicians were held in several countries. A study carried out in six countries in the European Region on the medical certification of causes of death showed that the format of certificate recommended by WHO was adhered to in only two of these countries. The international comparability of data is therefore considerably impaired through national variations in coding practice.

8.28 The following activities concerned with maternal and child health were carried out with UNFPA support. A consultation was held in Geneva in March to study the methodology and application of lay reporting of perinatal and maternal morbidity and mortality data. The results of trials in India, Thailand, USA (Indian Health Service), and Yugoslavia were reviewed, and stress was laid on the need to develop methods that could be used in the collection and reporting of data, both by the medically trained and by those with no qualification in the health field.

8.29 The data collected by the countries participating in a project on the registration of pregnancies and their outcome were reviewed during a consultation held in Geneva in June, when modifications to the proposed certificate were suggested. It was felt that countries should be encouraged to establish a pregnancy register from before the twentieth week of gestation, ensuring a link with existing registration schemes, and that the work should be extended to perinatal morbidity and mortality.

8.30 Another consultation, held in Geneva in November, reviewed the results of field trials of alternative drafts of an international certificate of cause of perinatal death. It was concluded that a special form for stillbirths and deaths in the first week of life was desirable, and that there should be a separate notification of conditions in the fetus or child and of conditions in the mother.
9. FAMILY HEALTH

9.1 The Organization's programme in family health, grouping activities in maternal and child health, nutrition, health education and human reproduction, reflects the interaction of the many social, economic, biological and psychological factors affecting the health both of the members of the family, regarded as the basic social unit, and of the community of which the family forms a part. A consultation was held in Geneva in November to consider the role of family health and its relationship to the health of the individual and of the community. The various factors influencing family health—such as nutrition, control of infection, fertility regulation, cultural values, and mental health—were discussed, as well as present trends in family health care in different settings, and aspects of health education, training, evaluation and research.

9.2 Government commitments for the promotion of family health have increased, but the difficulties arising from changing technology and from the need to integrate an increasingly wide range of activities within the existing infrastructure underline the importance of improving the managerial capacities of departments of health and the need for systematic project formulation, training in management techniques, and operational research.

9.3 Maternal and child care, as the "outpost sentinel" of much of the health service, has acquired greater responsibilities with regard to surveillance. Closer association is therefore required with all specialized treatment and preventive services.

9.4 The rapid expansion of family health programmes has increased the need for systematic manpower planning and evaluation of training activities. A large proportion of WHO-assisted projects during 1973 were devoted to the preparation and in-service training of health personnel in a wide range of subjects related to family health (see Chapter 10). Stress was laid on the use of more responsive teaching methods and on the adaptation to local situations of materials for self-instruction designed according to new techniques.

9.5 Close coordination continued within the United Nations system, as well as with the large number of bilateral-aid agencies and nongovernmental organizations providing assistance in the field of family health. Joint activities in maternal and child health, nutrition and health education were continued and expanded with the cooperation of UNICEF, the World Food Programme, FAO, UNESCO, IAEA (regarding research on iron nutrition), and the International Children's Centre, as well as nongovernmental organizations such as the International Confederation of Midwives, the International Federation of Gynecology and Obstetrics, the International Paediatric Association, the International Union for Health Education, and the International Union of Nutritional Sciences.

9.6 As a means of strengthening the health component of population and family planning programmes, increased emphasis has been laid on interagency consultations, especially with the United Nations and its four regional economic commissions, with ILO, FAO, UNESCO and IBRD, with nongovernmental organizations such as the International Planned Parenthood Federation and the Population Council, and with sources of bilateral aid.

9.7 The Organization continued to play an active part in the preparations for World Population Year (1974), particularly with regard to the dissemination of information, and the World Population Conference, to be held in 1974. It compiled background material for use at the four plenary sessions of the conference and participated in three preparatory symposia organized by the United Nations.

9.8 Coordination with UNFPA was further strengthened during 1973, the fourth year of joint activities in family planning, human reproduction and population dynamics. Joint country missions established the basis for the development of comprehensive national programmes in family planning, taking into account the distribution of resources, particularly external funds. UNFPA continued to support a number of WHO-assisted projects at country, regional and interregional levels.

Maternal and child health

9.9 While governments continue their efforts to reduce maternal, perinatal, infant and child mortality,
there is a growing concern to lower morbidity, promote children’s growth and development, and improve family health in general. Fresh strategies for maternal and child health programmes are being established by some countries—for example, in the Region of the Americas, in the context of the ten-year plan drawn up in 1972 at the III Special Meeting of Ministers of Health of the Americas. The Organization has started to collect and assess information on the resources available to deal with the problems of maternal and child health, to examine recent changes in the strategy for the delivery of health care aimed at improving coverage, and to review various specific aspects of maternal and child health activities.

9.10 Three interrelated problems affecting the health of mothers and children—malnutrition, infection and reproductive problems—were emphasized once again in the report on the inter-American investigation of mortality in childhood.1 While nutritional deficiency stands out as the most serious single problem, the health risk to children increases considerably when malnutrition is accompanied by infection, malnutrition of mothers, low birth weight, and high numbers of offspring. The study further confirmed the importance of both prenatal care of mothers and perinatal care, and demonstrated that breast feeding, the educational level of mothers, and the availability of water in the home have a definite effect on the incidence of various diseases.

9.11 WHO support to maternal and child health activities—with regard to the provision of services, the training of personnel, and research—mainly falls into four linked areas: strengthening of maternal and child care, including family planning, within the general health services, with the aim of improving efficiency, population coverage and the quality of care provided during pregnancy, childbirth, infancy and childhood; assistance regarding specific needs related to family planning activities; growth and development of the child, including nutritional aspects; prevention of infectious diseases in the perinatal period and in childhood. It is only relatively recently that family planning has been generally accepted as an activity within the health services. Since 1970 the Organization has received requests from more than 50 countries or territories for assistance with family planning programmes being carried out as an integral part of maternal and child health services. Some projects are just being formulated, but others are at the stage of being extended from hospital centres to smaller.

9.12 In 26 countries in the African Region WHO-assisted maternal and child health services are being developed as an essential part of projects for the strengthening of basic health services. The maintenance phase of programmes for the control of communicable diseases such as tuberculosis, smallpox and yellow fever relies increasingly on the regular immunization of infants and preschool children through maternal and child health clinics and similar services. Examples of such projects are to be found in Ivory Coast, Kenya, Madagascar, Malawi, Mali, Niger, Rwanda, the United Republic of Tanzania, and Zambia. Increasing emphasis has been laid on maternal and child care in Dahomey, where there are now 10 maternal and child health clinics; in Gabon, where a considerable proportion of the effort to develop health services has been concentrated on services for children; and in Ivory Coast, where a maternal and child health centre has been established in the chief town of every department. Family planning has been integrated into maternal and child health services in 67 clinics and 18 health centres in Mauritius, and integrated programmes are also being planned or implemented in Botswana, Ghana, Kenya, Liberia, Nigeria and Swaziland. Assistance was provided to Cameroon and Gabon for study of problems of subfertility.

9.13 In the Region of the Americas the Organization provided assistance for the extension of maternal and child health services in two regions of Argentina, and in Uruguay it helped the Ministry of Health to develop a maternal and child health programme and cooperated in a survey of induced abortion and its effect on health. Advice on problems of obstetrics and the newborn was given to institutions in Brazil, Cuba, Ecuador, Mexico and Peru, and advisory services were also provided for a collaborative study that is being carried out in a number of countries in Latin America on the impact of early rupture of membranes upon delivery and the newborn. Increased emphasis has been laid on the integration of family planning into maternal and child health services; 13 countries are developing such programmes, and plans have been drawn up for large-scale UNFPA-assisted projects in 8 countries. In Colombia, the services provided by the national programme of maternal and child health and family welfare now cover 90% of the municipalities, family planning services have been incorporated into the 30 regional hospitals, and plans have been drawn up to expand.

activities in the rest of the country. In Guyana the regional hospitals' postnatal clinics are now offering family planning services, and manuals have been compiled outlining norms and procedures for maternal and child health services and the feeding of young children. In Costa Rica three more hospitals have begun to provide a joint family planning service for postpartum women, and an analysis of the results of the pilot project is serving, in regional seminars, to demonstrate the use of data systems. In Chile a UNFPA-assisted project for the strengthening of maternal and child health services, including family planning, has started in four health areas.

9.14 Of the 33 family health projects in the South-East Asia Region receiving support from WHO and UNFPA, 13 are specifically related to maternal and child health. Considerable assistance has been provided for the strengthening of the maternal and child health units of health directorates to meet the increasing demands of family health programmes—for example, in Bangladesh. In Burma a review of the maternal and child health services has revealed an urgent need for more facilities in health institutions for the training of health workers in maternal and child health for work in rural areas. In India there was a liberalization of the abortion laws in 1972, and to meet the new situation a programme of fellowships in abortion care is being established. Assistance has also been given in the formation of a task force in the Ministry of Health to develop plans for a broad programme in family health, to expand the maternity-centred family planning services (including abortion care) and to bring these within reach of the rural and semi-urban populations. Indonesia has received assistance for strengthening a postpartum programme at present operating in 26 hospitals and being expanded to an additional 36. Assistance was given to Sri Lanka for the preparation of a plan of action for an extensive four-year national family health programme to be financed by UNFPA, and to Thailand for four new UNFPA-supported projects for the improvement of various aspects of maternal and child health/family planning services.

9.15 The evaluation of maternal and child health services in certain countries in the European Region was discussed by a working group that met in Copenhagen in September. In many countries the adaptation of the services to a changing environment and the integration of curative and preventive activities constitute a major concern. Paediatricians and health administrators are giving increasing attention to the influence of society on the child, and health personnel are being orientated accordingly. In this field WHO is working in close contact with the Association of Paediatric Education in Europe and with the Association of European Paediatric Cardiologists.

Maternity-centred family planning programmes in Algeria and Turkey have been assisted by WHO.

9.16 In many countries in the Eastern Mediterranean Region maternal and child care has been largely integrated into the basic health services at the peripheral level. WHO is assisting Afghanistan, Democratic Yemen, Sudan and Yemen with plans for the development of integrated maternal and child health/family planning programmes. Large-scale maternity-centred family planning programmes assisted by UNICEF and WHO and funded by UNFPA are in operation in Egypt, Iran, Iraq, Pakistan and Tunisia. The projects in Iran and Pakistan were evaluated and recommendations made for improvements.

9.17 Eight countries and territories of the Western Pacific Region are receiving WHO assistance in developing maternal and child health/family planning care as part of the basic health services. In the Republic of Korea three hospitals are serving as demonstration and training centres for a programme of integrated services of this type, and in the Philippines such services are now provided in 25 hospitals. WHO/UNFPA-assisted courses in integrated maternal and child health family planning were continued at the Institute of Public Health of the University of the Philippines for the staff of these teaching hospitals and for tutors of nursing/midwifery schools. The British Solomon Islands Protectorate, Malaysia, and the Republic of Korea submitted requests for UNFPA support for maternal and child health/family planning programmes drawn up with WHO assistance.

9.18 To determine the best ways of providing health services in rural areas, with particular emphasis on the provision of maternal and child health/family planning services covering a large proportion of the population, WHO assisted in the development of operational research projects in Iran, Morocco, the Philippines (in collaboration with the Population Council), and Tunisia.

9.19 Recent advances in specific aspects of family planning were reviewed during the year. With regard to the management of abortion problems, a WHO-assisted fellowships programme for training personnel from three countries of the Eastern Mediterranean Region was evaluated, and support was given for a seminar in Iran. In the South-East Asia Region the technical and public health aspects of the application of surgical procedures in relation to fertility regulation (including surgical procedures such as medical termination of pregnancy, male and female sterilization, reversal of
sterilization and the problems of training in these procedures were discussed at a regional seminar in New Delhi in February; particular stress was laid on the problems of reconciling modern technology with practical requirements in the provision of basic health and family planning services to large populations, especially in rural areas. At another regional seminar, held in November in Bangkok, the discussions centred on the experience gained in national programmes in the use of intrauterine devices, the new devices now available, and the role of auxiliary health personnel.

9.20 Critical reviews of the scientific literature on the following subjects were prepared: the psychological aspects of induced abortion; the relative risks of sterilization alone and in combination with abortion; the mental health aspects of family planning (see paragraph 4.86); lactation and reproduction, and nutritional aspects of lactation.

9.21 In recent years stress has been laid on the need for a better understanding of various aspects of breast feeding. In collaboration with the International Children’s Centre, Paris, WHO has therefore initiated a project to carry out research in a number of countries on the frequency and duration of breast feeding, the quality and quantity of human milk, the interrelationship of lactation and reproduction, and the impact of breast feeding on the health of the mother and the growth and development of the child. A questionnaire has been prepared with a view to the collection of information on frequency and duration. It is hoped that the studies will yield results of practical value for the delivery of maternal and child care.

9.22 A model growth chart for monitoring the nutritional and health status of children was finalized during the year for testing by auxiliaries in various settings. The chart is of simple design, for international use in the maternal and child health programmes of local health services.

9.23 With the growing trend for mothers to work outside their homes, the day-care of preschool children assumes increasing importance, providing opportunities to promote optimum overall development of the child, improve regular health supervision, and carry out immunization and nutrition programmes. During 1973 WHO assisted a number of countries in the South-East Asia, Eastern Mediterranean and Western Pacific Regions in implementing programmes in this field. In anticipation of growing interest from the other Regions, a critical review of literature on day-care is being prepared.

9.24 As part of its activities to reduce child mortality and morbidity due to diarrhoeal diseases, the Organization provided assistance to Indonesia and Mongolia with regard to rehydration therapy programmes, and organized a course on the subject in Rangoon for medical officers and paediatricians in the South-East Asia Region. In addition, a document reviewing recent knowledge in this field is being prepared; it includes guidelines on methods of rehydration, for the use of the local health services and of parents.

9.25 The Organization continued to collaborate closely with the International Children’s Centre, participating in the semi-annual meetings of the Centre’s Technical Advisory Committee and in a seminar on health problems of migrant children, and assisting with the provision of training for UNICEF staff. Cooperation with the International Federation of Gynecology and Obstetrics included active participation in the Federation’s special committees on perinatal and maternal mortality.

Nutrition

9.26 The four nutritional deficiency diseases that, by their extent and social significance, cause the most serious public health problems in the developing countries are protein-calorie malnutrition, xerophthalmia, nutritional anaemias, and endemic goitre.

Protein-calorie malnutrition

9.27 Protein-calorie malnutrition, particularly in young children, remains the most important of nutritional problems, and WHO gives it the highest priority. In addition to its effects on the health and physical development of infants and young children, it may have adverse effects on mental development, which may impair the socioeconomic progress of those countries where it is prevalent.

9.28 The extent of malnutrition in young children all over the world is shown in Table 2, which summarizes the results of a WHO review of 95 nutritional surveys carried out in 59 developing countries during the period 1963-73 and covering the clinical examination of almost 250,000 children under 5 years of age.

9.29 The report of the inter-American investigation of mortality in childhood\(^1\) stressed that nutritional deficiency was the most serious health

problem uncovered in the investigation, as measured by its involvement in mortality. Immaturity at birth or nutritional deficiency was either the underlying or an associated cause of death of 57% of the children who died at less than 5 years of age.

9.30 With the support of the Organization, the Caribbean Food and Nutrition Institute, Jamaica, and the National Nutrition Institute, Mexico, have initiated a comprehensive study of the incidence and types of the two main forms of protein-calorie malnutrition—marasmus and kwashiorkor—in order to establish patterns and trends.

9.31 The WHO-sponsored anthropometric surveys begun in the Western Pacific Region in 1971 were extended in 1973 to countries in the Regions of the Americas and South-East Asia. A protocol was prepared for the tabulation and presentation of the data collected.

9.32 Breast feeding is considered to be one of the best means of preventing malnutrition in very young children in developing countries. Reference is made in paragraph 9.21 to WHO's participation in a collaborative study in this field.

9.33 The Protein Advisory Group of the United Nations System, during its twenty-first session, in New York in June, discussed the problem of mass nutrition education and the inclusion of nutrition considerations in national economic planning. It also reviewed the important problem of the world protein supply and the shifting dietary patterns observed recently as a consequence of the sharp increase in price of such commodities as cereals, oilseeds, and soya beans.

9.34 The Protein Advisory Group’s ad hoc working group on single-cell proteins met in Cambridge, Mass., USA, in June and considered a number of new products that are at present being developed in several countries of North America and Europe, and in Japan. After discussing the safety of some of these products for animal feeding, the working group decided to give high priority to the preparation of guidelines for the production of single-cell proteins for animal feed.

9.35 Interest in the production and marketing of weaning foods based on local resources has been increasing. About 1000 tons of Supramine were produced by a new plant in Egypt in 1973, and a similar plant is under construction in Iran.

9.36 The Organization and the Institute of Nutrition of Central America and Panama are assisting Haiti and the Dominican Republic in developing local vegetable mixtures for infants and other vulnerable groups.

9.37 In Zaire, the project to promote the use of soya as a weaning food, which was started in Kananga, has now been extended to Bukavu, Goma, Gemena, and Lubumbashi.

9.38 Toxic factors are sometimes an obstacle to the use of legumes in the manufacture of weaning foods. This is so with broad beans, which are widely consumed in the Mediterranean area and are responsible for outbreaks of favism, especially in young children. Research is at present being carried out in Egypt, Israel, Lebanon, the Netherlands and the United Kingdom to identify the factors responsible for the disease and ways and means of inactivating them. Preliminary results indicate that the toxic factor is probably concentrated in the skin of the bean and that it decreases with lapse of time from harvesting.

9.39 Studies by the Institute of Nutrition of Central America and Panama have demonstrated that highly nutritious varieties of maize (principally those containing the opaque-2 gene) can be used in traditional culinary preparations such as tortillas. Other studies made by the Institute on the fortification of grain products with synthetic amino acids or protein concentrates were completed during the year and have yielded a practical method of fortifying Incaparina with lysine.

Xerophthalmia

9.40 Xerophthalmia is still the main cause of blindness in young children in many developing countries. The Organization sponsored an epidemiological study on avitaminosis A in Cebu, Philippines, which includes the determination of the cost and effectiveness of various preventive methods, and initiated a project in north-east Brazil to evaluate the optimum dosage of vitamin A (administered together with vitamin E) in the prevention of xerophthalmic lesions. It is supporting a study begun by the Institute of Nutrition, Recife, Brazil, on the safety, rate of absorption, and efficacy of periodic administration of large oral doses of vitamin A and is assisting the University of Chile, Santiago, in a study of the feasibility and efficacy of fortifying sugar with vitamin A.

9.41 With the support of UNICEF and WHO, the Government of Bangladesh has made plans for carrying out a blindness survey (with special reference to xerophthalmia), implemented a comprehensive programme for the control of vitamin A deficiency among preschool children, and trained personnel from

Table 2. Protein-calorie malnutrition among young children: results, by area, of surveys in selected countries, 1963-1973

<table>
<thead>
<tr>
<th>Area</th>
<th>No. of countries</th>
<th>No. of surveys</th>
<th>No. of children examined</th>
<th>Severe forms</th>
<th>Moderate forms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Range (%)</td>
<td>Median (%)</td>
</tr>
<tr>
<td>African Region</td>
<td>16</td>
<td>28</td>
<td>23 143</td>
<td>0.5-39.4</td>
<td>3.1</td>
</tr>
<tr>
<td>Region of the Americas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caribbean</td>
<td>7</td>
<td>13</td>
<td>17 467</td>
<td>0.5-12.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Central America, Mexico and Panama</td>
<td>7</td>
<td>8</td>
<td>9 616</td>
<td>1.1-5.9</td>
<td>2.0</td>
</tr>
<tr>
<td>South America</td>
<td>6</td>
<td>9</td>
<td>140 481</td>
<td>0.2-6.3</td>
<td>1.3</td>
</tr>
<tr>
<td>South-East Asia Region (except India)</td>
<td>6</td>
<td>7</td>
<td>6 949</td>
<td>1.4-1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>India</td>
<td>1</td>
<td>5</td>
<td>31 730</td>
<td>1.1-20.0</td>
<td>2.2</td>
</tr>
<tr>
<td>Eastern Mediterranean Region and Algeria</td>
<td>10</td>
<td>18</td>
<td>14 863</td>
<td>0.3-10.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Western Pacific Region</td>
<td>6</td>
<td>7</td>
<td>5 554</td>
<td>1.9-6.2</td>
<td>3.5</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>95</td>
<td>249 803</td>
<td>0.2-39.4</td>
<td>2.5</td>
</tr>
</tbody>
</table>

the malaria control teams to administer vitamin A to children in oral doses of 200 000 international units every 6 months. By August, first doses had been given to more than 10 million children. Similar programmes are being arranged in Upper Volta, where WHO has acted in an advisory capacity, and in El Salvador, where the Organization is collaborating with the American Foundation for Overseas Blind.

Nutritional anaemias

9.42 WHO research on anaemias is mainly concerned with the study of iron absorption from plant and animal foodstuffs, the effects of iron supplements in pregnancy, and the development and assessment of methods for the fortification of food with iron.

9.43 The joint IAEA/WHO coordinated research programme on iron nutrition was reviewed at a coordination meeting in Vienna in March. The research projects on iron absorption and iron fortification were discussed, and plans were made for the continuation of the study.

9.44 A WHO meeting on nutritional anaemias, held in New Delhi in October, reviewed the progress of research on this subject in the South-East Asia Region and discussed the practical preventive measures that might be adopted.

9.45 In Thailand, where fish sauce is widely consumed and often replaces salt in the diet, WHO and the Swedish Medical Research Council are cooperating in a study of the effect of fortifying fish sauce with iron, using sodium edetate as a chelating agent. The preliminary results obtained after the first year show a lower prevalence of anaemia and a higher average haematocrit reading in the village where the fortified sauce was eaten than in control villages and than in the same village before the experiment began. Similar studies in Guatemala using fortified salt were started during the year by the Institute of Nutrition of Central America and Panama.

Trace elements

9.46 In April, a WHO Expert Committee on Trace Elements in Human Nutrition was convened in Geneva. At present 14 trace elements are believed to be essential for animal life, but others are likely to be added to the list as experimental techniques are further refined. The trace element content of food was reviewed by the Committee, taking into account recent developments in agriculture and the food industry. Minimum and maximum daily intakes were proposed for several elements, but the Committee stressed that maximum safe intakes and minimum requirements depend on the nature of the diet as a whole and on the environment. In particular, levels were proposed for essential trace elements in processed foods intended for infants and young children. Since changes in man's environment could have
important effects on his trace element intake, the Committee recommended that an international collaborative programme be designed to monitor the trace element content of foods.

Endemic goitre

9.47 In the Region of the Americas, the fourth meeting of the Organization's technical group on endemic goitre, which was held in São Paulo in October in cooperation with the Government of Brazil, carried out a complete review of the problems related to the prevention of endemic goitre. The meeting emphasized the value of iodization of salt as the most practical method of prevention but also suggested the possibility of using iodized oil in areas where the former method is not feasible and where endemic cretinism is prevalent. Assistance was provided to the Philippines for a study on methods of preventing endemic goitre and to Cameroon, Kenya, the United Republic of Tanzania, and Zambia for the planning of goitre control by the use of iodized salt.

Food and nutrition policies

9.48 In view of the need for adequate coordination among international organizations in the assistance given to governments on food and nutrition policies, an interagency consultative meeting in the Region of the Americas was held in Santiago in March, with the participation of ECLA, UNICEF, FAO, and WHO. Recommendations were made for a common approach in the formulation of food and nutrition policies for integration into national plans, although such policies will naturally vary in detail according to the political structure and the state of development of the countries concerned.

9.49 In cooperation with UNICEF and FAO, WHO provided assistance for the organization of intercountry seminars on food and nutrition policies in Lima in July, in Lusaka in August, and in Beirut in September. All three seminars stressed the responsibilities of health services in the early diagnosis, prevention, and treatment of nutritional diseases and pointed out the importance of the participation of health services in the planning and implementation of national food and nutrition programmes. In the Beirut seminar, the needs for training in nutrition in the Eastern Mediterranean Region were reviewed in the light of the policies and programmes envisaged by Member States.

9.50 The Institute of Nutrition of Central America and Panama and the Caribbean Food and Nutrition Institute, both of which are assisted by WHO, have similarly organized seminars during the year—in Barbados, Guyana, and the West Indies—on food and nutrition policies.

Applied nutrition programmes

9.51 In cooperation with FAO and UNICEF, WHO provided assistance to India, the Khmer Republic, Laos, Malaysia, Pakistan, the Philippines, the Republic of Viet-Nam, and Sudan in the development and strengthening of applied nutrition programmes.

9.52 WHO increased its participation in the applied nutrition programme in India and played a catalytic role in strengthening the nutrition component of the duties of basic health personnel. Nutrition activities will in future be considered as an integral part of the daily work of most health centres. One of the main objectives is to stimulate the interest of health personnel in nutrition work and particularly in nutrition education. The development of small village industries for packing nutritious food mixtures made out of local products has shown considerable promise.

9.53 In Haiti, WHO assisted in the preparation of a training programme for auxiliaries in nutrition, who will have the main responsibility for the development of nutrition activities within the nutrition and rural development programme sponsored by UNICEF, FAO, UNESCO, and WHO.

Nutrition activities in health services

9.54 In most WHO-assisted nutrition projects, the nutrition activities are carried out within the framework of the health services, but they may be centred on specific programmes, depending on the needs of the countries concerned and on local conditions. Examples of specific programmes assisted during the year are: the organization of a nutrition unit in the Ministry of Health, Singapore; the strengthening of dietary services in hospitals (Singapore, Yemen); the integration of nutrition activities in maternal and child health and basic health services (Burundi, Kenya, Republic of Viet-Nam, Singapore, Sudan); the development and supervision of feeding programmes (Singapore, Yemen); the creation or extension of nutrition rehabilitation centres in 15 countries; the organization of nutrition laboratories (Brazil, Madagascar, Pakistan, Sudan); and the carrying out of nutrition surveys (Burundi, Cameroon, Singapore).

9.55 Surveys on the nutritional status of young children were undertaken with WHO assistance in Cameroon, Singapore, and Zaire. Assistance was also provided for the processing and interpretation of data from a nutritional survey carried out by the National Food and Nutrition Commission, Zambia.
The Organization assisted Argentina, Brazil, Chile, and Peru in the preparation of surveys on nutritional status as a continuing activity of health services.

9.56 After consultations with ECAFE, WHO suggested the establishment of a food and nutrition monitoring unit in the Lower Mekong Basin to predict sharp changes in food supplies and to monitor trends in food, nutrition, and health status in order to enable appropriate preventive measures to be taken. This was accepted in principle, and the organization of this unit is now being undertaken by the Faculty of Tropical Medicine, University of Bangkok, with advice provided by WHO and other agencies.

9.57 In Africa, projects for the development of basic nutrition activities have been extended to Burundi, Cameroon, Congo, Dahomey, Gabon, Ivory Coast, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Zambia. Particular attention has been paid to nutritional surveillance (largely by the use of weight-for-age charts for young children in health centres), to nutrition education activities, and to nutrition training for health personnel in which the training is adapted to local conditions.

9.58 With the assistance of WHO, nutrition units were established or strengthened, and follow-up services for malnourished children were organized, in Laos, Singapore, and Zaire. In Sudan, nutrition units were created within the health services in eight provinces to facilitate the expansion of applied nutrition work.

9.59 In Yemen, school and hospital feeding programmes are continuously being improved through the development of kitchen facilities and the training of personnel. In Democratic Yemen and Iraq, new programmes for the training of dietitians and the improvement of hospital food services were initiated. In Afghanistan, assistance is being provided through the Institute of Public Health, Kabul, to train health workers in nutrition and to promote nutrition work at health centres.

9.60 The Joint FAO/WHO/OAU Regional Food and Nutrition Commission for Africa prepared summaries of the food and nutrition situation in 14 countries in the African Region, to be used as a basis for national food and nutrition policies, and gave advice on the nutritional aspects of the emergency assistance to the countries that were seriously affected by drought and famine during the year. Considerable national and international efforts were made to remedy the situation in collaboration with the Office of the United Nations Disaster Relief Coordinator, UNICEF, FAO and the World Food Programme. Guidelines were prepared on the most common nutritional disorders, nutritional surveillance, and the treatment of malnutrition. Recommendations for the future work of the Commission, made by a meeting of the sponsors in Brazzaville in June, were approved by the Regional Committee for Africa in September.

9.61 As a joint effort with USAID, support is being given for the reorganization of the National Institute of Nutrition in Ecuador and the organization of a new National Food and Nutrition Institute in Brazil.

9.62 WHO increased its assistance to supplementary feeding and nutrition education programmes in Latin America, and helped in the planning, implementation, and evaluation of health-related projects carried out by governments in cooperation with the World Food Programme (see paragraphs 13.28-13.80).

9.63 In collaboration with FAO and the International Union of Nutritional Sciences, the Organization prepared a glossary on food and nutrition terminology in English, French, and Spanish, the purpose of which is to provide definitions of selected terms that are frequently used in international nutrition programmes, particularly of those that can be misinterpreted and may have different meanings in different countries and in the three languages.

Health education

9.64 The planning of local and national health programmes must include provision for the active and continuing involvement of the community if the health needs of the people are to be understood and satisfactorily met. This emerges clearly from the examination of its health education programme that the Organization conducted during the year in preparation for the Executive Board’s review of the programme in January 1974.

9.65 However, an understanding of the traditions, structure and communication channels of a community is indispensable for the development of a realistic strategy to involve people in individual and community efforts. The Organization is therefore assisting a number of research projects in this field, among which the following may be cited as examples. In India, the Central Health Education Bureau, New Delhi, made a study of factors determining the adoption of modern health and family planning
practices in a rural community, and the Department of Community Health of Jawaharlal Nehru University investigated the users’ assessment of the impact of the activities of primary health centres on community health practice, including family planning, in rural areas of 10 states. The findings should indicate the nature and scope of health education that may be carried out in rural India, where there are over 5000 primary health centres providing health services, including health education, for a sizable proportion of the population. In Sri Lanka an inventory is being made of all reports on research on behavioural and related sciences that include health aspects, so as to provide a basis for planning the educational component of health programmes, particularly family planning projects. A regional training course on social science research methodology applied to family health education was held in Bangkok in November, for participants from health education and family health units of ministries in the South-East Asia Region. The School of Public Health of Seoul National University, Republic of Korea, is making a study of behavioural problems with regard to the adoption of family planning, with a view to devising appropriate educational methods for the community. The Faculty of Medicine of the University of Ibadan, Nigeria, is conducting a study to determine the educational and other factors that influence the regular utilization and proper maintenance of the comfort stations (combining laundering, bathing and toilet facilities) that were constructed as part of a UNDP/WHO-assisted wastes disposal and drainage project.

9.66 Attention was given during the year to the development of teaching materials and to ensuring adequate coordination with communications services. A guide on the preparation and pretesting of health education material was distributed to countries in the African Region to assist staff in using simple procedures before large-scale production of printed material is undertaken. In the Western Pacific Region an advisory team assisted Malaysia, the Philippines and the Republic of Viet-Nam with the development of educational materials on family health, and an inter-country workshop on the subject was held in Tonga.

9.67 The existence in each country of a national health education service is of vital importance for the encouragement of consumer participation in health affairs on a voluntary and continuous basis. High priority was given to health education in the planning and development of health services in the African Region, and the Governments of Botswana, Congo, Gabon, Madagascar, Mauritania, Niger and the United Republic of Tanzania have included the development and strengthening of health education services among their national priorities. WHO assisted the national health authorities of Congo, Dahomey, Gabon, Mali, Sierra Leone, Upper Volta and Zaire in reviewing their needs and resources regarding health education, and in preparing short- and long-term plans. In Ghana the health education services were strengthened at the central and regional levels and health workers were trained in health education techniques. A number of campaigns were organized to educate the public on a variety of health topics, in close collaboration with the radio, television and the press, and several manuals and other educational material were prepared. Recommendations were made for the development of health education in schools. In Nigeria, where health education services have been established with WHO assistance in 10 of the 12 states, two training courses in health education were held for the staff of state health services, and a second national seminar was held on the effective planning and organization of health education services. In Uganda emphasis was laid on health education in a project for the development of basic health services, and a comprehensive plan was prepared to develop health education both of the general public and in schools.

9.68 Emphasis was also laid on health education in the Organization’s work in the Region of the Americas, in accordance with the ten-year health plan for the Americas, approved at the III Special Meeting of Ministers of Health of the Americas in October 1972, which stresses the importance of community participation. The results of a survey on health education in 12 Caribbean countries and territories were discussed at a workshop held in Kingston in November, when guidelines were formulated for a long-term plan for the development of health education services in the Caribbean area. Assistance was provided to El Salvador for the organization of a Health Education Division and for planning the educational aspects of programmes on communicable diseases, environmental health, medical care and school health. Other countries that received assistance for the development of their health education services included Brazil, Guyana, Haiti, Nicaragua, Trinidad and Tobago, Uruguay, and Venezuela.

9.69 In the South-East Asia Region, Bangladesh, India, Indonesia, Nepal, Sri Lanka and Thailand have drawn up health education programmes as part of their long-term health plans. WHO assisted Sri

---

Lanka with the reorganization of the Health Education Bureau, in-service training, and the coordination of health education activities with the Family Health Bureau.

9.70 With regard to maternal and child health, the Organization continued to assist a study in Ethiopia on the impact on neonatal mortality of training local midwives in health education, and a study in Jamaica on the use of health education for the promotion of child health in the hospital and community setting. In Barbados several educational activities were carried out in order to promote a better use of the services provided by the district maternity hospitals and thus relieve the burden on the central obstetric services. In the South-East Asia Region an inter-country workshop on the role of social, cultural and educational factors in the planning of infant health care was held in Kathmandu in September-October. Health education aspects were stressed in a number of activities related to family planning, particularly in the work of task forces concerned with human reproduction (see paragraph 9.87), and the Organization continued to provide health education specialists to assist family planning programmes in a number of countries.

9.71 Much of the Organization's work on health education was concerned with school-age children and youth, close collaboration being maintained with UNICEF and UNESCO. In Nigeria, for example, assistance was given in the preparation of curricula and teaching materials in health education for primary and secondary schools and teacher training institutes. In the Region of the Americas, the School of Public Health of the University of São Paulo, Brazil, continued a study on the impact of health education of school-age children on the behaviour patterns of their parents with regard to health. In Ecuador, a national survey of attitudes and practices of school-age children and youth served as a basis for planning the health aspects of educational curricula, and training courses on health education and family life education for schoolteachers were held in Guayaquil and Quito. El Salvador and Venezuela continued to receive assistance with regard to the inclusion of health education in the general educational system. Pilot projects on family life education for school-age children and youth were started in Trinidad and Tobago, and in St Kitts, West Indies; the subject also received considerable attention in Dominica and Nevis. Guidelines for the development of health education for school-age children and youth in Latin America were drawn up at an intercountry consultation held in Caracas in September. A project in Maharashtra State, India, for the development of health education—including family life education—as a part of the overall school health services includes a large training element.

9.72 At a seminar held in Tonga in October senior health workers, health education specialists and school health personnel from countries and territories of the South Pacific area discussed ways of helping children and youth to understand the importance of the physical, mental and social health of the family, and considered the role of each member of the family in that respect. A study on the attitude of biology teachers regarding family planning is being made by the School of Public Health of Teheran University to help in preparing teachers to assume their role in guiding adolescent students in matters regarding family health.

9.73 Increased attention is being given to health education in the field of environmental health and to the role of individuals and communities in improving the hygienic quality of the environment; WHO has therefore prepared a guide to help sanitary engineers and sanitary inspectors to include health education in environmental health programmes. It is interesting to note that health education is now being specifically included in plans of operation for environmental health projects; the UNICEF/WHO-assisted project in Bangladesh for the reconstruction of water supplies may be cited as an example. Training in health education is being given to environmental health workers—for example, in Sri Lanka, as part of a project for village water supplies.

9.74 The Organization continued to assist countries in developing the health education component of projects for the control or prevention of communicable and noncommunicable diseases—in El Salvador, for instance, health education activities carried out as part of a mass vaccination campaign against various communicable diseases helped the campaign to surpass the target set; another example is the smallpox eradication project in Ethiopia. Community participation will also play an important part in the seven-country onchocerciasis control programme in the Volta River basin (see paragraph 2.42), and work began during the year on the development of health education aspects of this project. With regard to cardiovascular diseases, the value of health education for prevention has been emphasized in the programmes in North Karelia (Finland) (see paragraph 4.10), and in Kaunas (USSR) and Rotterdam (Netherlands) (see paragraph 7.35). Its importance was also stressed by a working group that met in Innsbruck to consider preventive measures against ischaemic heart disease,
and at a meeting convened by WHO to draw up guidelines for an international cooperative effort for the control of cardiovascular diseases (see paragraph 4.11).

**Human reproduction**

9.75 In view of the increasing social concern with family planning there is sometimes unrealistic pressure for quick returns and clear-cut results from family planning programmes. However, this is a new and highly complex field in which social, economic, biological and psychological factors interreact, giving rise to innumerable problems, due both to the frequent lack of a suitable service infrastructure and to the very newness and difficulty of the work. The Organization's research programme in human reproduction, described in the following paragraphs, is aimed at contributing to the solution of these problems.

9.76 The use of such methods of fertility regulation as hormonal contraceptives or intrauterine devices presents an unique set of problems for research. Unlike therapeutic agents, they are directed to interference with normal body processes. They may be used over long periods of time, and a rapid and complete cessation of their action is often demanded of them. Moreover, they are likely to be continuously employed by a considerably larger number of people than is any therapeutic agent, and frequently with little or no medical supervision.

9.77 At the operational level, many obstacles, in addition to those caused by the scarcity of staff or facilities, have first to be identified and then obviated; both these processes often need much research. For the introduction of the different methods of fertility regulation in different cultural settings it is necessary to determine the appropriate approaches to the population in terms of information, frequency of contact, logistics of supply, and provision of follow-up.

9.78 Family planning is only one of the many aspects of human reproduction in which research is required, although it is the greatest in terms of the number of people concerned. Among the others, those to which the Organization accords priority include sterility, pregnancy, fetal development, and the postpartum and neonatal periods.

9.79 The forms vary in which WHO assistance is given: it may consist in setting up and funding task forces for collaborative research on well-defined issues; in supporting a specific project (principally by paying the salaries and purchasing equipment) or a whole programme of research; or in building up a new research institution or strengthening an existing one. The development of expertise in research in human reproduction is being carried out increasingly as an integral part of WHO support to national family planning programmes, and is complemented by a parallel programme of assistance in research administration, including the defining of priorities, and in the organization and evaluation of research programmes.

**Presently available methods of fertility regulation**

9.80 The now commonly used methods of fertility regulation, such as hormonal contraceptives and intrauterine devices (IUDs), have almost all been developed in North America and Europe, and their side-effects have been studied primarily in developed countries. Those who must provide family planning services in the developing countries, however, ask whether these methods may not cause different or more severe side-effects in the presence of severe malnutrition or endemic disease. For example, where schistosomiasis is prevalent and impairs liver function, is there any contraindication to hormonal contraceptives, since the liver plays an important role in their metabolism? Similarly, the prevalence of anaemia in many developing countries gives rise to concern about its possible exacerbation as a result of the increased bleeding at times associated with the use of IUDs. Another fundamental issue is whether the dosages of contraceptive steroids, basically developed for Western women, are physiologically appropriate for women differing markedly in body size, diet, working habits, and genetic constitution. In Egypt, India, Iran and Thailand, therefore, the Organization has initiated studies on side-effects and dosages in developing countries.

9.81 Preliminary analysis of the data collected by the WHO research team at the Chulalongkorn Hospital, Bangkok, on the effects of metabolic and hepatic functions of injectable contraceptives and of several oral preparations suggests that the risk of liver damage from hormonal contraceptives is not higher in Thai women, among whom there is a relatively high frequency of infectious liver disease, than in women in whom these conditions are rare. In a study of three different IUDs among 2500 women in a rural area, 3-month and 6-month follow-ups have been conducted to ascertain continuation rates, efficacy and side-effects; the follow-ups will be repeated at 12 and 18 months. The effects of norgestrol, an orally administered hormonal contraceptive, on lactation, liver function and carbohydrate metabolism are also being studied.

---

9.82 This research team's purpose is threefold: to conduct research, to build up local expertise so that research may continue after the team ceases its activities, and to provide research training for countries in the South-East Asia and Western Pacific Regions. In that connexion, it organized three training courses in 1973—on the methodology of clinical trials with fertility-regulating agents (for participants from India, the Philippines, the Republic of Korea, Singapore, and Thailand); on recent advances in reproductive endocrinology and family planning (for Thai participants); and on laboratory techniques, with emphasis on quality control in clinical chemistry, and the maintenance of electronic equipment used for radioimmunoassays (also for Thai participants).

9.83 A considerable body of data on the effects of injectable contraceptives has been accumulated by the McCormick Hospital in Chiang-Mai, Thailand, and made available to WHO. In collaboration with the London School of Hygiene and Tropical Medicine, the Organization is now analysing this information, which concerns 8500 women, with respect to blood pressure and weight changes during the administration of depot medroxyprogesterone acetate, and to accidental pregnancy and pregnancy outcome, continuation rates, and return of fertility after discontinuation of use.

9.84 The question has been raised whether the use of hormonal steroids is likely to increase the risk, for the "pill-user", of later having a live-born child with chromosomal abnormalities. Preliminary results that became available during the year from carefully designed studies, including some supported by WHO at the University of Geneva, do not suggest a greater risk.

9.85 Almost annually for the past ten years, WHO has convened groups of experts to evaluate progress on different methods of fertility control. This assessment, so far as effectiveness and side-effects are concerned, has necessarily been based on carefully conducted clinical trials on subjects attending hospital services and clinics. Such analyses have proved of great value to investigators concerned with the research and development of new methods and to physicians, but of limited use for wider-scale family planning programmes, since they could not include the numerous factors that influence the extent to which any one type of birth-control method is accepted by different population groups, is used effectively, and is associated with different side-effects. Among these factors are the social, cultural and economic milieu; the general prevailing mortality and morbidity; the level and pattern of the health services; and the availability of alternative methods of fertility regulation. In October, a scientific group was therefore convened which addressed itself to the research issues that arise in attempting to compare the relative value, risk and acceptability of different methods in the same population or the same method in different populations. The group made recommendations as to those lines of research that could most usefully be pursued in the WHO programme.

Research and development of new methods of fertility regulation

9.86 Every advance in contraceptive technology has extended the possibility of family planning to some additional groups in the population but has still failed to meet the personal requirements of others. The development of new, safe, acceptable, and effective methods for fertility regulation is the aim of WHO's Expanded Programme of Research, Development and Research Training in Human Reproduction. It is funded by voluntary contributions to the Special Account for Medical Research, which rose from US $4.4 million for the first year of operation of the programme to $6.2 million in 1973, the second year. The donors—the Canadian International Development Agency, the Danish International Development Agency, the Norwegian Agency for International Development, the Swedish International Development Authority, and the Ford Foundation—together with eleven other interested agencies, met in Geneva in November to review the progress of the programme and to discuss plans for the future.

9.87 Much of the collaborative research in the Expanded Programme is done through task forces; a detailed description of how these operate and of the priority issues on which they are concentrating was recently published.1 Numerous meetings were held during the year of the several task forces which were conducting 192 research and development projects on methods or agents for:

- regulation of ovum transport, by blocking the oviduct, by modifying ovum transport so as to prevent implantation, or by preventing ovum development through modification of oviduct secretions.
- regulation of sperm migration and survival in the female, through new types of vaginal or cervical devices, that can be retained for a long time and that will physically or chemically interfere with the transport and survival of sperm in the female reproductive tract.
- regulation of implantation, by an intrauterine delivery system for drugs that has maximum anti-

fertility effect, minimum side-effects and does not inhibit ovulation. The same system is being explored as a means of introducing into the uterus therapeutic substances to prevent the most common side-effects of IUDs (bleeding, pain and expulsion).

— regulation of fertility by injectable contraceptives, by injection of compounds at intervals of three or more months. This method may prove to be of considerable interest where health services are limited. The only injectable contraceptive available, however, has serious disadvantages and the development of new compounds is sought.

— immunological regulation of fertility, by blocking the action of physiological substances essential to various reproductive processes. This is a programme presenting many more uncertainties than those described above; nevertheless, it has been considered worth pursuing, with a strategy allowing for many “cut-off” points, as a vaccine would represent a very great advance in contraception.

— regulation of male fertility, by destroying the fertilizing capacity of sperm through interference with their maturation and survival in the epididymis.

— safe termination of pregnancy, by using prosta-glandins and their analogues for the interruption of pregnancy between the first and fifth months.

— assessment of techniques for pregnancy termina-
tion, from the point of view of immediate complications and long-term sequelae of currently used methods, such as subsequent infertility, premature delivery or fetal wastage.

— acceptability of fertility-regulating methods, by investigating the attributes of methods that affect their acceptance in various sociocultural conditions.

9.88 Meetings were also held of two other task forces concerned with:

— ovulation detection, to develop a simple and accurate method by which a woman could detect her time of ovulation and thus improve the reliability of the “rhythm” method of fertility regulation.

— pharmacological models to assess the toxicity and side-effects of fertility-regulating agents. To explore the possibility of developing better pharmacological models 60 representatives from national drug regulatory agencies, pharmaceutical manufacturers, and leading medical scientists in the field of human reproduction were brought together in September in Geneva. Difficulties are caused by lack of agreement on animal models and by species differences in the reproductive process. The meeting identified problems for research to increase under-standing of the comparative and human pharmacology of fertility-regulating agents.²

9.89 The four WHO Research and Training Centres in Human Reproduction—in Buenos Aires (acting as the central office for institutions in the “Three-Nations Programme”), Moscow, New Delhi and Stock-holm—expanded their multidisciplinary research in fertility regulation and increased their collaboration with the task forces.

9.90 The network of WHO clinical research centres provides a ready facility to test, with standardized protocols, new methods emerging from the collaborative research described above or methods from other sources. Three new centres were designated in 1973, bringing the total to 17 in all WHO Regions.

9.91 There is a considerable reservoir of scientific expertise in industry and a variety of promising compounds and agents that may lead to improved methods of fertility control. Collaborative research and development projects, based on appropriate letters of agreement to safeguard the public interest, were initiated with 12 companies.

9.92 Another aim of the Expanded Programme is to promote training; in addition to the training afforded by the WHO Research and Training Centres, 26 research training grants were awarded. To further the exchange of knowledge, support was given to four symposia—on control processes in reproduction (Manchester, United Kingdom), chromosomal errors in relation to reproductive failure (Paris), the transport, survival and fertilizing ability of spermatozoa (Tours, France), and physiological and genetic aspects of reproduction (Bahia, Brazil). The proceedings of an earlier WHO colloquium were published.³

9.93 In the “small contracts” programme, initiated in 1972 to support the research of scientists who have returned to their own countries following research training abroad, or to facilitate preliminary research, 38 contracts were awarded to scientists in Argentina, Australia, Brazil, Colombia, the Federal Republic of Germany, the Republic of Korea, Sweden, Switzerland, Thailand, the United Kingdom, and the USA.

9.94 Essential supplies (reagents, labelled compounds, small equipment and spare parts) were furnished to investigators experiencing difficulty in ob-

---


taining them and conducting research projects relevant
to the regulation of human fertility. The Organization
met 78 requests for such assistance from scientists in
24 countries in all Regions.

Developing national research competence

9.95 The Expanded Programme is concerned with
the rapid development of new methods of fertility
regulation and primarily supports established scientists
at existing institutions; other components of the
overall WHO programme in human reproduction
focus on building up research institutions in the
context of national family planning programmes and
developing epidemiological and operations research
in human reproduction and family planning. This
work is largely supported by UNFPA funds. It aims
at providing a research base for the study of a large
number of questions that may arise in respect of local
populations—for instance, in relation to possible
interactions between contraceptive agents and endemic
disease and deficiency states.

9.96 Support for institutions in Egypt, Iran and
Pakistan continued. In Egypt, for instance, 15 new
research projects in eight institutions were supported,
and a collaborative study was started on the interaction
between oral contraceptives and certain clinical mani-
festations of schistosomiasis. In Iran four research
groups received support, and hormone laboratory
facilities required for studies on the endocrinological
effects of methods of fertility control were established
at the WHO-assisted Institute for Research on Human
Reproduction in Teheran and at the universities in
Isfahan and Shiraz. An interregional seminar on
advances in the physiological, clinical and public
health aspects of human reproduction, organized at
the same Institute in November, was attended by
participants from the South-East Asia, European and
Eastern Mediterranean Regions. Emphasis was placed
on endocrinological and metabolic assessments of side-
effects related to existing and new contraceptive
methods. In Turkey and Pakistan hormone labora-
tories are being set up with WHO support (in Ankara
and Karachi respectively), and in the latter country
assistance was also given for the design and monitoring
of a number of clinical and epidemiological projects
in the family planning programme. The Indian Council
for Medical Research received support for its Contra-
ceptive Testing Unit, which comprises several clinical
centres.

9.97 In many instances, the rapid development of
research in human reproduction and family planning
has outstripped the formulation of an overall research
strategy and the development of the organizational
structures needed to put that strategy into effect. A
workshop was held in Geneva in October, in which
scientists and administrators responsible for scientific
policy from Argentina, Canada, India, Pakistan, Thailand,
Turkey and the USA took part, to identify
the issues involved in formulating and carrying out
biomedical research policies in human reproduction
and family planning, particularly in developing coun-
tries, and to consider the major principles and tasks
in the administration of such research.

9.98 To meet, at least in part, the needs of African
countries for research training in reproductive bio-
medicine, a three-year postgraduate training pro-
gramme for English-speaking physicians and biologists
has been set up at the University of Ibadan, Nigeria.
The programme (in which the WHO Clinical Research
Centre in Human Reproduction, Ibadan, participates)
provides for laboratory, clinical and epidemiological
work in various aspects of reproduction research.

Service research in family planning

9.99 Operational research into the best methods of
dispensing family planning care within the health
services was the subject considered by a scientific group
in November. The group made recommendations as
to which types of family planning activities could be
combined with other health activities both for the
greater advantage of the recipient and for the greater
convenience of the services concerned.

9.100 A study of the role of the family in acceptance
of family planning programmes in health services has
begun in Turkey in collaboration with the Institute of
Community Medicine, Ankara. It aims to identify the
factors contributing to underutilization of family
planning services that have been integrated with other
health services, and it includes a controlled trial
of motivation to family planning through the hus-
band and other family members; most educational
programmes so far have been directed mainly to the
wife.

9.101 In addition to the research mentioned in para-
graph 9.87 on the immediate complications and long-
term sequelae of various methods of pregnancy
termination, investigations are being initiated on the
psychosocial aspects of abortion. A consultation was
held in Prague in August to prepare the protocol for
a study to identify needs that services may be failing
to provide, including referral mechanisms and pre-
and post-abortion counselling.
9. FAMILY HEALTH

Other epidemiological studies in human reproduction and family planning

9.102 In the collaborative studies, started in 1970, on the effects on family health of different patterns of, and factors affecting, family formation (e.g., family size, spacing of children, age at pregnancy) analysis has been completed of the data from the collaborating centres in India, Iran, Lebanon, the Philippines and Turkey. The analysis is being made at the International Computing Centre, Geneva, and the WHO International Reference Centre on Epidemiological Studies in Human Reproduction, Chapel Hill, N.C., USA, which is also assisting in coordinating the studies. The data are considerable since they include physical, social and psychological information on about 5000 women and several thousand children in each collaborating centre. The other centres are in Colombia, Egypt, Pakistan and the Syrian Arab Republic.

Other aspects of research in human reproduction

9.103 A consultation was held in August to assist the Organization in developing a research strategy on the public health aspects of sterility and infertility. A review was then made of demographic and epidemiological data from certain countries or territories in sub-Saharan Africa, the Caribbean and the South Pacific on the prevalence, distribution, etiology, and social and personal implications of these conditions. This review served as the basis of discussion in December when a group of collaborators met to plan a series of research projects to define the gaps in knowledge and seek possible approaches to resolution of the problem, particularly in areas with limited resources.

9.104 Fetal immaturity contributes very significantly to perinatal morbidity and mortality, but scientific study of the problem is hampered by the relative inaccessibility of the human fetus, although a considerable contribution to knowledge has been made by animal studies in the past 15 years. A scientific group was convened in August to review the present state of knowledge in selected body systems and, particularly, to consider those animal studies that give insight into the control and assessment of maturation where studies in the woman are ethically or technically impossible.

9.105 Among the recommendations made by the scientific group was one on the need for a multicentre trial to determine the efficacy of corticosteroids administered to the mother to induce pulmonary maturation in the fetus and thus avoid one of the main causes of the respiratory distress syndrome in the newborn. A planning meeting for these studies was held in Geneva in November, and a common protocol agreed upon.
10. HEALTH MANPOWER DEVELOPMENT

10.1 The Organization's programme in health manpower development takes full account of the importance of basing the training of health workers on the needs of the community they are to serve and on the local social, economic, and cultural conditions. Moreover, the health care delivery system must be such as to enable the health workers to make use of any special knowledge and skills they have acquired. Thus a proper balance is necessary between health services development and health manpower development. The majority of WHO-assisted projects, particularly those dealing with the organization of health services, include education and training.

10.2 This chapter gives examples of WHO's activities in the development of health manpower, arranged where possible according to the level of training provided. It should be borne in mind that there is inevitably some overlapping between the activities described under different headings.

10.3 A full account of the training courses, seminars, and workshops organized or cosponsored by WHO during the year would be extremely voluminous, and only a few are therefore mentioned in the text; however, an indicative list is given in Table 4 at the end of this chapter to illustrate their range and variety.

Health manpower planning

10.4 Decisions intended to improve the health services often rely largely on measures to increase the number of health workers—usually those in professional categories. Moreover, they frequently take account only of the cost of training and do not consider the much higher cost of providing adequate facilities and equipment to ensure the optimum utilization of the trained staff. It is therefore evident that more use must be made of modern techniques of health manpower planning to allow for an examination of choices in policy-making, the ranking of priorities, the formulation of objectives, the guidance of activities, and evaluation.

10.5 Greater emphasis was given during the year to the critical analysis of past experience and to new approaches to health manpower planning problems.

The Pan American Conference on Health Manpower Planning, which took place in Ottawa in September, reviewed the current problems and indicated a number of approaches that might be utilized in solving them, for instance, by improving the information system and by further study of the international migration of health workers. The WHO-assisted health manpower study carried out since 1971 by the Government of Sri Lanka was terminated and an interim report was drawn up on the 11 smaller studies involved. In addition, general reports were made on priority health demands and their projections, on the current health system, and on health manpower subsystems. WHO is discussing the findings with the study's national advisory committee to assess the appropriateness, adequacy, effectiveness, and efficiency of the health system. Both WHO and the Government of Sri Lanka are fully conscious of the need to follow up the study and to institute permanent arrangements for health manpower planning as part of the country's health planning process. A study conducted with WHO assistance in Bahrain, Kuwait, Oman, Qatar, and the United Arab Emirates gave an opportunity of examining the overall health manpower situation in depth, of making preliminary predictions of needs, and of exploring the most effective ways of developing a health manpower plan. In the Western Pacific Region, the first regional seminar on health manpower was held in Manila in October. It focused on current and emerging manpower problems, the methods and procedures of health manpower planning, the organization of health manpower, and the training of health workers.

10.6 In response to Health Assembly resolution WHA25.42, WHO has designed a protocol for a multinational study on the international migration of physicians and nurses. The objectives of the study are: to determine the magnitude and define the patterns of migration; to develop a profile of migrant physicians and nurses in terms of their demographic and social characteristics, level of education, specialty, and employment history and so ascertain the group that is most likely to migrate; to identify the factors associated with migration; to identify, in each country, the consequences of, and the population groups affected by, the migration of physicians and nurses; and to propose intervention strategies for each pattern.
10. HEALTH MANPOWER DEVELOPMENT

10.7 Nurses constitute the largest group of health workers in most countries of the world. In order to obtain a better knowledge of their conditions of work, as a basis for devising ways of improving them, the Organization, together with ILO, made an extensive study of the literature and data on this subject for a joint ILO/WHO meeting in November. The meeting discussed the qualifications, utilization, and remuneration of nurses, the legal constraints on licensing and practice, the legal protection afforded to nurses in their work, the means of protecting them against health risks, and career mobility. It gave advice on the feasibility of preparing an international instrument governing the working conditions of nurses.

10.8 As a part of the Organization's assistance to a nursing manpower study carried out in Egypt, a group of nurses in that country were trained in the methods of collecting, analysing, and interpreting data for use in the planning of nursing education and services. Assistance was also given in carrying out nursing manpower surveys in Indonesia and Nicaragua, as well as in Sri Lanka (as part of the wider study referred to above); and in preparing long-term plans for the development of nursing manpower—at country level in the New Hebrides and Venezuela, for instance, as well as at the regional level in the Western Pacific and the Americas.

10.9 A study on manpower planning and development in environmental health was initiated in the European Region to provide new methodological approaches.

Education and training of health personnel

10.10 A clear statement of aims makes an educational programme more effective and enables it to be evaluated. Educational objectives, however, have to take account of many factors, including the needs and resources of the community, the level of scientific attainment, the educational standard of the students and the sociocultural system. In order to tackle the problem effectively, teachers should have knowledge of management and planning techniques and modern teaching methods.

10.11 During 1973, WHO has given advice on educational planning to several Member States, arranged consultations on the planning of educational systems, and organized courses for health personnel entrusted with decision-making in training. Assistance of this kind was provided to the Universities of Algiers and Constantine (Algeria), the Universities of Grenoble, Lyons, Nancy and Rennes (France), the University of the Negev (Israel), and the Universities of Berne, Geneva and Lausanne (Switzerland).

Assistance to training institutions

10.12 Throughout the world a large number of training institutions have continued to receive WHO assistance in the form of either assignment of teaching staff (see Table 3) or advice in the creation of new schools. The Organization has been encouraging countries to establish multiprofessional teaching institutions for medical and allied health personnel.

Intermediate and auxiliary health personnel

10.13 WHO has prepared guidelines on the planning, implementation, and evaluation of programmes to train medical assistants and on their optimum use. Particular attention has also been given to the training of “peripheral” or “front-line” health personnel—i.e., those with whom the patient first comes into contact.1

10.14 It is a truism that the less training a worker has had, the more necessary it is to supervise him; yet little has been done to teach senior personnel the art of supervision. To help WHO to assist inremedying this deficiency a consultation was held in Geneva in July to advise on the policy regarding training for the supervision of auxiliaries.

10.15 A conference on the medical assistant was held at the National Institutes of Health, Bethesda, Md., USA, in June under the joint sponsorship of WHO and the Fogarty International Center. It was attended by 19 participants from 18 countries, in addition to those from the USA. It provided an opportunity to compare the experience gained in the USA in the training and utilization of physicians' assistants with that gained in other countries and to consider those aspects of training and utilization in one country that might be adapted for use in another.

10.16 UNFPA-assisted studies on the use of auxiliary personnel continued in Brazil, Egypt, and Hungary, and the principal investigators met in December for the third time to review the work so far accomplished. The meeting made plans for the closer coordination of

---

efforts and discussed the final phase of the studies. The studies have made it possible to review the composition of health teams, to adapt them more closely to actual needs, and to reorient the training of different categories of personnel so that they are more properly prepared for their functions.

10.17 Assistance was provided to Greece in the planning of a programme for the training of nine different categories of health technicians and to Guatemala and Mexico in the assessment of training programmes for auxiliary personnel.

10.18 In the African Region, WHO assistance has been directed mainly to the short-term training of auxiliaries. In the Region of the Americas, training programmes were initiated in Costa Rica, Guatemala, Honduras, Nicaragua, and Panama in an attempt to organize four teams to act as nuclei for the training of a sufficient number of auxiliary personnel to satisfy the needs of health services. A compendium of information on auxiliary training programmes in the Eastern Mediterranean Region is being compiled. In Democratic Yemen, the Libyan Arab Republic, and Yemen, WHO assisted both the direct training of health auxiliaries and the preparation of their teachers. In Bahrain, Oman, Qatar, and the United Arab Emirates, assistance was provided in the preparation of long-term plans for auxiliary training institutions that would make the best use of existing resources. In the Western Pacific Region, WHO helped such countries as Laos, Malaysia, Papua New Guinea, the Republic of Korea, and the Republic of Viet-Nam in the training of auxiliary health personnel of various categories.

10.19 WHO is the executing agency for the UNDP-assisted programme at the Institute of Medical Technology at Constantine, Algeria, which provides for the training of medical assistants and nurse/midwives. The Organization participated with the Algerian Government and UNDP in a mid-term review of the programme, which resulted in a recommendation for an extension of the project to the end of 1976, with a gradual phasing out of international assistance.

10.20 The need to prepare more nursing personnel has led to an increased assistance to education programmes at the intermediate level—for example, the

Table 3. Assignments of teaching staff, 1973

<table>
<thead>
<tr>
<th>1. For training professional personnel * – (by subject)</th>
<th>Teachers</th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic medical sciences</td>
<td>35</td>
<td>300</td>
</tr>
<tr>
<td>Paediatrics, maternal and child health</td>
<td>9</td>
<td>79</td>
</tr>
<tr>
<td>Clinical and related fields</td>
<td>26</td>
<td>170</td>
</tr>
<tr>
<td>Public health and preventive medicine (including hospital administration and statistics)</td>
<td>41</td>
<td>322</td>
</tr>
<tr>
<td>Dental education</td>
<td>5</td>
<td>44</td>
</tr>
<tr>
<td>Nursing</td>
<td>95</td>
<td>904</td>
</tr>
<tr>
<td>Environmental health</td>
<td>16</td>
<td>140</td>
</tr>
<tr>
<td>Veterinary public health</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>230</strong></td>
<td><strong>1962</strong></td>
</tr>
</tbody>
</table>

| 2. For training auxiliary personnel                    | 53       | 498    |
| **Total**                                             | **283**  | **2460** |

<table>
<thead>
<tr>
<th>2. Countries and territories to which assigned (continued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabon</td>
</tr>
<tr>
<td>Papua New Guinea</td>
</tr>
<tr>
<td>Ghana</td>
</tr>
<tr>
<td>Paraguay</td>
</tr>
<tr>
<td>Guatemala</td>
</tr>
<tr>
<td>Philippines</td>
</tr>
<tr>
<td>Guinea</td>
</tr>
<tr>
<td>Qatar</td>
</tr>
<tr>
<td>India</td>
</tr>
<tr>
<td>Republic of Korea</td>
</tr>
<tr>
<td>Indonesia</td>
</tr>
<tr>
<td>Republic of Viet-Nam</td>
</tr>
<tr>
<td>Iran</td>
</tr>
<tr>
<td>Rwanda</td>
</tr>
<tr>
<td>Iraq</td>
</tr>
<tr>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>Israel</td>
</tr>
<tr>
<td>Senegal</td>
</tr>
<tr>
<td>Italy</td>
</tr>
<tr>
<td>Sierra Leone</td>
</tr>
<tr>
<td>Jamaica</td>
</tr>
<tr>
<td>Singapore</td>
</tr>
<tr>
<td>Jordan</td>
</tr>
<tr>
<td>Somalia</td>
</tr>
<tr>
<td>Kenya</td>
</tr>
<tr>
<td>Sri Lanka</td>
</tr>
<tr>
<td>Khmer Republic</td>
</tr>
<tr>
<td>Sudan</td>
</tr>
<tr>
<td>Laos</td>
</tr>
<tr>
<td>Thailand</td>
</tr>
<tr>
<td>Lebanon</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>Libyan Arab Republic</td>
</tr>
<tr>
<td>Tunisia</td>
</tr>
<tr>
<td>Malawi</td>
</tr>
<tr>
<td>Turkey</td>
</tr>
<tr>
<td>Malaysia</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
</tr>
<tr>
<td>Maldives</td>
</tr>
<tr>
<td>Mali</td>
</tr>
<tr>
<td>United States of America</td>
</tr>
<tr>
<td>Mauritania</td>
</tr>
<tr>
<td>Upper Volta</td>
</tr>
<tr>
<td>Mauritius</td>
</tr>
<tr>
<td>Venezuela</td>
</tr>
<tr>
<td>Mongolia</td>
</tr>
<tr>
<td>Yemen</td>
</tr>
<tr>
<td>Morocco</td>
</tr>
<tr>
<td>Zaire</td>
</tr>
<tr>
<td>Morocco</td>
</tr>
<tr>
<td>Zambia</td>
</tr>
</tbody>
</table>

* Some instructors were engaged in the training of both professional and auxiliary personnel.
programmes with career prospects for nursing technicians offered by universities in Argentina, Colombia, Ecuador, and Panama and the programmes for training nursing technicians in secondary schools in Brazil, Cuba, El Salvador, Paraguay, and Venezuela. There are at present about 50 programmes of this type in the Americas. Assistance was given for a survey of existing training programmes for nursing auxiliaries in the same Region and for the development of a methodology for the study of the activities of these health workers as a basis for revising curricula. Assistance was also given in the preparation of nurses engaged in teaching and supervising auxiliary nurses and midwives. In India, for example, 77 nursing teachers received such preparation through four orientation courses, and another 42 were prepared through a series of workshops. In Nepal, the curriculum for auxiliary nurses and midwives was revised, emphasis being placed on the provision of more community health experience. In many countries, the traditional birth attendant continues to play a large role in maternity care and family planning. During the past two years the Organization assisted in a study of traditional birth attendants, and in Geneva in March it convened a consultation on the role of the traditional birth attendant in maternal and child health and family planning to prepare guidelines for the training of these health workers and their involvement in maternal and child health and family planning programmes.

10.21 The training of sanitary technicians and assistant sanitarins in Algeria, Morocco, and Turkey is carried out either in connexion with environmental health projects or as autonomous education and training projects. The short-term objective of these projects is to produce local staff for the established environmental health services. In the African Region the training of auxiliary environmental health personnel is performed routinely by the WHO sanitary technicians offered by universities in Argentina, Colombia, Ecuador, and Panama and the programmes for training nursing technicians in secondary schools in Brazil, Cuba, El Salvador, Paraguay, and Venezuela. There are at present about 50 programmes of this type in the Americas. Assistance was given for a survey of existing training programmes for nursing auxiliaries in the same Region and for the development of a methodology for the study of the activities of these health workers as a basis for revising curricula. Assistance was also given in the preparation of nurses engaged in teaching and supervising auxiliary nurses and midwives. In India, for example, 77 nursing teachers received such preparation through four orientation courses, and another 42 were prepared through a series of workshops. In Nepal, the curriculum for auxiliary nurses and midwives was revised, emphasis being placed on the provision of more community health experience. In many countries, the traditional birth attendant continues to play a large role in maternity care and family planning. During the past two years the Organization assisted in a study of traditional birth attendants, and in Geneva in March it convened a consultation on the role of the traditional birth attendant in maternal and child health and family planning to prepare guidelines for the training of these health workers and their involvement in maternal and child health and family planning programmes.

10.21 The training of sanitary technicians and assistant sanitarins in Algeria, Morocco, and Turkey is carried out either in connexion with environmental health projects or as autonomous education and training projects. The short-term objective of these projects is to produce local staff for the established environmental health services. In the African Region the training of auxiliary environmental health personnel is performed routinely by the WHO sanitary technicians and sanitarians involved in the development of basic health services.

10.22 Training courses for health inspectors and food handlers were included in the food sanitation activities carried out in Fiji, Tonga, and Western Samoa through a UNDP-supported intercountry project for the South Pacific.

10.23 The Organization assisted in the development of training programmes for dental auxiliaries in several countries, with a view to expanding both the preventive and the curative aspects of dental services rendered by auxiliaries working either in urban institutions or in rural health teams. Assistance of this kind was given to Ecuador, Guyana, Iran, Jamaica, Mexico, Panama, Senegal, Trinidad and Tobago, Western Samoa, and Zaire. In the European Region a study was initiated in 20 countries to review existing experience on the training and utilization of different types of dental auxiliaries and to collect data on their numbers, work specifications, training programmes, and working conditions.

10.24 Training for health laboratory technicians was provided at the WHO-assisted Training Centre for Health Services Personnel at Lomé, where 17 technicians graduated during the year and 23 trainees started the course. WHO also assisted Democratic Yemen, the Libyan Arab Republic, Somalia, and Yemen in the training of technicians through the provision of instructors, equipment, and literature, while refresher training for field laboratory assistants was given in Indonesia, Mongolia, Sri Lanka, and Thailand. Training of technicians continued in Laos and the Khmer Republic; in addition, the first course for laboratory assistants held in Dahomey came to a successful conclusion and the second course was started. In accordance with the recommendation of the III Special Meeting of Ministers of Health of the Americas for the establishment of health laboratories in 24 countries, a supporting programme was initiated for the training of health laboratory personnel in Central America and Ecuador.

10.25 Nutrition education in nursing schools in Africa was reviewed and strengthened, particularly in Botswana, Burundi, Cameroon, and Zaire. Nutrition activities within the maternal and child health services are now carried out at 53 health centres in four states of Malaysia, for which 201 staff were prepared in 1973 through practical in-service training with some lectures. In Laos, assistance was given in the training in nutrition of fifth-year medical assistants and pharmacy assistants, as well as in the in-service training of auxiliary midwives who teach nutrition.

Professional health personnel

10.26 A WHO Expert Committee on Internationally Acceptable Guidelines for Medical Education met in Geneva in September to examine certain broad principles that might serve as a guide to countries in setting up new medical schools as well as in improving existing ones. The Committee stressed that medical education should be responsive to the health problems of society and to changing needs in health care and that data on the health patterns and delivery of health care should be utilized for rational educational planning. In addition, questions relating to health manpower and to economic, social, cultural and
education factors should be taken into account by those formulating medical education policy.

10.27 The fourth World Directory of Medical Schools was issued as a bilingual publication (English and French). It provides information in tabular form on medical schools throughout the world, based on a survey for the year 1970.

10.28 A conference of deans of medical schools in the European Region was convened in Copenhagen in April-May 1973. The meeting was aimed at the better interaction of educational and health planning and was concerned specifically with topics of mutual interest to deans of medical schools and health administrators. It was attended by 52 participants from 23 Member States. Three main points were discussed—the potential contribution of ministries of health to medical education policies; the way in which medical schools might help ministries of health in formulating national health policies; and the cooperation between deans of medical schools in Europe on such matters as manpower problems, staff and student evaluation, and the assessment of medical care.

10.29 In some countries in the Americas, a system of combining teaching with practical medical care is being developed in which specialized activities are concentrated in the cities and non-specialized care is decentralized. Through the participation of university hospitals and medical schools, manpower development is closely coordinated with the health care system. The ultimate goal of the programme is the merging of primary community health care with regional and national hospitals, the central health service administration, and the faculties of medicine. The training of medical students is determined in accordance with the real needs of the country. Projects along these lines were already in operation during 1973 in Colombia, Ecuador, and Honduras, and preliminary planning was carried out in other countries.

10.30 In the Eastern Mediterranean Region in 1973 new medical schools were either established or in the advanced planning stage in Egypt, the Libyan Arab Republic, Pakistan, Somalia, and Tunisia. An unusual feature of the new centre for the health sciences in the Negev, Israel, (see paragraph 7.34) is that it is responsible both for the delivery of health services and for the training of health personnel.

10.31 The broad objectives of WHO assistance to nursing education during the year have been the development of coordination between classroom studies and work in practice areas, the development of methodologies for the continuous evaluation and reorganization of education programmes, the conduct of studies of problems that affect teaching and learning, the development of teacher-training programmes and of educational methods, and the strengthening of the organization and administration of education and training programmes for all levels of nursing personnel. Examples of the above assistance are given in the following paragraphs.

10.32 In the Region of the Americas several inter-country projects were concerned with the development of guidelines for the planning, implementation, and evaluation of nursing education programmes. In the Eastern Mediterranean Region, nursing education programmes have been evaluated and priorities redefined in Afghanistan, Iraq, and Tunisia, and a study was made of the cause of high attrition rates among students of the High Institute of Nursing in Teheran. In the Western Pacific Region, a WHO technical advisory committee on nursing met in December to assess the various systems of education for nurses and midwives in the Region and to provide guidelines for their improvement.

10.33 Assistance to basic nursing education at university level was given in Egypt, Iceland, Iran, Iraq, Peru, and Thailand. During the past 11 years of assistance to the College of Nursing in Baghdad, 137 students have gained a B.Sc. degree in nursing.

10.34 Of more than 300 WHO nurses assigned to Member States during 1973, approximately 200 were classified as nursing and/or midwifery educators. The remaining 100 were mainly public health nurses concerned with the development of basic health services, and most of them also carried out education and training functions in one form or another.

10.35 The training of staff to assume technical and administrative responsibilities in water supply and sewerage undertakings is an important aspect of WHO's programme in environmental health. In addition to supporting various courses, WHO promotes in-service training by urging subcontracting consulting firms to carry out all planning and design activities on site and with national participation. In the African Region, WHO's assistance to the training of environmental health personnel at the professional level was extended to Ghana, Kenya, Mauritius, Nigeria, Upper Volta, and Zaire. In the Region of the Americas, universities continued to be the focal point of the environmental engineering education pro-

---

gramme. With the assistance of the Organization, training in this subject was organized for the first time by the National University of the North-East (Argentina), the University of Santa Caterina (Brazil), the University of Guyana, the University of Haiti, the University of San Luis Potosí (Mexico), and the University of Texas at El Paso (USA).

10.36 The Organization continued its assistance to the Sanitary Engineering Centre at Rabat, from which 31 French-speaking sanitary engineers from 10 countries have graduated since its establishment in 1969. In February, the Moroccan authorities and WHO jointly carried out the first evaluation of this interregional project, as a result of which a number of practical measures to further the development of the centre were recommended and a proposal was made for a new training programme, which was needed because of recent changes in the Faculty of Engineering. The preparation was completed of two manuals, on biology and chemistry, to be utilized primarily at the Sanitary Engineering Centre at Rabat. WHO continued in its role of coordinator and administrator of the assistance provided by the Government of Switzerland to the Rabat centre as well as to the Regional School of Sanitary Engineering, University of San Carlos, Guatemala.

10.37 The training of radiological technicians, who are needed to ensure adequate protection against radiation hazards, was supported by WHO in many countries. Assistance was given in the establishment of a new school for radiological technicians in the Philippines, and continued for schools in India and Indonesia, while in Africa plans were formulated for establishing an intercountry training centre for this type of personnel, and assistance was given to Liberia, Nigeria, and Zaire. Assistance for the training of local personnel in the maintenance and repair of X-ray and other medical equipment was provided to Fiji, Western Samoa, American Samoa, and the British Solomon Islands Protectorate. The first phase of the in-service training programme in the Khmer Republic for the maintenance and repair of medical equipment was completed, and a similar programme was started in Malaysia. Schools and courses for the maintenance and repair of medical electronic equipment and X-ray machines were established or assisted in India, Indonesia, Mongolia, and Sierra Leone. In Bombay, India, WHO has assisted courses in nuclear medicine for physicians; while the existing courses in medical physics have been expanded so that they now last two years and lead to an M.Sc. degree. Support was also given to a school in Bangkok offering a similar course in medical physics.

10.38 A new World Directory of Veterinary Schools, based on a survey of information for the year 1971, was published under the joint auspices of FAO and WHO.

10.39 Assistance was provided to Peru for premises and equipment for a new dental school at the University of San Marcos, Lima, and to Venezuela for the revision and implementation of a new dental curriculum in the Faculty of Dentistry at the University of the Andes, Mérida. Assistance for dental education programmes and for evaluation, testing, and measurement was provided to dental schools in Peru and Brazil, and a meeting in Lima of the Organization's coordinating committee for education in health sciences discussed the development of education programmes in Bolivia. The first programme on dental pulp was initiated with a series of lectures given in Chile, Colombia, and Peru by prominent dental workers.

10.40 In the Western Pacific Region, WHO advisory services concentrated on the development of dental manpower in relation to existing dental care delivery systems to meet the accrued and future needs of the people. Formalization of on-the-job training curricula was an important aspect of intercountry assistance. In Fiji, Tonga, and Western Samoa, advice was given for collaborative research on the clinical and preventive aspects of dental education. In Fiji, WHO also assisted a national seminar on the recognition, control, and prevention of periodontal disease.

10.41 WHO also provided assistance to dental education in Mali, Senegal, Sri Lanka, Syrian Arab Republic, Thailand and Zaire.

10.42 In the Eastern Mediterranean Region a meeting was held in February to discuss the teaching of maternal and child health integrated with family planning in nursing schools and medical schools in the Region.

10.43 In Burma and Mongolia, health education courses were held in relation to specific programmes and field situations. In Bangladesh, the current training programmes in health education were reviewed with the aim of orienting them more towards field work. In order to improve the standard of teaching of family health education and related subjects and to provide adequate local teaching materials, a meeting of health education teachers of the South-East Asia

Region was held in New Delhi in December. In the Eastern Mediterranean Region the Government of Democratic Yemen was assisted in training personnel in health education at the Institute of Manpower Development in Aden. In the Western Pacific Region the Organization helped in developing the health education training facilities of public health institutes in Malaysia and the Republic of Viet-Nam. Assistance in the former country was in connexion with training programmes for prospective appointees as government health education officers.

Special training programmes

10.44 Special training programmes include postbasic training, specialization, and continuing education; training in public health; and teacher training for schools for health personnel. In certain fields—for example, nutrition and health statistics—such programmes often cover a wide range of categories of health workers.

10.45 A WHO Expert Committee on Continuing Education for Physicians, held in June-July in Geneva, reviewed, on the basis of an earlier comparative study, the patterns of organization of continuing education for physicians. It made recommendations on the organization and institutionalization of continuing education, on its integration into national health services, on the application of modern educational planning and methods, and on means of motivating both medical students and physicians to pursue their studies up to the end of their professional careers. During the year, the Central Institute for Advanced Medical Studies, Moscow, a WHO Collaborating Institution for Postgraduate Education, issued four reports on specialisation and continuing education which were widely circulated to Member States, training schools, and interested individuals.

10.46 An agreement was signed between WHO and the Faculty of Graduate Studies, Mahidol University, Bangkok, for assistance to a two-year course in preclinical disciplines leading to an M.Sc. degree. The aim of the course is to prepare the students for teaching posts in departments of the University.

10.47 Technical and financial assistance was extended to the University of Guanabara in Brazil for the development of a postgraduate programme in the social sciences that will take account of the teaching of preventive and social medicine in Latin America, the experience acquired in the social science seminars conducted in several schools in the Americas, and the growing interest in the social sciences taken by schools of medicine, dentistry and nursing.

10.48 Assistance to postbasic nursing and midwifery education was given through 44 projects, of which 26 were at country level, 16 at intercountry level, and two at interregional level. These projects are increasing the numbers of national nurses able to assume responsibility for the development of nursing education programmes in their countries. In Ghana, for example, where 93 nurses have qualified as teachers and 124 as supervisors under the WHO-assisted programmes that began in 1963, Ghanaian nurses assumed responsibility for basic nursing education in 1971 and for advanced nursing education in 1973. In the intercountry programme in Nigeria, 10 African nurses were awarded the B.Sc. degree in nursing, bringing the total to 64 since assistance began in 1962. From the programme in Tunisia there have been 44 graduates since 1964. In Thailand a Master’s degree programme in health administration and resources management was started. In India assistance has been given, during the past nine years, to postbasic degree programmes in eight colleges of nursing, most recently to that in Uttar Pradesh, where such a programme was established in 1973 with an enrolment of 12 students. In the Americas the existing programmes in Latin America and the Caribbean were studied with a view to establishing nursing education programmes on a regional basis. In several Regions nursing education activities included short courses on specialized areas of nursing—e.g., medical/surgical nursing, neonatal nursing and psychiatric nursing.

10.49 Long- and short-term training programmes in maternal and child health and family planning were conducted for nursing and midwifery personnel in many countries. A guide was published for nurses and midwives responsible for preparing personnel for family planning activities.

10.50 Several veterinary schools in the Americas have received assistance in strengthening the teaching of epidemiology, public health, and food hygiene. The Institute of Hygiene and Preventive Medicine in Calcutta, India, was assisted by the Organization in giving postgraduate courses in veterinary public health leading to a Master’s degree.

---

10.51 In addition to the assistance given to several permanent centres organizing annual courses of instruction in nutrition for physicians, public health nutritionists, and dietitians, the Organization supported the development of teaching activities at the Caribbean Food and Nutrition Institute, Jamaica, and at the Nutrition Institute, Islamabad, Pakistan. The second conference on training in nutrition and dietetics in Latin America was held in São Paulo, Brazil, in January to review the extent to which recommendations on curriculum development had been implemented. As a result, a permanent committee on curriculum evaluation was set up, which had its first meeting in September, when it proposed practical ways of advising in this field.

10.52 The University of Ibadan, Nigeria, and the University Centre for Health Sciences in Yaoundé were selected as centres for the training of health education specialists in the African Region. WHO provided advice to these universities during 1973 and it is planned to begin training in 1974. A guide for developing postgraduate and undergraduate training in health education was prepared and sent to all ministries of health in the African Region; it outlines the future development of health education services and stresses the need for qualified personnel. Assistance was provided to Indonesia in developing a curriculum for postgraduate training in health education at the Master’s level and to India and Indonesia in developing specific plans to train health education teachers.

10.53 To train medical officers in epidemiology and establish a cadre of epidemiologists in countries where they are most needed, WHO has been sponsoring annual English-language courses in Prague and New Delhi (since 1966), and Moscow and Alexandria 1 (since 1969). The first French-language course was held in 1972-73 in Paris and Rennes, France, and Bobo Dioulasso, Upper Volta. In June 1973 the directors of the courses met in Geneva to review progress and to consider plans for future work; new objectives were adopted, serving as a basis for a revised curriculum.

10.54 With the cessation of UNDP funding, the international courses on the epidemiology and control of tuberculosis are likely to come to an end. During their 12 years of existence, they have served to train 287 physicians from 87 countries—169 through the English-language courses in Prague and 118 through the French-language courses in Rome.

10.55 With regard to malaria, lack of financial support has also led to the closure of the WHO international Malaria Eradication Training Centre in Manila. Since the centre’s establishment in 1963 as a joint undertaking of the Government of the Philippines, USAID, and WHO, 57 courses and group educational activities have been held, attended by a total of 1326 participants from 43 countries.

10.56 A WHO Expert Committee on Postgraduate Education and Training in Public Health, held in Geneva in April-May, 2 reviewed the situation in postgraduate public health education on the basis of an international comparative study on basic public health training carried out in 1972 and in the light of experience gained since the subject was last discussed by an expert committee in 1960. The recommendations of the Committee related to the organization, objectives, and evaluation of postgraduate public health education, the ways and means of furthering its development, the content of curricula, and the application of modern principles of educational planning.

10.57 The fifth meeting of directors and representatives of schools of public health, which took place in Brazzaville in March with participants from Africa, South-East Asia, the Eastern Mediterranean, and the Western Pacific, reviewed the objectives and role of schools of public health and similar institutions in teaching, research, and service to the community. A study group that met in the same city in July considered the assistance to departments, institutes, and schools of public health, with a view to the development of training at undergraduate and postgraduate levels.

10.58 WHO assistance was given in a number of countries to the teaching of public health, 3 whether at undergraduate level, for formal postgraduate courses, or for in-service training. The Pan American Centre for Health Planning, Santiago, continued its training assistance to countries through three international courses, two national courses, and four seminars. The Guide to Teaching Methods in Epidemiology in Spanish was revised. 4 In Bolivia, Guatemala, Honduras and Panama, which have no schools of public health, WHO supported a programme of in-service training through intensive basic courses.

---

1 The Alexandria part of this course was not held in 1973.
3 See also paragraph 7.11.
for public health service staff who have had no opportunity to obtain formal training in this field. In Costa Rica, existing resources for the development of public health training programmes were reviewed.

10.59 Assistance has continued to the course for public health administrators at the Central Institute for Advanced Medical Studies in Moscow through the award of fellowships and the provision of lecturers. A new plan of operation provides for the continuation of the courses until the end of 1976.

10.60 WHO is helping the Ecole nationale de Santé publique at Rennes, France, to introduce into its curriculum instruction in maternal and child health and family planning for the benefit of students from French-speaking developing countries.

10.61 Education programmes in public health nursing, including maternal and child care and family planning, were assisted in all Regions. At the intercountry training centres for health service personnel in Lagos and Lomé for English-speaking and French-speaking personnel respectively, 171 nurses and midwives have, since 1968, received orientation in public health nursing. In the Republic of Korea, assistance was given to postbasic programmes in public health nursing at both certificate and Master’s levels, and in Sri Lanka aspects of public health nursing have been incorporated into the curricula of eight schools of nursing—a task in which WHO helped by arranging a short course for teaching and supervisory staff.

10.62 With a view to enabling Member States to increase the number and capacity of their training institutions, the Organization is continuing its worldwide training programme for training teachers of health personnel. Its aim is not only to improve the teaching standards in schools for health personnel and to render teaching more relevant to local health needs and demands but also to help to meet quantitative needs by introducing manpower planning in relation to teaching staff. The programme began in 1970, when a WHO interregional teacher-training centre was set up at the Center for Educational Development, University of Illinois College of Medicine, Chicago, USA, for the training of educational leaders and specialists for regional centres. The latter in turn prepare teachers for national and intercountry centres, where yet other teachers will be trained for work in schools. It is hoped that by 1975 the programme will make all WHO Regions self-sufficient in the means of preparing teachers and in educational research and that by 1980 it will make most Member States self-sufficient in these respects. In 1973, four medical teachers finished the one-year course in Chicago and three more started it. Fifteen teachers followed a four-week seminar and began work in the newly established regional teacher-training centres. Eight such centres have been, or are being, established in all WHO Regions except the European Region. In addition to the regional teacher-training centre established in 1972 in Shiraz, Iran, the centres for educational technology in the health sciences in Mexico and Brazil (see paragraph 10.68), are carrying out the functions of regional teacher-training centres. New regional centres were created in Kampala, Yaoundé, and Sydney (Australia), and others are being developed in Bangkok and Peradeniya (Sri Lanka). The Center for Educational Development issued four reports on teacher training during 1973. Eight of the reports so far issued by this centre were published by WHO.1

10.63 The training of teachers of basic sciences in the African Region was the subject of a study group that met in Brazzaville in December. The group discussed the number of teachers required, reviewed the teaching methods at present in use, and made recommendations on the nature of further WHO assistance.

10.64 The training of nurse educators and the improvement of teaching methods formed a part of most WHO-assisted nursing education projects in all Regions. In Bangladesh, the College of Nursing was reactivated, and an education programme to prepare nurse educators and administrators was started.

Educational technology

10.65 The work of the Organization in educational technology has greatly expanded during the year. A number of successful small projects have helped to indicate the ways in which the new technology can contribute to more effective health manpower development.

10.66 Self-instruction. To provide means of self-instruction, the Organization arranges for the design, testing, and large-scale production of various kinds of teaching/learning materials, including those in audiovisual form. The programme provides for the training of all categories of personnel in teaching methodology and the preparation of self-instructional materials.

---

1 Development of educational programmes for the health professions; 1973, Geneva, World Health Organization (Public Health Papers, No. 52).
material and for research into factors that impede the development and effective use of self-instructional materials.

10.67 As part of this programme, a Centre for Educational Technology in the Health Sciences was established in Cairo during the year, following a feasibility study by WHO. The new centre is a cooperative effort of the Egyptian Government, UNDP, UNICEF, IBRD, and WHO. Initially, emphasis is being given to materials for nurse training—a local priority—but the Centre will later expand its activities into other fields within the health sector. Materials will be produced in English, French, and Arabic for distribution to developing countries with training needs similar to those in Egypt.

10.68 Feasibility studies for two other centres, one in Accra with DANIDA assistance and the other in New Delhi, were also completed during the year. The activity and output of these centres will be coordinated with those of centres in Mexico City and in Rio de Janeiro, Brazil, which have been set up with the assistance of the Organization and the Kellogg Foundation. The functions of the Latin American centres include the organization of courses in programmed learning, the development and production of audiovisual materials, and the use of computer technology in instruction.

10.69 In a number of smaller projects, WHO assistance to institutes has contributed to the production of high-quality teaching/learning materials, especially for individual study. The Centre for Individual Learning Materials in Medical Education, London, which forms part of the Department of Audio Visual Communication, British Medical Association, and was designated as a WHO collaborating institution, has provided advisory and training facilities during the year and has published (with WHO financial aid) a 500-page compilation on the curriculum objectives of the Abraham Lincoln School of Medicine; this sets out the learning experiences in clinical medicine associated with each educational step and should prove valuable to curriculum planners in medical schools. Assistance to the medical faculty at Rotterdam has allowed the preparation this year of an English version of a new multimedia pathology course, called “Integrated Pathology Audiovisual Learning System”, which will be placed on trial in a number of developing countries during 1974.

1 University of Illinois College of Medicine (1973) Curriculum objectives, London, Department of Audio Visual Communication, British Medical Association/British Life Assurance Trust for Health Education.

10.70 Evaluation of teaching/learning materials and provision of a selective information service. There is a universal need among teachers for a reliable source of information on the content, quality and target audience of the wide range of audiovisual programme materials now available. A study group on the selection of teaching/learning materials in health sciences education met in April. The criteria for selection were defined, various methods of assessment were reviewed, and a proposal was made for a large-scale pilot study on the provision of an information service. In this study, appraisals of various materials by a panel of experts in collaborating institutes would be sent to a central institute for storage, retrieval and dissemination. A feasibility study for this pilot project was completed in December.

10.71 Other WHO activities in the evaluation field included a complete revision of the lists of teaching aids supplied by UNICEF to nursing and midwifery teaching schools. A number of field trials have been made of selected audiovisual teaching/learning materials in developing countries. These studies underlined the urgent need for evaluation of the many and often expensive audiovisual materials that are at present being used without adequate pretesting. They have also revealed the difficulties inherent in making an objective assessment of educational material that may be used in diverse situations in various developing countries. In collaboration with the Royal Tropical Institute, Amsterdam, WHO is carrying out a comparative trial of study material in a novel audiovisual form for the basic training of middle-level auxiliaries in East Africa. The material will also serve them as a source of reference during their service.

10.72 Meanwhile, the ad hoc information service provided by WHO was considerably expanded during the year. An Educational Technology Resources and Display Centre was set up in Geneva in May and proved particularly useful for briefing some 50 visitors each month. Information is provided by correspondence to a large number of institutes and individuals, most of them in developing countries. Four mobile media centres have been assembled and installed for use in seminars, workshops, and conferences. Two are based on the WHO Regional Teacher Training Centres at Shiraz, Iran, and Sydney, Australia; one on the National Institute of Public Health in Saigon; and one on the WHO Regional Office for the Western Pacific, Manila. The Shiraz centre has also created an individual study section, which serves to demonstrate the role of the new technologies in medical education.
10.73 **Teaching and reference materials.** The project for collation, screening, and (where necessary) translation of reference materials for teachers at schools for health auxiliaries, which began in 1972, achieved its first objectives in December 1973, when comprehensive sets of carefully selected handbooks and manuals were dispatched free of charge to some 400 training schools in English- and French-speaking developing countries. Each set included a booklet explaining how to make effective use of the material and a set of some 500 illustrations to assist the teacher in the preparation of visual aids, manuals and notes for students.

10.74 A comprehensive manual on basic techniques for the medical laboratory, prepared in a highly pictorial manner with some 1400 illustrations, was completed in the French version and was submitted to a number of training schools for field testing. Accompanying teaching materials for each school include some 50 filmstrips and sets of slides describing each technique, a book of overhead-projector transparencies to assist in the explanation of difficult concepts, and a set of some 1500 tested multiple-choice questions.

10.75 Assistance to the medical faculty in Newcastle, United Kingdom, permitted the preparation of a series of films on gynaecological diagnosis, which are destined for trial in medical schools in developing countries. In response to numerous requests from institutes for sets of projection slides on the epidemiology, clinical picture, and control of the principal human parasitic diseases, WHO gave assistance for the production of 12 sets of slides by a leading medical artist in association with three tropical diseases institutes in the United Kingdom. These sets will be reproduced and made available, together with accompanying texts, to schools for the training of public health workers and auxiliary health personnel.

10.76 **Improvement of communication techniques for teaching and supervision.** Auxiliaries working in rural areas in many developing countries have no opportunity for continuing education, and their remoteness prevents direct supervision, so that the quality of their performance falls. Conventional measures have failed to remedy this situation. A task force was established in December to consider the feasibility of a pilot communications project in a developing country, followed eventually by an extension of the project to cover the entire rural health programme. The use of telecommunications and related technologies is being explored in order to ensure that an effective system can be designed that will be within the administrative and financial capacity of a developing country.

10.77 In February and March the Organization assisted Indonesia in preparing an inventory of communications resources and in the planning of an institute of educational technology. An experimental system for transmitting hand-drawn text and sketches by radio is being developed and might be used to help solve the immense training and continuing education problems of a country with such widely scattered communities.

**Fellowships**

10.78 All Regions endeavoured to rationalize their fellowships procedures, and the trend towards intra-regional placements continued. This trend is enabling the programme to maintain the average cost of fellowships by reducing expenditure on travel. Another trend of importance to future self-sufficiency in manpower development is the increasing number of fellowships being given for the preparation of teachers in the various branches of the health sciences.

10.79 From 1 December 1972 to 30 November 1973, WHO provided assistance to enable 5940 individuals to study abroad. The Organization awarded 3647 fellowships for study, including 364 for undergraduate study, and 2293 fellowships for participation in meetings or other educational activities organized by WHO, such as courses, seminars, and workshops. Annex 7 summarizes the number of fellowships by subject of study and by Region.

**WHO staff training**

10.80 Seven WHO staff members were given study leave during the year and 26 were provided with refresher training. The ninth training course in English for WHO Representatives, which was held in Alexandria, Egypt, in February-March, was attended by 21 participants from all six WHO Regions. The participants were staff members serving as WHO Representatives, senior medical officers, or staff members due shortly to take up a position as WHO Representative. Country programming was the theme of the course.

10.81 A workshop on modern teaching methods was held in Lomé in July for 20 French-speaking WHO
nurse educators working in the African Region. A course on family planning was held in May with UNFPA funds for 15 staff members assigned to field projects in the Western Pacific Region.

**Library and documentation services**

10.82 Since its inception in 1972, the WHO MEDLARS\(^1\) Centre has provided WHO staff, members of WHO expert advisory panels, national health administrators, and health institutions in Member States with current awareness or retrospective bibliographies derived from the huge store of citations in the computer database. During the year under review preparations were made for the adoption early in 1974 of the MEDLINE\(^2\) system, which should significantly improve the provision of medical literature services to Member States. Resembling a computerized airline reservations system, MEDLINE has a number of terminals connected to a computer located at a remote site. The searcher informs the computer of his requirements by operating a teletypewriter keyboard at his terminal and receives an instant response in the form of a bibliographical list. A broad range of programmes is available in the areas of health care delivery, education, and research. Both the quantity and the quality of searches are increased through the use of MEDLINE, with the result that a large number of countries can now benefit from this valuable bibliographical resource.

10.83 A regional documentation centre in human reproduction, family planning and population dynamics has been established in the South-East Asia Region. Unpublished material has been collected throughout the Region. Two bibliographies were prepared on 1972 material and one on 1973 material, for distribution to interested workers and institutions.

10.84 The PAHO/WHO Regional Library of Medicine, São Paulo, Brazil, is continuously expanding its resources and services. In particular, it has helped to strengthen the holdings of other biomedical libraries through gifts or the exchange of back issues. It has satisfied nearly 45,000 interlibrary requests for the reproduction of scientific articles and approximately 1000 demands for special bibliographies and references.

**Cooperation with other organizations**

10.85 In addition to those quoted below, examples of cooperation between WHO and other organizations in health manpower development are given in Chapter 13.

10.86 Under the auspices of the Kellogg Foundation, the Association of University Programs in Hospital Administration, and the Organization, a meeting was held in Washington, D.C., in May of 25 representatives of 18 private, governmental, and international institutions that provide technical and financial support to health sciences education in Latin America through the work of the Health Sciences Education Information Centre. The main task of the meeting was to review the role of the Centre's agencies, particularly the private foundations, in the implementation of the ten-year health plan for the Americas.

10.87 In the European Region, the Organization cooperated with UNDP, UNESCO, and IBRD in connexion with an investment feasibility study on higher education in Morocco and with a higher education project in Greece. Cooperation was continued with the Association for Paediatric Education in Europe. Contact was made with the College of Europe in Belgium, as well as with the Centre for Educational Research and Innovation of the Organization for Economic Co-operation and Development.

---

1 Medical Literature Analysis and Retrieval System, of the National Library of Medicine, Bethesda, Md., USA.

2 MEDLARS on-line.
Table 4. Examples of training activities arranged or supported by the Organization

Figures in parenthesis indicate the approximate numbers of participants.

<table>
<thead>
<tr>
<th><strong>EPIDEMIOLOGY AND STATISTICS</strong></th>
<th><strong>IMMUNOLOGY</strong></th>
</tr>
</thead>
</table>
| *Epidemiology and control of communicable diseases*—interregional courses, in English and French  
**English:** Prague, Aug.-Oct., and New Delhi, Nov. 1973-Feb. 1974 (12)  
Moscow, Sept.-Oct. (11)  
*Methods of epidemiological surveillance of zoonoses, foodborne infections, and other communicable diseases*—interregional seminar  
Bangkok, Oct. (29)  
*Epidemiological surveillance of communicable diseases, including zoonoses*—regional seminar (AMRO)  
Rio de Janeiro, Brazil; Dec. (50)  
*Epidemiological surveillance*—course, in English (AMRO)  
Atlanta, Ga., USA; April-Nov. (3)  
*Epidemiological surveillance*—course, in Portuguese  
Brazil, June-Oct. (20)  
*Epidemiological surveillance*—course, in Spanish  
Venezuela, May-Oct. (16)  
*Epidemiology and medical statistics*—regional courses, in English, French and Russian (EURO)  
**English:** London, Sept. 1973-March 1974 (20)  
**French:** Brussels, Jan.-May (9)  
**Russian:** Bratislava, Czechoslovakia; Sept.-Dec. (8)  
*Teaching of health statistics, including family planning statistics*—interregional seminar for teachers of health statistics  
United Kingdom and USA, Oct. (12)  
*Family planning statistics*—interregional workshop for statisticians  
New Delhi and Seoul; Oct.-Nov. (20)  
*Statistical methods in national family planning programmes*—interregional training workshop for statisticians  
Cotonou, Dahomey; April (22)  
*Vital and health statistics*—regional course, in English (EURO)  
London, Sept.-Dec. (6)  
*Health statistics*—6 courses, lasting 6-10 months, for auxiliaries  
Argentina, Chile, Colombia, Cuba, Mexico and Peru (197)  
*Medical records*—3 courses, lasting 3-11 months, for auxiliaries  
Costa Rica, Jamaica, and Venezuela (62)  |
| *Immunology*—interregional course, at the WHO Research and Training Centre for Immunology  
Lausanne, Switzerland; Sept. (16)  
*Clinical immunology*—interregional course, at the WHO International Reference Centre for the Serology of Autoimmune Disorders  
London, Oct. (16)  
*Origin, regulation and interrelation of haemopoietic cell populations: relevance for the immune response*—course, in collaboration with the International Cell Research Organization and UNESCO  
Ulm, Federal Republic of Germany; Sept. (26)  
*Hepatitis B antigen*—regional workshop held in collaboration with the National Cancer Research Institute, Tokyo (WPRO)  
Tokyo, Nov. (24)  
*Immunology*—regional course for teachers of immunology in medical schools (WPRO)  
Adelaide, Melbourne and Canberra, Australia; May (21)  
*Clinical immunology*—course, in collaboration with International Union of Immunological Societies  
Santiago, Chile; Aug. (150)  |
| **COMMUNICABLE DISEASES** |
| *Smallpox eradication*—seminar  
Addis Ababa, Sept. (50)  
*Smallpox eradication*—refresher courses in 4 centres for district supervisors  
Nepal, Sept.  
*Virology (for the epidemiological surveillance of communicable diseases)*—regional course (SEARO)  
Poona, India; Nov. (15)  
*Epidemiological surveillance and control of yellow fever*—regional seminar  
Bangui, Oct. (17)  
*Serology and bacteriology of venereal diseases*—regional course for laboratory staff (WPRO)  
Singapore, March-April (11)  
*Epidemiology and control of tuberculosis*—interregional courses, in English and French  
**English:** Prague and Sri Lanka, April-July (15)  
**French:** Rome and Turkey, March-June (8)  
*Tuberculosis bacteriology*—regional course (AMRO)  
Caracas, March-April (13) |
Table 4 (continued)

**Epidemiology and control of tuberculosis**—regional course (AMRO)
  Caracas, Jan.-April (21)

**BCG vaccine production**—interregional 3-month individual courses, in collaboration with DANIDA
  Copenhagen (6)

**Tuberculosis**—regional course (WPRO)
  Tokyo, June-Oct. (17)

**Leprosy control methodology**—regional course
  Mandalay, Burma; Oct.-Nov. (28)

**Clinical aspects and treatment of cholera**—interregional course
  Surabaya, Indonesia, and Singapore; June-July (15)

**Laboratory aspects of cholera**—interregional course
  Lomé, Feb.-March (12)

**Sanitation in cholera control**—interregional seminar
  Manila and Bacolod, Philippines; Nov.-Dec. (10)

**Rehydration therapy centres**—intercountry course (SEARO)
  Rangoon, March (20)

**Animal health planning**—course
  Buenos Aires, May-Dec. (26)

**Ecological aspects of zoonoses**—regional course
  Buenos Aires, June (11)

**Use of in vitro techniques for testing susceptibility of Plasmodium falciparum to chloroquine**—interregional seminar
  Kuala Lumpur, Nov. (11)

**Epidemiology of malaria**—interregional seminar
  Algiers, Dec. (15)

**Malaria control and eradication**—interregional course
  Manila, Jan.-April (24)

**Malaria epidemiology**—intercountry seminar (SEARO)
  Prabhudhapat, Thailand; Feb.-March (20)

**Serodiagnosis of parasitic diseases**—interregional course
  Bordeaux, France; June-July (13)

**Analysis of pesticides**—interregional course, in collaboration with DANIDA
  Copenhagen, Sept.-Oct. (12)

**Safe and effective use of pesticides in public health and agriculture in Asia and the Far East**—seminar, in collaboration with FAO and the Industry Cooperative Programme
  Bangkok, Sept. (34)

**NONCOMMUNICABLE DISEASES**

**Dental public health**—interregional course, in collaboration with DANIDA
  Copenhagen, Sept.-Nov. (16)

**Methodology of scientific investigation**—workshop for dental students
  Guatemala, Jan. (16)

**Teaching of pedodontics**—regional seminar, in Spanish, in collaboration with the Faculty of Dentistry, University of Illinois Chicago, Ill., USA (16)

**Psychiatry**—seminar for physicians
  Camaguey, Cuba; Nov. (20)

**Alcoholism**—regional workshop
  San José, Costa Rica; Feb. (41)

**Community action for mental health care**—regional seminar (SEARO)
  Bangalore, India; Oct.-Nov. (20)

**Mental health epidemiology and statistics**—regional course, in Russian, for psychiatrists and statisticians (EURO)
  Prague, June

**Organization of mental health services**—interregional seminar
  Addis Ababa, Nov.-Dec. (50)

**Epidemiology of cancer**—regional seminar (SEARO)
  New Delhi, Nov.-Dec. (54)

**Cytology**—course for the Eastern Caribbean area
  Port-of-Spain, Sept. 1972-June 1973 (6)

**Physiological testing methods of rehabilitation of patients with cardiovascular diseases**—regional course (EURO)
  Göteborg, Sweden; May-July (13)

**Cardiovascular epidemiology**—seminar, in collaboration with the Council on Epidemiology and Prevention, International Society of Cardiology
  Orsay, France; Sept. (36)

**Prevention and control of major cardiovascular diseases**—course, in collaboration with DANIDA
  Copenhagen, Jan.-June (10)

**Diagnostic techniques for haemoglobinopathies and allied disorders**—interregional course
  Abidjan, June (12)

**Human genetics**—interregional course, in collaboration with DANIDA
  Copenhagen, Nov.-Dec. (14)
<table>
<thead>
<tr>
<th>ENVIRONMENTAL HEALTH</th>
<th>STRENGTHENING OF HEALTH SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education and training in sanitary engineering—regional seminar (SEARO) Bangkok, Nov. (20)</td>
<td>Planning, administration and management of health services—interregional course Manila, Oct.-Nov. (18)</td>
</tr>
<tr>
<td>Training and utilization of sanitation personnel—regional seminar (SEARO) Jakarta, May (14)</td>
<td>Health economics—interregional seminar Geneva, July (14)</td>
</tr>
<tr>
<td>Design of environmental information systems—seminar Poland, Jan. (97)</td>
<td>Modern management approach in health administration—regional seminar Cairo, Oct. (17)</td>
</tr>
<tr>
<td>Control of coastal water pollution—interregional course, in collaboration with DANIDA Copenhagen and Aarhus, Denmark; July-Aug. (14)</td>
<td>Health planning—regional course for countries and territories in the South Pacific area (WPRO) Port Moresby, Aug.-Sept. (18)</td>
</tr>
<tr>
<td>Air pollution—regional seminar (WPRO) Manila, May (23)</td>
<td>Health planning—course Malaysia, June-July (30)</td>
</tr>
<tr>
<td>Radiation protection, supervision and inspection—interregional course, in collaboration with DANIDA Copenhagen, Aug.-Sept. (18)</td>
<td>Health manpower planning—regional seminar (WPRO) Manila, Sept. (21)</td>
</tr>
<tr>
<td>Calibration methods for secondary standards in radiation dosimetry—interregional course, in collaboration with IAEA Brunswick, Federal Republic of Germany; Oct. (5)</td>
<td>Medical care and hospital administration—regional seminar Ottawa, June (20)</td>
</tr>
<tr>
<td>Radiation protection—regional seminar (WPRO) Manila, Feb. (19)</td>
<td>Medical care and hospital administration—5 courses, lasting 1-3 months, for medical directors, non-medical hospital administrators and directors of nursing departments Bolivia, Dominican Republic, Ecuador, and Uruguay (135)</td>
</tr>
<tr>
<td>Industrial hygiene engineering and chemistry—course Zagreb, Yugoslavia; Oct. 1972-July 1973 (7)</td>
<td>Functional programming of hospitals in relation to basic health services—regional seminar (SEARO) Bandung, Indonesia; Nov. (23)</td>
</tr>
<tr>
<td>Health problems of nomads—regional seminar (EMRO) Shiraz, Iran; April</td>
<td>Biomedical information—seminar Buenos Aires, March (30); and Santiago, April (43)</td>
</tr>
<tr>
<td>Food microbiology and hygiene—regional course (EURO) Zeist, Netherlands; April-May (18)</td>
<td>Scientific research and social science methodology—workshop Costa Rica, July-Aug. (38)</td>
</tr>
<tr>
<td>Quality control of food—course Panama, June (20)</td>
<td>Health laboratory tutor technicians—regional course (EMRO) Beirut, Oct. 1972-Feb. 1973 (15)</td>
</tr>
<tr>
<td>Food hygiene and inspection procedures—course for senior health inspectors Venezuela, Feb.-Dec.</td>
<td>Organization and operation of a blood transfusion service—interregional course for laboratory staff Budapest, March-June (8)</td>
</tr>
<tr>
<td></td>
<td>Anaesthesiology—interregional course, in collaboration with DANIDA Copenhagen, Jan.-Dec. (16)</td>
</tr>
<tr>
<td></td>
<td>Anaesthesiology—interregional refresher course, in collaboration with DANIDA Copenhagen, June (25)</td>
</tr>
<tr>
<td>Medical teachers’ training—course</td>
<td></td>
</tr>
<tr>
<td>Peradeniya, Sri Lanka; Jan. (18)</td>
<td></td>
</tr>
</tbody>
</table>

| Community health aspects of medical education—regional seminar  |
| Bangkok, May (25) |

| Teacher training—regional workshop for deans and 2 regional workshops for teachers in medical schools (WPRO)  |
| Sydney, Australia; June (16); Sept. (16); Nov.-Dec. (20) |

| Medical education—workshop  |
| Kuala Lumpur, Oct.-Nov. (38) |

| Nursing education—regional course in English and French (AFRO)  |
| Brazzaville, June (13) |

| Modern teaching methods for nurse educators—interregional course, in collaboration with DANIDA  |
| Copenhagen, Sept.-Oct. (20) |

| Modern teaching methods for nurse educators—regional course (EURO)  |
| Manchester, United Kingdom; Aug.-Sept. (10) |

| Nursing care of surgical patients—course  |
| Burma, April-June (20) |

| Nursing—intercountry course  |
| Sri Lanka, June (22) |

### FAMILY HEALTH

| Recent advances in reproductive biology and family planning—interregional course  |
| Bangkok, July (16) |

| Methodology of clinical trials with fertility regulating agents—interregional course  |
| Bangkok, April (14) |

| Advances in the physiological, clinical and public health aspects of human reproduction—interregional seminar  |
| Teheran, Nov. (24) |

| Maternal and child health—interregional course of advanced training for administrators of maternal and child health services, in collaboration with UNICEF  |
| Warsaw, Sept.-Oct. (13) |

| Child health—course for senior teachers of child health, in collaboration with UNICEF  |
| London; Dar es Salaam; Nairobi; and Hyderabad and Bombay, India; March-Nov. (9) |

<p>| Teaching the biology of human reproduction—travelling seminar for professors in faculties of medicine, in collaboration with the Latin American Centre for Perinatology and Human Development and the Universities of Buenos Aires and Chile  |
| Argentina, Uruguay and Chile; March-April (14) |</p>
<table>
<thead>
<tr>
<th>Event Description</th>
<th>Location and Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public health and maternal and child health nursing—course for instructors of nursing auxiliaries</td>
<td>Bolivia, July-Dec. (25)</td>
</tr>
<tr>
<td>Maternal and child health nursing—Master’s degree course</td>
<td>Cali, Colombia; Jan. 1973-July 1974 (6)</td>
</tr>
<tr>
<td>Maternal and child health and family planning—course for nurses in service and education posts</td>
<td>Cali, Colombia; April-Aug. (33)</td>
</tr>
<tr>
<td>Maternal and child health—course for nurse-midwife practitioners</td>
<td>San José, Costa Rica; March 1973-Feb. 1974 (20)</td>
</tr>
<tr>
<td>Maternal and child health and family planning—course for nurse educators</td>
<td>Panama City, March-May (13)</td>
</tr>
<tr>
<td>Family nursing, including family planning—postbasic course</td>
<td>Panama City, June-Dec. (19)</td>
</tr>
<tr>
<td>Maternal and child health and family planning—course for service nurses</td>
<td>Panama City, Sept.-Nov. (22)</td>
</tr>
<tr>
<td>Application of surgical procedures to human reproduction and family planning—regional seminar (SEARO)</td>
<td>New Delhi, Feb. (14)</td>
</tr>
<tr>
<td>Education in paediatrics—regional seminar (SEARO)</td>
<td>Dacca, June (23)</td>
</tr>
<tr>
<td>Social, cultural, and educational factors related to effective planning and programming for infant health—regional workshop (SEARO)</td>
<td>Kathmandu, Sept.-Oct.</td>
</tr>
<tr>
<td>Teaching of human reproduction, family planning and population dynamics—regional course</td>
<td>Dacca, July (41)</td>
</tr>
<tr>
<td>Mother and child care—regional course organized by the International Children’s Centre</td>
<td>Paris and Lyons, Oct.-Dec. (2)</td>
</tr>
<tr>
<td>Family health and family planning—course, in collaboration with the International Children’s Centre and the Free University, Brussels</td>
<td>Paris and Brussels, Jan.-Feb. (22)</td>
</tr>
<tr>
<td>Child health—course, in collaboration with UNICEF</td>
<td>Beirut, Nov.</td>
</tr>
<tr>
<td>Problems of abortion—seminar</td>
<td>Iran, April-May (50)</td>
</tr>
<tr>
<td>Medical and surgical aspects of family planning—regional seminar (WPRO)</td>
<td>Tokyo, Oct. (21)</td>
</tr>
<tr>
<td>Public health nutrition—interregional course for physicians</td>
<td>Paris, Feb.-April (14)</td>
</tr>
<tr>
<td>Malnutrition and mental development—workshop</td>
<td>Saltsjöbaden, Sweden; Aug. (37)</td>
</tr>
<tr>
<td>Food and nutrition—regional seminar (EMRO)</td>
<td>Beirut, Sept.</td>
</tr>
<tr>
<td>Group feeding—regional course (EMRO)</td>
<td>Cairo, March-April</td>
</tr>
<tr>
<td>Nutrition teaching in medical schools—workshop</td>
<td>Isfahan, Iran; Dec. (20)</td>
</tr>
<tr>
<td>Health education methods and techniques—regional course</td>
<td>Lomé, Jan.-Feb. (13)</td>
</tr>
<tr>
<td>Social science research methodology applied to family health education—regional course</td>
<td>Bangkok, Nov.-Dec. (25)</td>
</tr>
<tr>
<td>Health education—refresher course</td>
<td>Burma, Oct.-Nov. (15)</td>
</tr>
<tr>
<td>School health education—course</td>
<td>Burma, Dec. (30)</td>
</tr>
<tr>
<td>Development of education and information materials on family health—regional workshop (WPRO)</td>
<td>Nuku’alofa, Tonga; Oct. (13)</td>
</tr>
<tr>
<td>Family life education in schools, South Pacific—regional seminar (WPRO)</td>
<td>Nuku’alofa, Tonga; Oct. (14)</td>
</tr>
<tr>
<td>Training of health workers in health education—regional seminar (WPRO)</td>
<td>Manila, July-Aug. (16)</td>
</tr>
<tr>
<td>Role of health education in family planning—regional seminar (WPRO)</td>
<td>Manila, Jan. (16)</td>
</tr>
</tbody>
</table>
11. PROPHYLACTIC AND THERAPEUTIC SUBSTANCES

11.1 As the number of powerful chemical and biological preparations for use in patient care grows, governments are becoming more aware of the need for better methods of quality control, for preclinical testing and clinical trials of new medicines, and for surveillance of the therapeutic risks and benefits of existing ones. The Organization has continued to stress the importance of a comprehensive approach to drug quality, safety, and efficacy.

11.2 A special effort is being made to improve the competence of workers in laboratories for the control of biological products at the national level, and training was accordingly provided in biological standardization, as well as in drug quality control and clinical pharmacology (see Chapter 10).

Drug evaluation and monitoring

11.3 Ensuring the safe and efficacious use of medicinal products is a heavy responsibility for national drug authorities, and measures to evaluate the therapeutic benefits of drugs in relation to the risks that may be involved in their use are being developed to an increasing extent in many countries. Decisions by governments to limit the availability of specific drugs for reasons of insufficient safety or lack of efficacy have been increasingly notified to Member States through the WHO drug information circular system. Fourteen new information circulars were issued in 1973, bringing to 123 the total number issued since the inception of this service in 1963. The value of such a service is demonstrated by the issue in several countries of new regulations controlling the use of hexachlorophene in both medicinal and consumer products, following reports of severe adverse reactions in infants and young children.

11.4 To assist public health officials in developing the necessary machinery for evaluating drugs in terms of therapeutic safety and efficacy, a second European symposium on clinical pharmacological evaluation in drug control took place in Heidelberg, Federal Republic of Germany, in September. WHO helped to organize this meeting, which was held under the sponsorship of the Ministry of Youth, Family Affairs and Health of the Federal Republic of Germany. Participants and observers from 25 European countries were given advice by a group of experts in clinical pharmacology on systems and methods suitable for national application.

11.5 Discussions were held between representatives of the International Union of Pharmacology and of WHO in order to strengthen collaboration in research fields of common interest. It was agreed that it would be useful to organize a coordinated programme in which individual drugs widely used for medical purposes in different countries would be studied from the standpoint of clinical pharmacology.

11.6 With the development of more effective detection and reporting of adverse reactions to drugs by doctors and hospitals in Member States, national centres have provided an increasing amount of data for use by the WHO Research Centre for International Monitoring of Adverse Reactions to Drugs, in Geneva. During 1973, centres were established in France and Finland; 17 national drug monitoring centres in four WHO Regions are now actively collaborating in this programme. As at 1 November 1973, 73 104 reports of adverse reactions to 6152 different drugs were recorded in the WHO centre’s files. Detailed summaries concerning newly reported reactions, numerous reactions, and serious or fatal reactions, including fetal malformations, have been provided for study by national centres. Intensive investigations of certain reactions have subsequently been undertaken in collaboration with national centres. In a number of instances measures for closer surveillance have been established and steps taken to alert prescribing physicians following the confirmation of hazards by national drug safety committees. Consultations with experts from national drug authorities were held in Geneva in March and September. The aim of the first consultation was to improve the clinical and pharmacological value of the information exchanged; the second reviewed the operation of the international information system and prepared guidelines for future activities. Assistance for the establishment and development of national drug monitoring centres to detect and investigate causal relationships between drugs and adverse reactions was continued.
11.7 Several Member States are concerned about the economic consequences of the adverse effects of drug therapy. A preliminary study has accordingly been carried out on methods whereby the losses incurred as a result of adverse reactions to drugs used therapeutically might be estimated on a nationwide basis. These methods have been applied experimentally to data for different countries from the files of the WHO Research Centre for International Monitoring of Adverse Reactions to Drugs, Geneva. It is, however, open to debate whether economic losses due to the adverse effects of therapeutic drugs can be directly weighed against the benefits derived from the use of these drugs.

11.8 Taking into account the views of experts from a number of countries, the Director-General proposed to the Twenty-sixth World Health Assembly that a feasibility study be undertaken on the establishment of an international information system on the registration of drugs in Member States. This would be based on information from the drug registration or notification systems in operation in a number of Member States. The aims of the international system would be to provide Member States with data on the conditions of registration and withdrawal of drugs (e.g., details on the composition of the drugs, therapeutic indications, cautionary statements, and marketing restrictions) and with the most complete scientific data available on which registration or withdrawal is based; to improve the scientific and administrative processes of registration so as to facilitate the marketing of useful new drugs and prevent the introduction of harmful ones; to promote the development of acceptable criteria for the safety, efficacy, and quality of drugs; and to reduce the need for repetitive testing in animals and minimize human exposure to possible risks in clinical trials. This proposal was adopted by the Health Assembly in resolutions WHA26.30 and WHA26.31, and Member States with the necessary facilities were subsequently invited to take part in the proposed feasibility study.

11.9 It has been known for some time that the responses of patients to specific drugs can vary, depending on, for example, the dose, the severity of the disease, and the rate of metabolism and excretion and other pharmacokinetic factors. More recently it was learned that differences in the bioavailability of active substances of pharmaceutical dosage forms are an important and often unrecognized source of variations in drug response and may have a bearing on the therapeutic and adverse effects produced by pharmaceutical preparations. A scientific group on the bioavailability of drugs, meeting in Geneva in June, reviewed various aspects of the evaluation and testing of pharmaceutical products for the biological availability of their medicinal ingredients. It advised that priority be given to studying the bioavailability of products containing drugs for the treatment or prevention of serious illness, particularly those drugs with a steep dose-response relationship and an unfavourable therapeutic index (ratio of efficacy of the drug to its lethality in animals) and those that are relatively poorly soluble in water. Steroids, antiepileptics, cardiac glycosides, hypoglycaemic agents, anticoagulants, and certain anti-inflammatory drugs and anti-infectives are among the products requiring early consideration.

11.10 WHO-sponsored studies on drug utilization in different countries were continued. Investigators in Norway, Sweden and the United Kingdom were joined by others in Belgium and the Netherlands. Results were discussed at an international symposium on drug consumption held in Prague in October. At present, relationships between morbidity and drug consumption in circumscribed fields of pathology are being studied, as are the differences in the manner of use of certain groups of drugs in different geographical areas.

11.11 In collaboration with UNIDO, assistance was given to several countries in the African Region for the establishment of their own pharmaceutical industries. UNIDO helped with the planning aspects and, through an intercountry project, WHO advised on questions of drug safety and efficacy, as well as on quality control. Recommendations were made for the reorganization of the National Pharmaceutical Office in Chad, and the possibility of creating a drug monitoring centre in the Central African Republic was studied. The Government of Uganda was helped in organizing a drug control laboratory and in preparing a request to UNIDO for assistance.

Pharmaceuticals

11.12 The twenty-ninth and thirtieth lists of proposed international nonproprietary names for pharmaceutical substances were published in the *WHO Chronicle*.

The lists, containing 82 and 85 names respectively, bring the total of such proposed names to 3130. The thirteenth list of recommended international nonproprietary names, consisting of 147 proposed names to which no objection had been filed or in respect of which objections had been withdrawn, was also published.\(^2\) In addition to the third cumu-

\(^1\) *WHO Chronicle*, 1973, 27, 120, 380.

ative list of proposed names, comprising all those published in lists 1-25, computer printouts listing all names from lists 1-30 alphabetically, together with references to national nonproprietary names, were made available upon request to national committees on nonproprietary names and other interested parties.

11.13 Several countries publish their own national nonproprietary names, the majority of which are identical to the international nonproprietary names. In order to assess the use made in countries of the international nonproprietary names for regulatory, pharmacopoeial, labelling, and other purposes, a questionnaire was sent out to Member States, and the replies received will be submitted for consideration by an expert committee. It is encouraging to note that one country which used to select and publish its own nonproprietary names is now systematically adopting new recommended international nonproprietary names as national names.

11.14 Plastics are now widely used for containers for blood and injections generally, as well as for liquids that are not administered parenterally, and for syringes and other injection devices. However, chemical and physical tests alone do not provide adequate specifications and biological tests on aqueous extracts as described in some national pharmacopoeias are not always sufficiently sensitive to discriminate reliably between suitable and unsuitable plastics. A 172-page document entitled “Plastic Containers for Pharmaceuticals—Testing and Control” has therefore been issued by WHO. It contains a general review of the problems involved in the use of such containers and an account of existing national requirements in this connexion.

11.15 During 1973 the WHO Centre for Chemical Reference Substances, in Stockholm, made five new substances available for use in connexion with the WHO programme on quality specifications for drugs. A total of 68 chemical reference substances are now available. They are provided for tests and assays included in the International Pharmacopoeia, especially when infrared identification is required, when chromatographic tests and assays are specified in the monographs, or when spectrophotometric or photometric methods are necessary for the determination of a substance. There is a definite tendency towards an increase in the number of chemical reference substances needed for pharmaceutical analysis and, with the introduction of automated procedures, it can be foreseen that reference substances will be needed for most drugs. The need for increased international cooperation in this field is obvious.

11.16 Collaboration between national pharmacopoeia commissions, institutions establishing chemical reference substances, and WHO has greatly increased during the last few years. Such collaboration is vital, not only for establishing the actual reference substances, thus minimizing duplication of effort, but also for developing generally acceptable principles and criteria for the use and evaluation of the substances. Consultations were held during the year to discuss ways of increasing international cooperation in the field of chemical reference substances still further by developing a scheme for the regular exchange of technical information between national organizations engaged in the establishment of chemical reference substances and WHO.

11.17 In 1969, the Twenty-second World Health Assembly, in its resolution WHA22.50, recommended that Member States adopt and apply a certification scheme on the quality of pharmaceutical products moving in international commerce. A number of Member States have since stated their willingness to participate, but the comments received indicate that the original scheme needs to be thoroughly revised. This scheme provides for two certificates, known as Certificate A (for the certification of manufacturers respecting good practices in the manufacture and quality control of drugs) and Certificate B (for the certification of individual batches). Under the scheme, the responsible public health authorities of an exporting country would, after inspection, establish and keep up to date a list of manufacturers of drugs satisfying the requirements of good practices in manufacture and quality control. Comments from Member States suggest that it is rarely practicable for the authorities of exporting countries to certify individual batches of drugs. The usefulness of lists of manufacturers observing good manufacturing practices has also been questioned. A draft revised certification scheme was therefore prepared for circulation to all Member States, together with a request for comments, with a view to the preparation of a final text to be presented to the World Health Assembly.

11.18 The Organization continued to help governments in various parts of the world to deal with problems in the pharmaceutical field. For example, in the African Region, fellowships in pharmacy and pharmacology were awarded and refresher training

---


was organized for pharmacy inspectors. The Government of Zaire was given assistance in the reorganization of its Division of Pharmaceutical Services and advice on new pharmaceutical legislation, the functioning of pharmacies, and drug control. In the Region of the Americas, the Organization provided advisory services on drug quality control to the Governments of Barbados, Brazil and Ecuador. It also assisted Brazilian officials in arrangements for the installation of a drug quality institute in São Paulo to train drug analysts and inspectors and to furnish technical information concerning drug quality control. The Organization provided advisory services to governments in connexion with the establishment of a drug testing laboratory for the Caribbean area. Arrangements were made with the United States Food and Drug Administration and the Canadian Health Protection Branch for training drug analysts and drug establishment inspectors from Argentina, Barbados, Cuba, Guyana, Trinidad and Tobago, and Venezuela. In the South-East Asia Region, assistance was given for the further training of analysts working in drug control laboratories at Rangoon and Colombo. WHO continued to advise the Government of Thailand on such matters as the training of drug inspectors, inspection procedures, pharmaceutical production, guidelines for drug manufacturers, and the analysis of drugs and biological products. A WHO workshop on the quality control of drugs, held in Jakarta in June, was attended by representatives of national drug control agencies in Bangladesh, India, Indonesia, Nepal, Sri Lanka, and Thailand. Legislative and other aspects of drug quality control were discussed and recommendations were made on procedures for the surveillance of drugs marketed in the Region. In the Eastern Mediterranean Region, assistance was given to Egypt, Iran, Lebanon, Pakistan and Sudan for the promotion of good practices in the manufacture and quality control of pharmaceutical preparations and the establishment of laboratories for the quality control of pharmaceutical preparations. Jordan, the Libyan Arab Republic, and Saudi Arabia were given guidance and assistance in the organization of medical stores and medical supplies.

**Biological standardization**

11.19 The Organization continued its activities leading to the establishment of international standards and international reference preparations for biological substances of importance in prophylaxis and therapy. Meeting in April, the WHO Expert Committee on Biological Standardization 1 considered the establishment of new international reference preparations and the replacement of some established preparations, stocks of which were running low. A number of collaborative assays coordinated by the three WHO International Laboratories for Biological Standards in Denmark (Copenhagen) and the United Kingdom (London and Weybridge) were presented, and certain requirements for biological substances were reviewed by the Committee.

11.20 Among the pharmacological substances considered, the International Reference Preparation of Gramicidin S was discontinued. The Committee also decided to discontinue the international reference preparations of certain organic arsenicals and MSb on the ground that these substances have been superseded by other drugs, and biological methods of assay are no longer required for them. The Committee decided to retain the International Standard of Vitamin D because it would be advisable to have available for international use a well characterized, stable preparation that could be used for biological assays. The International Standard for Glucagon was established, and the International Standard for Heparin was replaced. It was decided that the International Standard for Diphtheria Toxoid, Plain, should be replaced and that the WHO International Laboratory for Biological Standards at Copenhagen should arrange for a collaborative assay of suitable replacement material. The Committee noted that collaborative research studies were being arranged with the aim of developing a new method for titrating the virus content of yellow fever vaccines.

11.21 The International Reference Preparation of Human Immunoglobulin IgE was established, and that of Diphtheria Antitoxin for Flocculation Test was replaced. The Committee decided to modify the names of all the standards for gas-gangrene antitoxins to conform to present principles of bacterial nomenclature, and the International Standard for Gas-gangrene Antitoxin (Clostridium histolyticum) was replaced. International Standards for Anti-Salmonella pullorum Serum (Standard Form S) and for Anti-Salmonella-pullorum Serum (Variant Form V) were established.

11.22 As regards requirements for biological substances, the Committee adopted Requirements for Rabies Vaccine for Human Use, prepared by WHO in collaboration with a number of experts. Because of the replacement of the International Reference Preparations, it was necessary to adopt an addendum to the Requirements for Cholera Vaccine. An addendum to the Requirements for Inactivated Influenza Vaccine

---

was also adopted to permit specifications for haemagglutinin content in influenza vaccines to be made in international units.

11.23 A revised version of the General Requirements for the Sterility of Biological Substances was adopted; it takes into account experience and technical advances since the formulation of these requirements in 1959. The Committee also made detailed suggestions and recommendations concerning proposed General Requirements for the Manufacture and Control of Sterile Pharmaceutical Preparations and Biological Substances and for Sterility Testing, which were prepared by WHO and will be considered at a later stage by a WHO Expert Committee on Specifications for Pharmaceutical Preparations.
12. COORDINATION OF MEDICAL RESEARCH

12.1 Accounts of particular research activities—an indispensable element of WHO's operational programmes—are given under the relevant headings in the preceding chapters. The present chapter summarizes some of the general aspects of the Organization's coordinated research programme.

12.2 Much of the research with which WHO is concerned is collaborative research—carried out by persons or institutions in various parts of the world and coordinated by WHO, which provides some financial support. Institutions designated as WHO international or regional reference centres, which may also receive support from the Organization, provide essential international services. There were 255 such reference centres at the end of 1973, and 208 officially designated WHO collaborating institutions and laboratories (see Annex 5).

12.3 In accordance with resolution WHA25.60 adopted by the Twenty-fifth World Health Assembly, an interim report containing proposals concerning WHO's role in the development and coordination of biomedical research was presented to the Executive Board at its fifty-first session, in January 1973, and to the Twenty-sixth World Health Assembly, in May. In resolution WHA26.42 the Assembly requested that the study be continued and that a full report be presented to the Executive Board at its fifty-third session and to the Twenty-seventh World Health Assembly, including recommendations of the WHO Advisory Committee on Medical Research. The study was accordingly pursued, and a full report was prepared for submission to the Executive Board at its fifty-third session, in January 1974.

12.4 At its fifteenth session, in June, the WHO Advisory Committee on Medical Research made recommendations to the Director-General on policy regarding WHO-supported research in the light of developments since the beginning of the intensified programme of medical research in 1959. The Committee emphasized that WHO's research programme should be directed mainly towards the solution of problems not covered by national efforts, particularly those that cut across national boundaries or cannot be investigated satisfactorily without international cooperation or assistance; for developing countries, research on nutrition and communicable diseases (particularly parasitic diseases) should remain high priorities. The cooperation of national agencies should be sought, so as to enable WHO to maintain an up-to-date and comprehensive record of research going on in various parts of the world. In view of the success of the WHO research and training centres, the principle behind them should be extended to all fields, as far as appropriate, including operational research. Greater provision should be made for peer review of decisions on individual projects before their approval, and technical documents should be made as widely available as possible to research workers.

12.5 The Committee reviewed the research programmes in malaria, toxicology of pesticides, nutrition, human reproduction, and the development of environmental health criteria. It also examined the reports of five selected scientific groups—on viral hepatitis; inherited blood clotting disorders; treatment of haemoglobinopathies and allied disorders; cell-mediated immunity and resistance to infection; and agents stimulating gonadal function in the human. In addition, the Committee discussed research and development in biomedical engineering applied to WHO epidemiological problems (see paragraphs 12.9-12.11); it considered that this field should be further explored in view of its great potential usefulness.

12.6 The Advisory Committee on Medical Research of the Pan American Health Organization (PAHO)—at its twelfth meeting, held in Washington, D.C., in June—reviewed the research activities being carried out in the Region of the Americas and examined the reports of scientific groups on Chagas' disease in Brazil; biomedical research in Latin America; the use of medical auxiliaries in the hemisphere; and surveillance of and research on infectious diseases along the Trans-Amazon Highway, with special emphasis on the etiology and epidemiology of the haemorrhagic syndrome encountered in several countries of South America.

---

12.7 Seven scientific groups were convened in Geneva by WHO during the year on the following subjects: environmental health criteria; bioavailability of drugs (principles and problems); assessment of the carcinogenicity and mutagenicity of chemicals; comparative aspects of reproductive processes in different species and their relevance to human reproduction; assessment of the relative effectiveness, safety and acceptability of different methods of birth control; operational research on delivery of family planning care in health services; and ecology and control of rodents of public health importance. Reference is made to these meetings in the relevant sections of this report.

12.8 Under the WHO research training programme, 59 grants were awarded in 1973 to enable research workers to work abroad and widen their research experience with a view to increasing their contribution to the research activities of their own countries on their return. In addition, 38 grants were awarded to promote the exchange of scientific knowledge by enabling investigators studying subjects of interest to WHO to visit scientists in other countries working in similar or related fields. The research grants awarded for training and exchange are shown, by subject and type of grant, in Annex 6.

12.9 Research has continued on the development of automated instrumentation applicable to large-scale epidemiological studies. For example, a portable health data recorder and a cardiac interbeat interval histogram recorder have been tested in the field, with successful results, and a number of technical improvements have been made to improve their reliability; and an image digitizer for microbe detection has been redesigned to reduce its size and cost and also to broaden its application (for instance, to malaria and tuberculosis). All three instruments were developed in collaboration with the Federal Polytechnic School, Lausanne, Switzerland. Work on instrumentation for more rapid and accurate detection of the tubercle bacillus was undertaken together with the Massachusetts Institute of Technology, Cambridge, Mass., USA.

12.10 During an international symposium on the development of rapid methods and automation in microbiology (see paragraph 7.54), a panel discussion was organized on measurement problems encountered in many of WHO's communicable disease projects. A review was presented of the results of the work done in collaboration with the Federal Polytechnic School, Lausanne, and proposals were made regarding further research.

12.11 Methodological research has also been carried out in collaboration with the Imperial College of Science and Technology, in London, to refine the analysis of longitudinal epidemiological records for the detection of trends and fluctuations, as well as the analysis of spatial distributions, for example of environmental health factors. The use of display technology is being developed for these purposes—that is, the computer-assisted processing of data for graphic representation of results. Further refinement of these methods will be needed for practical application to WHO programmes in environmental health, vector biology and control, epidemiology and communications science.

12.12 The potential uses of space technology—particularly the use of remote sensing technology for monitoring the human environment and for specific public health and educational programmes—were kept under review, and WHO participated in a symposium on this subject organized by the International Council of Scientific Unions in Konstanz, Federal Republic of Germany, in May.

---

13. COOPERATION WITH OTHER ORGANIZATIONS

13.1 In 1970, when the United Nations General Assembly adopted the International Development Strategy and proclaimed the period 1971-80 the Second United Nations Development Decade, it provided that a first biennial review and appraisal of progress achieved in the implementation of the Strategy should be undertaken throughout the United Nations system during 1973. However, it became evident in 1972 that the first appraisal could only describe the situation at the beginning of the Decade, in view of the delay in the availability of statistical data. Accordingly the Organization submitted to the Secretary-General in February 1973 a detailed memorandum concerning the health situation at the beginning of the Decade and indicating various problems that had arisen in the effort to evaluate progress in the first biennium. The document was made available to the Economic and Social Council's Committee for Development Planning and its Committee on Review and Appraisal, and to the Council itself at its fifty-fifth session. According to a decision adopted by the General Assembly at the end of the year the specialized agencies, as well as other organizations and programmes of the United Nations system and the United Nations itself, will take steps to provide the necessary material for the mid-term review and appraisal in 1975; material collected in connexion with the Fifth Report on the World Health Situation, 1969-72, will be used for the preparation of the Organization's contribution to this mid-term review.

13.2 WHO provided extensive background documentation and assistance in connexion with preparations for World Population Year, 1974, and for the World Population Conference to be held in Bucharest in August. It participated in four symposia organized by the Conference secretariat and prepared five basic papers for the Conference. The papers will be updated on the basis of information provided by two symposia to be convened by WHO in 1974—one in Lima in February, and the second in Manila in July. The Administrative Committee on Coordination (ACC), through its Sub-Committee on Population, assumed overall responsibility at the intersecretariat level for promoting interagency cooperation in preparations for the Conference and for World Population Year. Close cooperation has been maintained with the United Nations Fund for Population Activities (see paragraph 15.16).

13.3 The Organization participated in the first two meetings of the Environment Coordination Board, held in April and October, and in the first meeting of the Governing Council of the United Nations Environment Programme, in June. Throughout the year it also participated in interagency consultations as well as in bilateral consultations with the secretariat of the Environment Programme, including those concerned with the preparation of the programme of work to be presented to the Governing Council at its March 1974 meeting.

13.4 The Organization provided expert advice and assistance in connexion with a number of natural disasters and emergency situations. The close working relationship established in 1972 with the Office of the United Nations Disaster Relief Coordinator in Geneva was continued—in particular, in connexion with assistance to Nicaragua and Pakistan. Cooperation was also maintained with the Office of the United Nations High Commissioner for Refugees, designated by the Secretary-General as the focal point until late 1973 for interagency assistance for the resettlement and rehabilitation of refugees and displaced persons returning to Southern Sudan, and with FAO and the United Nations with regard to the drought in the sub-Saharan Sahelian zone of Africa. The Organization helped to assess the health implications of the drought with respect not only to the emergency needs but also to the medium- and long-term plans being developed jointly by the United Nations and the Permanent Interstate Committee of the governments concerned. The magnitude of the disasters and emergency situations during the year necessitated a considerable increase in the level of supply operations (see paragraph 15.33 et seq.).

13.5 The Economic and Social Council, after reviewing a report of the Commission on Narcotic Drugs, endorsed the view that additional expert information would enable the Commission to carry out its work more effectively, and invited WHO, as the competent specialized agency, to assist the Commission by preparing timely analytical reports on the epidemiological pattern of drug abuse. In May, the Twenty-
sixth World Health Assembly accepted that invitation in its resolution WHA26.52, which was later brought to the attention of the Economic and Social Council. A project that should facilitate fulfilment of this request and enhance the effectiveness of the Organization's work is under discussion with the United Nations Fund for Drug Abuse Control (UNFDAC). ACC has agreed that its Inter-Agency Advisory Committee on Drug Abuse Control should fulfil the dual function of assisting ACC in the coordination of drug-abuse control activities and providing advice to the Executive Director of UNFDAC. The Organization continued to maintain close cooperation with UNFDAC and is carrying out several UNFDAC-supported projects.

13.6 The proposed programme and budget estimates for 1974 were circulated to the United Nations and organizations of the United Nations system in December 1972, at the time of their transmission to Member States of the Organization, and the comments received were brought to the attention of the WHO Executive Board and the World Health Assembly. Consultations were held with a number of specialized agencies, as well as with the United Nations, at an early stage in the preparation of the programme and budget proposals for 1975 in an effort to avoid duplication or overlapping, and to ensure that, as far as possible, programmes are complementary in character.

13.7 The Economic and Social Council reaffirmed that the United Nations regional economic commissions are the main general economic and social development centres within the United Nations system in their respective regions, and cooperation between WHO and the regional economic commissions was intensified during the year. Liaison was maintained with ECA and ECAFE (both of which include countries in three WHO Regions) by senior public health officials serving as liaison officers, and with ECE and ECLA through the respective regional offices of the Organization. The Regional Office for the Eastern Mediterranean was responsible for liaison with the United Nations Economic and Social Office in Beirut (UNESOB) up to the end of 1973; as from 1 January 1974 it will maintain liaison with the newly established Economic Commission for Western Asia.

13.8 The Organization is being requested ever more frequently in resolutions of the United Nations General Assembly or of the Economic and Social Council to provide reports or substantial contributions to comprehensive studies being prepared by the Secretary-General. The reports prepared during 1973 are mentioned in the summary of cooperation with other organizations at the end of this chapter, under the appropriate headings.

13.9 The UNDP Governing Council approved country programmes for 23 countries at its fifteenth session, held in New York in January-February 1973, and for a further 24 countries at its sixteenth session, held in Geneva in June. Considerable progress has been made with country programming since its introduction by UNDP in 1971. By the end of 1973, country programmes had been approved for 82 of the 116 countries or territories for which the procedure will be followed, leaving a further 34 to be dealt with in 1974-75. In each instance WHO provides a country brief and comments on the draft country programme. During 1973 it continued its review of the draft programmes to be submitted to the Governing Council's session in January 1974.

13.10 Reviewing the experience gained in country programming, the Governing Council expressed general satisfaction at the way in which the specialized agencies have discharged their functions, often by restructuring their services to meet the objectives of Economic and Social Council resolution 1530(XLIX).

13.11 Country programming is carried out against an indicative planning figure (IPF) for each country. Under the new criteria established by the Governing Council for calculating IPFs for the next programming period (1977-81), at least 25% of total resources will go to the 25 countries identified as being the least developed among the developing countries. As an interim measure, the Governing Council has allocated $35 million to these countries for 1973-76, and special studies have been carried out in six countries to programme additional assistance in the form of special pilot or demonstration projects and schemes to strengthen the national planning machinery.

13.12 Under the authority granted to him by the Governing Council, the Administrator directly approved 327 large-scale projects. Among them were 31 for which WHO was designated as executing agency (see Table 5), bringing to 117 the number of large-scale projects so far entrusted to WHO for execution.

13.13 In 1973 the expansion of the Programme was hampered by financial difficulties arising out of currency realignments and the fact that some major donors did not increase their contributions by the
### Table 5. Large-scale UNDP-assisted projects for which WHO is executing agency on which procedural action was taken during 1973

<table>
<thead>
<tr>
<th>Country</th>
<th>Project Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Maternal and child health/family planning (A &amp; S)</td>
</tr>
<tr>
<td>Bahrain</td>
<td>Sewerage, Bahrain (A &amp; S)</td>
</tr>
<tr>
<td>Botswana</td>
<td>National Health Institute, Gaborone (A &amp; S)</td>
</tr>
<tr>
<td>Brazil</td>
<td>Development of research and environmental pollution control programmes for the State of São Paulo (S)</td>
</tr>
<tr>
<td>Burma</td>
<td>Education and training of health manpower (A &amp; S)</td>
</tr>
<tr>
<td>Colombia</td>
<td>Administrative development of the health sector (A &amp; S)</td>
</tr>
<tr>
<td>Colombia</td>
<td>Improvement of health information system (A &amp; S)</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Assistance to veterinary laboratories, National Institute of Hygiene (A)</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Strengthening of health sector (A)</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Public and environmental health control, Awash Valley (S)</td>
</tr>
<tr>
<td>Gabon</td>
<td>Treatment, drainage and disposal of liquid and solid wastes, Libreville (S)</td>
</tr>
<tr>
<td>Gambia</td>
<td>Survey of sewerage and drainage systems, Banjul/Kombo St Mary area (A &amp; S)</td>
</tr>
<tr>
<td>Greece</td>
<td>Environmental pollution control, metropolitan area of Athens (A &amp; S)</td>
</tr>
<tr>
<td>Guatemala</td>
<td>Unified Food Control Laboratory, Guatemala City (A &amp; S)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Development of central and regional occupational health and industrial hygiene laboratories (A &amp; S)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Sewerage and sanitation, Jakarta (A &amp; S)</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Training of X-ray and electromedical technicians (S)</td>
</tr>
<tr>
<td>Iraq</td>
<td>Comprehensive basic health services—training (S)</td>
</tr>
<tr>
<td>Khmer Republic</td>
<td>Training of health laboratory technicians (A &amp; S)</td>
</tr>
<tr>
<td>Khmer Republic</td>
<td>Water supply, sewerage and drainage studies, Phnom Penh (A &amp; S)</td>
</tr>
<tr>
<td>Laos</td>
<td>Nursing education (A)</td>
</tr>
<tr>
<td>Madagascar</td>
<td>Pre-investment survey of water supply and sewerage, Tananarive (S)</td>
</tr>
<tr>
<td>Mauritius</td>
<td>Environmental and occupational health training (A &amp; S)</td>
</tr>
<tr>
<td>Mongolia</td>
<td>Brucella vaccine production, Songino (S)</td>
</tr>
<tr>
<td>Niger</td>
<td>Assistance to the National School of Public Health, Niamey (phase II) (S)</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>Malaria control programme (A &amp; S)</td>
</tr>
<tr>
<td>Republic of Viet-Nam</td>
<td>Water supply and sewerage in urban communities (A &amp; S)</td>
</tr>
<tr>
<td>Senegal</td>
<td>Study of water resources on the north coast and technical assistance in sanitation and water supply (A &amp; S)</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>Vector control (A &amp; S)</td>
</tr>
<tr>
<td>Sudan</td>
<td>National Health Laboratory Service, Khartoum (S)</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>Faculty of Pharmacy, University of Damascus (A)</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>Technical Health Institute, Damascus (A &amp; S)</td>
</tr>
<tr>
<td>Thailand</td>
<td>Community water supply (A &amp; S)</td>
</tr>
<tr>
<td>Turkey</td>
<td>Promotion of training and programmes in sanitary engineering, Middle East Technical University, Ankara (A &amp; S)</td>
</tr>
<tr>
<td>Uruguay</td>
<td>Development of nursing services (S)</td>
</tr>
<tr>
<td>Uruguay</td>
<td>Medical care and hospital administration (S)</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Environmental Pollution Research Centre, Caracas (A &amp; S)</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Programme for strengthening the activities of the National Institute of Hygiene, Caracas (A &amp; S)</td>
</tr>
<tr>
<td>Yemen</td>
<td>Health Manpower Institute, Sana'a (S)</td>
</tr>
<tr>
<td>Yemen</td>
<td>Water supply and sewerage systems for Sana'a and Hodeida (A &amp; S)</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>Community water supply, wastes disposal and pollution control, Kosovo (S)</td>
</tr>
<tr>
<td>Zambia</td>
<td>Development of basic health services (S)</td>
</tr>
<tr>
<td>Regional</td>
<td>Onchocerciasis control in the Volta River basin (A &amp; S)</td>
</tr>
<tr>
<td>Regional</td>
<td>Regional health manpower development, South-East Asia (A &amp; S)</td>
</tr>
<tr>
<td>Regional</td>
<td>Team in health planning, training and related study methodologies, South-East Asia (A &amp; S)</td>
</tr>
</tbody>
</table>

A : New projects approved during 1973 by the Administrator of UNDP.  

9.6% a year foreseen in the Consensus approved by the UNDP Governing Council in 1970.¹


13.14 At the meetings of the Inter-Agency Consultative Board (IACB) and its Programme Working Group, held in Geneva (April) and New York (October), attention was given to the best means of providing sectoral advice and support to UNDP.
Guidelines governing the relationship between WHO and UNDP at the country level were agreed by the Director-General and the Administrator in order to promote smooth working relations and define the respective responsibilities of UNDP Resident Representatives and WHO Representatives. This agreement will help the Resident Representative to obtain the sectoral support in the health field that he requires from WHO in country programming and project monitoring. The Programme Working Group reviewed measures taken by the agencies to improve their ability to formulate, implement and monitor their projects effectively. The Twenty-sixth World Health Assembly touched on the same topic in its resolution WHA26.49, and during 1973 WHO carried out a review of the procedures governing its participation in country programming and project management with a view to possible improvements. IACB also examined cooperation between bilateral-aid programmes and UNDP.

13.15 A notable feature of UNDP assistance in which WHO participated, with FAO and IBRD, was the preparatory assistance mission on onchocerciasis control in the Volta River basin area, which continued the preparatory assistance mission on onchocerciasis which WHO participated, with FAO and IBRD, was grammes and UNDP.

13.16 During 1973 project documents were signed for 41 large-scale projects entrusted to WHO for execution (see Table 5), including 27 of the 31 approved by the Administrator in the course of the year. Further project documents were under preparation for all the interregional and regional projects planned for 1974 and subsequent years, as well as for 69 large-scale country projects. In addition, preparatory assistance was approved for, or provided to, Belize, Brazil, Ecuador, Ghana, Greece, Khmer Republic, Mauritius, Senegal, Sri Lanka, Sudan, Syrian Arab Republic, Turkey, Venezuela, and Yemen.

13.17 In August and September 1973 joint UNDP/WHO missions visited the Regions concerned to review the regional projects for a team in health planning, training and related study methodologies and on regional health manpower development in South-East Asia, on malaria in the Eastern Mediterranean, and on environmental and public health advisory services in the Western Pacific. The terminal report on the large-scale project on public water supply, drainage and sewerage for the southwest coastal area of Sri Lanka was submitted to UNDP during the year.

WHO participated with other agencies and UNDP in a review of reporting procedures for UNDP-assisted projects; modified procedures will be introduced in 1974.

13.18 WHO continued to review requests submitted by governments for UNDP assistance, advising on health implications, and participated in a number of projects being executed by other agencies. It provided assistance in various fields, including epidemiology, sanitary engineering, hospital dietetics, pesticide toxicology, and veterinary public health. Similarly, some of the UNDP projects for which WHO is executing agency were assisted by the United Nations (prosthetics/orthotics), ILO (vocational rehabilitation), and FAO (agricultural economics and veterinary services).

13.19 WHO projects financed from UNDP sources are shown in Part III of this Annual Report.

United Nations Children’s Fund

13.20 At its twenty-seventh session, held in New York in April 1973, the Executive Board of UNICEF approved a budget of US $76.5 million, of which US $57.08 million was allocated directly to aid programmes. Most of the commitment of US $23.4 million to health was earmarked for maternal and child health, rural sanitation and water supplies, family planning and health education; a further US $6.2 million were allocated to nutrition. An important technical item on the Executive Board’s agenda was nonformal education, in which WHO’s main interest is the job-oriented nonformal training of certain categories of auxiliary and traditional health workers.

13.21 Close collaboration between WHO and UNICEF continued throughout the year. The joint policy of the two organizations on measles immunization was reviewed in the light of the availability of effective, safe and reasonably priced vaccine. As a result, UNICEF was encouraged to provide assistance in the form of measles vaccine, subject to the administrative feasibility of immunization campaigns, which is to be studied jointly with WHO in each case.

13.22 The revision of UNICEF’s medical equipment guide lists, teaching aid lists and bibliographies proceeded, while work began on updating its lists of drugs. On the basis of the guidelines for the planning of national rural water supply and sanitation programmes in developing countries, which were completed in 1973, UNICEF is revising its guide lists for rural water supply equipment.
13.23 Programmes in keeping with the policies recommended by the UNICEF/WHO Joint Committee on Health Policy at its nineteenth session in 1972 were started. Particularly noteworthy are the large xerophthalmia prevention programme in Bangladesh (see paragraph 9.41) and the family planning projects being jointly assisted in a number of countries.

13.24 The two organizations continued their cooperation in emergency and relief operations. After providing assistance to the United Nations Relief Operation in Dacca, they have undertaken joint efforts in the Sahel area of sub-Saharan Africa, in Nicaragua and in Viet-Nam, where WHO advised UNICEF on the most urgent health requirements, drugs and medical equipment. Advice was also provided to UNICEF in connexion with its stockpiling of drugs and medical supplies.

United Nations Relief and Works Agency for Palestine Refugees in the Near East

13.25 WHO continued to support the UNRWA health programme by providing the services of the Agency's Director of Health and five other health specialists. On request, the Organization also advised the Agency on the development of a mental health programme for refugee children. The contributions received by WHO up to 31 December 1973 from eight of its Members in response to the Director-General's appeal in accordance with World Health Assembly resolution WHA24.32, amounting to US $11 477 in cash and US $5000 (contributor's evaluation) in medical supplies, are being used in UNRWA's health programme.

13.26 UNRWA's comprehensive community health services, for which some 1.25 million refugees are eligible, comprise preventive and curative medical, dental and nursing care, environmental sanitation (for those living in camps), and nutritional support for vulnerable groups. Despite continuing serious budgetary difficulties, the level of health services was maintained, and in fact some modest improvements were achieved in the programme and facilities. Through appropriate preventive measures including surveillance, health education, environmental sanitation and an extensive programme of regular immunization and special campaigns, the communicable diseases were kept generally under control. No case of cholera, smallpox, louse-borne or endemic typhus, relapsing fever, plague or yellow fever was reported during the year. However, 8 cases of cholera occurred among the refugees in late 1972 (1 in the Syrian Arab Republic and 7 on the west bank of the River Jordan); these had not been confirmed in time for inclusion in the Annual Report for 1972.

13.27 The Twenty-sixth World Health Assembly considered a report on health assistance to refugees and displaced persons in the Middle East, and on the physical and mental health of the population of the occupied territories and of populations served by UNRWA, together with the abridged annual report of the Director of Health of UNRWA. Subsequently, the Health Assembly adopted resolution WHA26.56, in which it requested the Director-General to intensify and expand the Organization's programme of health assistance to the refugees and displaced persons in the Middle East, and decided to establish a special committee of experts to study the health conditions of the inhabitants of the occupied territories in the Middle East and report on its findings to the Twenty-seventh World Health Assembly.

World Food Programme

13.28 In 1973, the tenth anniversary of the World Food Programme (WFP), the Twenty-sixth World Health Assembly, in resolution WHA26.49, expressed its appreciation of the Programme's cooperation in health promotion. WHO and WFP jointly participated in a symposium on food, health and development organized by the United Nations Centre for Economic and Social Information in Geneva. Joint WFP/WHO missions to identify and evaluate projects, in Egypt, Lesotho, Philippines, Yemen and elsewhere, contributed to the recognition that health activities are necessary for economic and social development and to the allocation of WFP aid in the public health sector. During the year WFP submitted 32 new projects to WHO for technical scrutiny, while many other projects examined previously required reassessment. The January issue of World Health described how food aid can help in the strengthening of health services.

13.29 By 30 June 1973, in over 10 years of operation, WFP had committed food aid to a value of more than US $1444 million to some 760 development or emergency projects in more than 80 countries. Of those commitments, nearly US $104 million were allotted to projects directly promoting health, while many other projects examined previously required reassessment. The progress of the Programme's activities during the last 12-month period for which full figures are available is shown in Table 6.
Table 6. WFP commitments to health and related activities, and to all projects, since the Programme’s inception

<table>
<thead>
<tr>
<th>General nature of project</th>
<th>Projects approved as at 30 June 1972</th>
<th>Projects approved as at 30 June 1973</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>Amount (US $ million)</td>
</tr>
<tr>
<td>Health and related activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health promotion</td>
<td>46</td>
<td>103.6</td>
</tr>
<tr>
<td>Institutional feeding</td>
<td>59</td>
<td>264.2</td>
</tr>
<tr>
<td>Teaching institutions</td>
<td>69</td>
<td>96.3</td>
</tr>
<tr>
<td>Community housing and development</td>
<td>82</td>
<td>154.1</td>
</tr>
<tr>
<td>Total, all projects</td>
<td>588</td>
<td>1315.2</td>
</tr>
<tr>
<td>Development projects</td>
<td>511</td>
<td>1083.2</td>
</tr>
<tr>
<td>Emergency aid</td>
<td>150</td>
<td>129.6</td>
</tr>
</tbody>
</table>

13.30 In June 1973, WFP’s resources were considered sufficient to allow it to fulfil all its current obligations (940 000 metric tons of foodstuffs) up to the end of 1974, with a margin of some 270 000 metric tons for allocation to new projects to be implemented in the remainder of the 1973-74 biennium. By August 1973, however, the changed situation brought about by the acute world shortage of foodstuffs, price increases and inflation led WFP to forecast a deficit, so that new projects had to be postponed. Although the pledges announced at the October session of the WFP Inter-governmental Committee should partly relieve the situation, the Committee decided that the Programme should give priority to emergency projects and, among development projects, to those in the least developed countries, particularly if the projects are labour intensive or assist vulnerable groups or agricultural production.

Nongovernmental organizations

13.31 At its fifty-first session, in January 1973, the Executive Board decided to establish official relations with the following organizations: the International Cystic Fibrosis (Mucoviscidosis) Association, the International Radiation Protection Association, the International Society of Endocrinology, the International Sociological Association, the Population Council, the World Association of Societies of (Anatomic and Clinical) Pathology, and the World Council for Welfare of the Blind. It also decided to resume official relations with the World Federation of Anaesthesiologists, which had been suspended in January 1972 following the triennial review of the list of nongovernmental organizations in official relations with WHO. This brought the number of such organizations to 106 (see Annex 10).

13.32 The extent of cooperation with nongovernmental organizations in official relations with WHO is partially reflected in the preceding chapters of this volume. Other examples of effective collaboration include:

- cooperation with the League of Red Cross Societies and its Nursing Advisory Committee in connexion with natural disasters and other emergency situations;

- cooperation with the Council for International Organizations of Medical Sciences, including cosponsorship of a symposium on human rights and scientific and technological developments in biology and medicine, and cooperation in meetings of groups of experts to discuss proposals for an international nomenclature of diseases of the urinary tract and male genital organs, and of diseases of the respiratory system;

- consultations with the International Air Transport Association in connexion with the implementation of the International Health Regulations and the maintenance of standards for food and water supplies aboard aircraft and the handling there of at airports;

- cooperation with the International Organization for Standardization, and its technical committees on air and water quality, terminology, and physical, chemical and biochemical methodology;

- cooperation with the International Council of Scientific Unions and its Scientific Committee on Problems of the Environment (SCOPE), Committee on Space Research (COSPAR), and Scientific Committee on Water Research (COWAR);

- cooperation with the International Federation of Gynecology and Obstetrics and the International Confederation of Midwives, including a joint study group on the training and practice of midwives and maternity nurses;

- cooperation with the International Union against Cancer and its Committee on International Collaborative Activities, including participation in a symposium on methodology of controlled therapeutic trials.
SUMMARY OF COOPERATION WITH OTHER ORGANIZATIONS

13.33 The following illustrative list of cooperative activities and meetings in which WHO participated indicates the main fields of collaboration during the year between WHO and other organizations, apart from the cooperation referred to above with UNDP, UNICEF, UNRWA, WFP and non-governmental organizations. Other, more detailed examples of cooperation are to be found in the various chapters of this volume.

United Nations and related agencies

United Nations

13.34 Economic and social development: Economic and Social Council’s Committee on Review and Appraisal; working group and, subsequently, session of the Council’s Committee for Development Planning; submission of the WHO contribution to the first biennial review and appraisal of progress in the Second United Nations Development Decade; ACC Sub-committee on the Second United Nations Development Decade; Commission for Social Development; United Nations expert group on the development of field personnel for social development programmes in less developed areas; United Nations study group on community development and urban deprivation; preparation of a report on health concerns of the elderly and the aged (constituting Annex III of the Secretary-General’s report to the General Assembly); preparation of a detailed memorandum on the implementation of the Declaration on Social Progress and Development, in response to General Assembly resolution 2543 (XXIV) (to be annexed to the United Nations 1974 report on the world social situation); cooperation with the United Nations Research Institute for Social Development.

13.35 Population: seventeenth regular session and second special session of the Population Commission; participation in Preparatory Meeting on the World Population Conference, and preparation of basic papers for the Conference; meeting of the Advisory Committee of Experts on the World Population Plan of Action; participation in United Nations symposia on population and development, population and the family, and population resources and the environment; sessions of Inter-Agency Consultative Committee of UNFPA; UNFPA interagency working group to discuss implementation of recommendations of the Population Commission on interdisciplinary training in population; United Nations Committee on Interdisciplinary Training in Population; UNESOB regional population conference; provision of technical assistance and advice regarding the study on the status of women and family planning, started in 1969; ACC Sub-Committee on Population.

13.36 Environmental health and development of water resources: United Nations Committee on Peaceful Uses of the Sea-bed and Ocean Floor beyond the Limits of National Jurisdiction; Third United Nations Conference on the Law of the Sea (organizational session); ACC Sub-Committee on Marine Science and its Applications; ACC Sub-Committee on Water Resources Development, and its working group; ad hoc expert group on flood damage prevention; preparation of a paper on the role of WHO in water resources development, in response to Economic and Social Council resolution 1761 A (LIV).

13.37 Effects of atomic radiation: cooperation with UNSCEAR.

13.38 Housing, building and planning: Committee on Housing, Building and Planning; interregional seminar on new towns (organized in cooperation with the United Kingdom Government).

13.39 Lower Mekong Basin development programme: provision of advice on public health aspects of the programme, and representation at meetings of the Mekong Committee.

13.40 Science and technology: Committee on Science and Technology for Development; sessions of ACAST, and meetings of its ad hoc working group on appropriate technology and its regional groups for Africa, Asia and the Far East, Europe, and Latin America; ACC Sub-Committee on Science and Technology.

13.41 Outer space: Committee on the Peaceful Uses of Outer Space, its scientific and technical sub-committee, legal sub-committee, working group on direct broadcast satellites, and working group on remote sensing of the earth by satellites; ACC ad hoc interagency meeting on outer space applications.

13.42 Disasters: cooperation with the Office of the United Nations Disaster Relief Coordinator regarding assistance for the drought-stricken sub-Saharan Sahelian zone of Africa, to Nicaragua (following the earthquake), and to Pakistan (following floods).

13.43 Decolonization: cooperation with the Special Committee on the Situation with regard to the Implementation of the Declaration on the Granting of Independence to Colonial Countries and Peoples, and consultations between the Director-General and a mission designated by the Special Committee; in response to United Nations General Assembly resolution 2980 (XXVII), preparation of a memorandum reviewing the steps taken by the Organization with respect to implementation of the Declaration; United Nations/OAU international conference of experts for the support of victims of colonialism and apartheid in South Africa; cooperation with the United Nations Council for Namibia.

13.44 Human rights: Commission on Human Rights; United Nations seminar on the study of new ways and means of promoting human rights, with special attention to the problems and needs of Africa; preparation of a memorandum on health protection in emergencies with special reference to women and children (in response to Economic and Social Council resolution 1687 (LII)); submission of brief comments on the draft general principles on equality and non-discrimination in respect of persons born out of wedlock.

13.45 Women: United Nations regional seminars on the status of women and family planning (Santo Domingo and Jogjakarta).

13.46 Youth: United Nations ad hoc advisory group on youth; informal meetings of nongovernmental international youth organizations; preparation of the chapter on the health needs of youth for the Secretary-General’s report on youth submitted to the Economic and Social Council.

13.47 Rehabilitation: United Nations European seminar on the contribution of social security and social services to the rehabilitation of the disabled; ACC ad hoc interagency meeting on rehabilitation of the disabled; preparation of the section dealing with medical rehabilitation in the interagency comparative study on legislation, organization and administration of rehabilitation services for the disabled.

13.48 Drug dependence: Commission on Narcotic Drugs; International Narcotics Control Board; ACC Inter-Agency Advisory Committee on Drug Abuse Control; expert committee convened by the United Nations Division of Narcotic Drugs to study a revised form of annual reports.

13.50 Manpower development: ACC Sub-Committee on Education and Training; group of experts on study of outflow of trained personnel from developing to developed countries.


13.52 Public information: ACC Consultative Committee on Public Information; Programme Committee of the Centre for Economic and Social Information.


13.54 Information systems: cooperation with the Inter-Organization Board for Information Systems and Related Activities; participation in its workshop on library management and automation, and in its panel meeting.

13.55 Economic Commission for Africa: Executive Committee; eleventh session of the Commission and second session of the Conference of Ministers; ECA Technical Committee of Experts; United Nations seminar on slum housing and urban environment; United Nations/ECA/DANIDA seminar on training for rural development; meeting of non-United Nations organizations interested in population work in Africa; Conference of African Statisticians; consultative group on the African census programme; advisory committee of the Institut de Formation et de Recherche démographiques, at Yaoundé; intergovernmental committee of experts for science and technology development in Africa; subregional workshop on international cooperation in rural development in Africa (for English-speaking countries in East and southern Africa); collaboration with the African Institute for Economic Development and Planning.

13.56 Economic Commission for Asia and the Far East: twenty-ninth session of the Commission; ECAFE Committee on Industry and Natural Resources, Committee on Trade, and Sub-Committee on Tourism and Facilitation of International Traffic; interagency meetings on social development; collaboration with the Asian Institute for Economic Development and Planning; Conference of Asian Statisticians; ECAFE meeting on indicators of social development; meeting to discuss a design for a comparative study on the administration of family planning programmes; meetings of the permanent representatives to ECAFE and other representatives designated by members of the Commission; meeting of representatives of countries and intergovernmental bodies active in the field of human environment; meeting of country coordinators on family planning service statistics system; preparation of information paper on regional activities of WHO of interest to ECAFE.

13.57 Economic Commission for Europe: Twenty-eighth session of the Commission; United Nations working group on European cooperation in the development of social welfare training and research; cooperation in preparations for ECE symposium on the application of automation and computer techniques to the planning and management of river basins and other hydrological systems and ECE seminar on the problems of collection, disposal, treatment and recycling of solid wastes; ECE Committee on Water Problems; ECE symposium on river basin management; ECE seminars on environmental statistics, on the pollution of waters by agriculture and forestry, and on the chemical industry and the environment; ad hoc meeting on the development of a long-term programme of work for senior advisers on environmental problems; ECE Conference of European Statisticians, and meeting on migration statistics; ECE group of experts on road traffic safety; ECE ad hoc Committee on Road Traffic Accidents Statistics; ECE informal meeting of international organizations dealing with road safety.

13.58 Economic Commission for Latin America: fifteenth session of the Commission; seventh extraordinary session of the Committee of the Whole of the Commission, to consider the situation in Nicaragua following the earthquake.

United Nations Environment Programme

13.59 First and second sessions of the Environment Coordination Board; Governing Council; consultative meetings on programme areas; first session of senior advisers on the environment; consultative meeting of intergovernmental organizations concerned with environmental problems in Europe; informal consultation of international legal experts on environmental problems; interagency meeting on the development of the environment programme; interagency working group on monitoring, and joint meeting of this group with the SCOPE working group on monitoring; informal consultations on environment programme with governmental experts.

Office of the United Nations High Commissioner for Refugees

13.60 Executive Committee of the High Commissioner's Programme; meetings of interagency working group on relief assistance to Southern Sudan.

United Nations Industrial Development Organization

13.61 Maintenance of liaison officer with UNIDO, and consultation on programme activities; representation at sessions of the Industrial Development Board and of its Permanent Committee.

International Labour Organisation

13.62 Sessions of the International Labour Conference and ILO Governing Body; African regional conference of ILO; sessions of the Asian Advisory Committee and Inter-American Advisory Committee; meetings to evaluate the missions concerning employment policy in Colombia, Iran, Kenya and Sri Lanka, and human resources development in Liberia; meetings to discuss the draft reports of missions concerning comprehensive employment strategy in the Dominican Republic and the Philippines; Committee of Experts on the Application of the Indigenous and Tribal Populations Convention; Petroleum Committee; Caribbean employers' seminar on population and family planning; African employers' seminar on population and family welfare planning; meetings of ILO Textiles Committee and of the Sub-Committee on Safety and Health in the Textile Industry; joint ILO/UNESCO meeting on technical education and vocational training; meeting of experts on control of atmospheric pollution in the working environment; roundtable on the protection of youth and social security; meeting of experts on the safe use of asbestos; cooperation in the establishment of occupational noise criteria as part of the comprehensive WHO study on the public health aspects of community noise (UNEP, ICAO and OECD also participated).

Food and Agriculture Organization of the United Nations

13.63 Meetings of the joint ECE/Codex Alimentarius group of experts on the standardization of quick-frozen foods, and of the Codex committee on cocoa products and chocolate; interagency
group on agricultural biometeorology; seminar on food standards and control for French-speaking countries in Africa; session of the General Committee of the Industry Cooperative Programme; and meeting of the Programme’s Pesticides Working Group; meetings of the FAO Working Party of Experts on Official Control of Pesticides and the Working Party of Experts on Pest Resistance to Pesticides; FAO/DANIDA symposium on meat industry development; two FAO regional seminars for Latin American countries (on dairy education and dairy development, and on the development of meat production, hygiene, technology and marketing, with particular reference to educational requirements); FAO/DANIDA regional seminar on food and nutrition policy in national development for English-speaking countries in Africa; collaboration in FAO/IAEA symposium on nuclear techniques in comparative studies of food and environmental contamination.

United Nations Educational, Scientific and Cultural Organization

13.64 First meeting of the UNESCO/International Planned Parenthood Federation collaborative group to consider draft proposals for the establishment of a permanent clearing-house service for communication materials for family planning and population activities; meeting of specialists on methodologies for evaluation of mass media programmes for prevention of drug abuse; session of the International Coordinating Council of the Man and the Biosphere programme, and meetings of panels of experts on two of the programme’s projects (the perception of environmental quality, and the ecology and national use of island ecosystems); first meeting of the international coordination group for the Intergovernmental Oceanographic Commission’s global investigation programme on the marine environment; consultation on the status of scientific research workers; regional seminars on institution-industry cooperation in engineering education (in Córdoba, Argentina, and in Manila); sessions of the International Hydrological Decade’s Coordinating Council and working group on water balances; international symposium on mass media and scientific initiation; international congress on the sun in the service of mankind; UNESCO/UNFDAC meeting on youth and the use of drugs in industrialized countries; regional seminar on conditions, concepts, organization and achievements of the regeneration of school and out-of-school education in rural areas (Mexico City); thirty-fourth session of the International Conference on Education; symposium on recent developments in building and using simulation models in educational and manpower planning; feasibility study of a regional satellite television system of education for the countries of Latin America; meeting of experts on education integrated into rural development in Latin American and Caribbean countries; meeting of governmental experts to review the application of the agreements on the importation of educational, scientific and cultural materials; Second European Conference of Ministers of Education; Steering Committee of UNISIST (World Science Information System); elaboration of a study on the terminology used in special education; regional seminar on training abroad, Kuala Lumpur; session of the International Consultative Liaison Committee for Literacy; meeting for personnel specializing in educational technology.

International Bank for Reconstruction and Development

13.65 Annual general meeting of IBRD and affiliates and the International Monetary Fund; coordination in the implementation of the cooperative programme in water supply and sewerage, the onchocerciasis programme in the Volta River basin, and in relation to population questions.

World Meteorological Organization

13.66 WMO Executive Committee; sessions of the panel of experts on meteorological aspects of air pollution, and of Regional Association IV (North and Central America); representation at IMO/WMO centenary celebrations.

Inter-Governmental Maritime Consultative Organization

13.67 International conference on space requirements for special trade passenger ships; international conference on marine pollution.

International Atomic Energy Agency

13.68 Meetings of the Agency’s Board of Governors and Technical Assistance Committee, and seventeenth regular session of the General Conference; symposium on new developments in radiopharmaceuticals and labelled compounds; panel of experts to consider the capacity of the environment to accept radioactive materials; panel of experts on IAEA responsibilities under the convention on the prevention of marine pollution; panel of experts on modification of radiosensitivity in biological systems; study group meeting on radiological and environmental protection; FAO/IAEA research coordination meeting on isotopic-tracer-aided studies on the origin and fate of foreign chemical residues in the agricultural environment; regional seminar on the use of isotope techniques in water resources inventory planning and development (Mexico City); regional study group on radiological and environmental protection (Lima); annual consultative meeting of liaison officers of the International Nuclear Information System; panel of experts to provide guidance on principles and methods for establishing derived working limits for radioactive contaminants in food chains; IAEA-coordinated research programme on use of labelled antigens in serological epidemiology.

International Civil Aviation Organization

13.69 Session of the Facilitation Division.

Other intergovernmental organizations

Organization of African Unity

13.70 Liaison officer with OAU maintained; representation at tenth anniversary celebrations and tenth Assembly of Heads of State; participation in OAU medical advisory panels on diseases of the blood, liver and spleen, and on health planning in Africa, and in session of the Educational, Scientific, Cultural and Health Commission; during the year the Organization became a full member of the Co-ordinating Committee of the OAU Bureau for Placement and Education of African Refugees, participating regularly in its work and in the second seminar of the national correspondents of the Bureau.

Council of Europe

13.71 Participation in session of the Council; study group on public health personnel; working parties on automated blood grouping, dental hygiene, abuse of medicaments, and on health care and social work for old people living at home; sessions of the European Public Health Committee; ad hoc Committee on drug dependence.

Organization for Economic Cooperation and Development

13.72 Participation in several meetings of the Scientific Programme Committee and the Board of Management of the
international project in the field of food irradiation; expert group on human resources and planning in Africa; joint expert group on the safety of radioisotopic cardiac pacemakers; joint group established between the Committee for Scientific and Technological Policy and the Environment Committee; joint working party of the Industry Committee and the Manpower and Social Affairs Committee; group of experts on oxidants and their precursors in the atmosphere; meetings to discuss the progress of work in the project on education of the health professions in the context of health care systems; meeting to examine a draft protocol for epidemiological studies on the genetic effects of ionizing radiations; meeting of the air management sector group of the Environment Committee.

Council for Mutual Economic Assistance

13.73 Nineteenth conference of authorities concerned with management of water resources in member countries; cooperation regarding public health matters in the European Region.

Commission of the European Communities

13.74 Participation in international colloquium on the identification of irradiated foodstuffs; symposium on micro-dosimetry; meeting of national experts on the measurement of sulfur compounds and suspended particulates polluting the atmosphere; colloquium on problems posed by the contamination of man and his environment by mercury and cadmium.
14. PUBLIC INFORMATION

14.1 The Organization's twenty-fifth anniversary was associated with the broad theme chosen for World Health Day in 1973—"Health Begins at Home". The anniversary was celebrated by the Twenty-sixth World Health Assembly in May and by the Regional Committees later in the year, and the governments of many Member States organized related events.

14.2 The anniversary and the World Health Day theme gave rise to numerous articles in the general as well as in the specialized press. In the South-East Asia Region, for instance, articles on World Health Day were made available in Bengali, Burmese, Hindi, Indonesian, Mongolian, and Thai. Throughout the world original articles on WHO were published by leading newspapers. To mark the anniversary, WHO prepared an original features series on 25 major public health problems, each outlined in 25 facts.

14.3 The broadcasting media, too, gave wide coverage to these events. One television network in the USA devoted an hour to WHO, the programme being seen by an estimated 8 million people. Most of the countries in the Eastern Mediterranean Region marked the occasion, nine of them with special radio and television broadcasts. In the South-East Asia Region, where the twenty-fifth anniversary of the Regional Organization was also celebrated, a special 15-minute programme was produced by the New Delhi television studios. Messages from the Director General and the Regional Directors were widely heard; 72 recorded copies of the Director-General's message were distributed to meet requests and in the Western Pacific Region, for instance, the Regional Director's message was broadcast by 13 radio networks. Three special radio programmes produced by WHO for the occasion—on mental health, food, and protecting the family—were much used in English and French, and shortened versions in Spanish were sent to 83 radio stations in Spain and the Americas.

14.4 WHO produced two films for the occasion. The first, a 10-minute history of WHO, was shown on television in 24 countries; it was made in Romania by Studio Bucureşti. The other film, a 10-minute animated cartoon entitled "Health Begins at Home", was produced in Moscow by Souuzmultfilm. It was shown on television in 22 countries.

14.5 Booklets were issued to celebrate the twenty-fifth anniversary in the South-East Asia and Western Pacific Regions, and in the African Region a series of posters on the World Health Day theme was widely distributed, as was a collection of feature articles related to African conditions. In the Region of the Americas, 16,000 information kits and 9,200 posters in English, Portuguese and Spanish were distributed. Young people from a number of schools in New York took part in a WHO anniversary competition on the theme "Health Begins at Home", and a large group of prizewinners visited the WHO Regional Office in Washington, D.C.

14.6 The postal administrations of the United Nations and of more than 30 countries produced postage stamps, special cancellations or other philatelic material to mark the anniversary.

14.7 During the year, 200 press releases and feature articles were sent out from headquarters and the Regional Offices. About 30% of them concerned the World Health Assembly and the meetings of the Executive Board and the Regional Committees. Among the subjects dealt with by the Health Assembly, wide notice was given to the admission to membership of the Democratic People's Republic of Korea and the German Democratic Republic, to the retirement of the former Director-General, and to the changes concerning cholera in the International Health Regulations.

14.8 The smallpox eradication programme was given attention throughout the year. Other subjects receiving much comment in the world's press with reference to WHO included cancer treatment, the need for a worldwide attack against cardiovascular diseases, and the improvement of rabies vaccine. The WHO malaria information guide for travellers (see paragraph 1.4) was widely reproduced, especially in the USA.

14.9 With a new features series in the Americas, the Organization aims to provide information on its activities there in greater depth than is possible in the press release series. Through feature service agencies, the new series reaches 1,200 newspapers in Canada and the USA and 200 in other countries in the Region.

14.10 Ten issues of the magazine World Health were published in English, French, Portuguese, Russian,
and Spanish, and, with the cooperation of the German Green Cross, in German. The average total number of copies per issue for all these languages together was about 220,000, and many of the articles and photographs were widely reproduced in other publications. Four issues of World Health published in Arabic during the year focused on smallpox, the Organization's anniversary, mental health, and nursing. Arabic press and radio services made good use of this material. For financial reasons, the Hindi and Japanese editions of World Health have had to cease publication.

14.11 The quarterly Gazette published in the Americas entered its fifth year of publication. A new series on health leaders in the Americas is now included. The magazine's aim is to focus interest on health problems and health activities in the Region.

14.12 The WHO radio service in Geneva provides radio stations throughout the world with international health news in recorded or written form. It also produces taped talks by, or interviews with, authorities in the health field, and from time to time, more elaborate feature programmes. In all, 500 separate recordings were made during the year. The bulk of the production was in English, French, and Spanish, but 12 other languages were also used. The use made of the material is difficult to assess; however, the demand is indicated by the 2500 requests for recordings that were met during the year. Ten editions of the 15-minute news programme "Around the World with WHO" were each produced in English, French, and Spanish, and distributed to some 190 radio stations and networks.

14.13 "Health, Community and Development" is the title of a new series of radio programmes started in the Americas in response to the emphasis placed on community participation in health programmes by the Regional Committee. This series of 15-minute interviews or roundtable discussions aims to show what communities can do and are doing to promote health. The programmes are being sent to over 100 stations in Latin America.

14.14 In South-East Asia, a series of short television programmes was started on health topics of current interest. Its aim is to inform the public about health activities and about methods of prevention and treatment. In the African Region also, various media were used for information activities directed at educating the public.

14.15 The WHO film "Little Man—Big City" won an award at the Premier Festival international de l'Environnement in Montreal, Canada. The Second Gold Prize at the fifth International Festival of Red Cross and Health Films, held at Varna, Bulgaria, went to another WHO film—"Heart Sweet Heart"—submitted by the USSR.

14.16 WHO photographic reportages were made in numerous countries, and 45,000 photographic prints issued in Geneva received wide use. Illustrations to accompany WHO press features were much in demand.

14.17 Of the many exhibitions on WHO held during the year, three may be chosen for special mention. A travelling photographic display was organized in New Zealand to coincide with the meeting in Wellington of the Regional Committee for the Western Pacific. WHO participated in the Eighty-second International Exposition of Professional Photography in Denver, Colo., USA. An exhibition on malaria control and manpower development was mounted at the Huitièmes Journées médicales de Dakar.

14.18 A booklet entitled WHO Guide was produced for visitors to the headquarters building in Geneva. Some 5000 people visited the building during the year and were given talks about WHO.

14.19 On many occasions, WHO cooperated in the public information field with other organizations. The twenty-fifth anniversary of the adoption of the Universal Declaration of Human Rights and the centenary of the World Meteorological Organization were the subject of several articles appearing in World Health. One issue of the magazine was devoted to the World Food Programme's tenth anniversary.

14.20 A seminar on food, health, and development was held at Geneva in April for journalists and other media representatives. The meeting was largely financed by the Centre for Economic and Social Information of the United Nations (CESI) and brought together eight distinguished panellists with 30 media representatives and staff members of CESI, FAO, WFP, and WHO. The Organization cooperated also with UNDP, FAO and IBRD in publicizing the onchocerciasis control programme in the Volta River basin. With support from UNFPA, a public information programme on family health was started.

14.21 The United Nations Information Centre for the Nordic Countries in Copenhagen provided valuable assistance on the occasion of the meeting of the WHO Regional Committee for Europe and the inauguration of the new Regional Office building.
15. CONSTITUTIONAL, LEGAL, FINANCIAL AND ADMINISTRATIVE DEVELOPMENTS

Legal Matters

Constitutional and legal

15.1 On 16 April 1973 Swaziland, a Member of the United Nations since 24 September 1968, became a Member of the World Health Organization by depositing with the Secretary-General of the United Nations an instrument of acceptance of the WHO Constitution. On 8 and 17 May 1973 the Twenty-sixth World Health Assembly admitted the German Democratic Republic and the Democratic People’s Republic of Korea to membership, which became effective on 8 May and 19 May 1973, dates of the deposit of the instruments of acceptance of the WHO Constitution by the Governments of these countries with the Secretary-General of the United Nations. At the end of the year WHO had 138 Members and two Associate Members. A list of Members and Associate Members at 31 December 1973 is given in Annex 1.

15.2 During the year one Member, Bulgaria, deposited an instrument of acceptance of the amendment to Article 7 of the Constitution which had been adopted by the Eighteenth World Health Assembly in 1965 (resolution WHA18.48), thus bringing the total number of acceptances to 49. Article 7 relates to the suspension of voting privileges and services to which a Member is entitled.

15.3 Three Members, Bulgaria, Guinea and Viet-Nam, deposited instruments of acceptance of the amendments to Articles 24 and 25 of the Constitution adopted by the Twentieth World Health Assembly in 1967 (resolution WHA20.36), so that, by the end of 1973, 72 acceptances of these amendments, which bear on the membership of the Executive Board, had been received. The Twenty-sixth World Health Assembly, in resolution WHA26.62, urged those Members which had not yet notified their acceptance to do so within the shortest possible time.

15.4 The Assembly considered and adopted the recommendation made by the Executive Board in its resolution EB51.R51 to introduce as soon possible a programme and budget for a biennial period and to amend Articles 34 and 55 of the WHO Constitution by deleting respectively the words “annually” and “annual” from these Articles. The amendments will come into force when accepted by two-thirds of the Members in accordance with the provisions of Article 73 of the Constitution. The deletion from the Constitution of references to any particular budgetary period will provide a flexible arrangement under which, in future, the Health Assembly itself can determine whatever budgetary period it considers most appropriate for the Organization. Fiji deposited an instrument of acceptance of these amendments.

15.5 Indonesia acceded with reservations to the Convention on the Privileges and Immunities of the Specialized Agencies together with its Annex VII which relates specifically to the World Health Organization.

Health legislation

15.6 The growing complexity of health legislation—resulting partly from the need in the developing countries to adapt the health system to meet medical and technological progress, and from the increase in the number of countries that have acceded to independence and are promulgating their own legislation—is reflected in the constantly increasing number of requests received by WHO for information on various topics in this field. During 1973 information was provided on subjects as diverse as abortion, contraceptives, the use of organs and tissues for therapeutic purposes, autopsies, cigarette advertising, environmental carcinogens, noise control, air pollution, pollution of coastal waters by ships, fish hygiene, food additives, communicable disease control and immunization requirements, the hospitalization of mental patients, the practice of the health professions, and clinical trials of new drugs.

15.7 The demand from Member States for WHO assistance in drawing up health legislation is also
increasing, and during the year the Organization assisted Bahrain, Brunei, Gabon, Malaysia, the United Arab Emirates, and Yemen with the drafting of new acts and regulations or the updating of existing texts.

15.8 In the Region of the Americas a six-week workshop was held for legal advisers of health services. In addition, a study was made of the health legislation of Bolivia, Chile, Colombia, Ecuador, Peru and Venezuela, to assess the impact of current legislation on the health work under way or planned under the Andean Pact.

15.9 The Organization's quarterly publication, *International Digest of Health Legislation*, constitutes the main vehicle for informing health administrations and public health workers of significant developments throughout the world. Twenty-four volumes have now been published, in English and French editions, covering a total of some 11,000 items of legislation, presented either in full or in summary form.

**The Financial Position**

**Budget for 1973**

15.10 The effective working budget approved by the Twenty-fifth World Health Assembly for 1973 amounted to US $93,174,400, which was an increase of US $7,140,110 over the corresponding amount for 1972.

15.11 The further devaluation in February 1973 of the US dollar in relation to gold, and the continuing international monetary instability, gave rise to serious budgetary problems, as in 1972. Consequently, it became necessary to present additional requirements for 1973 totalling US $5,494,100 in order to meet the increased cost of implementing the approved programme.

15.12 In resolution WHA26.16 the Twenty-sixth World Health Assembly, on the recommendation of the Executive Board, approved supplementary budget estimates for 1973 amounting to US $3,508,500 in respect of the effective working budget, to be financed from available casual income, thus resulting in a revised total effective working budget for 1973 of US $96,682,900. The Health Assembly further decided that, as an exceptional measure, the balance of the additional requirements for 1973 (US $1,985,600) be financed by a reduction in the provisions included in the approved 1973 budget for credits to the Terminal Payments Account. Thus, in accordance with the Health Assembly's decisions, no additional assessments on Members were necessary in order to finance the additional requirements for 1973.

15.13 The approved budget level for 1973, including the supplementary estimates, was US $111,882,690. The difference of US $15,199,790 between the effective working budget and the approved budget level is accounted for by a transfer to the Tax Equalization Fund of US $12,760,950 and the Undistributed Reserve of US $2,438,840.

15.14 The distribution of the approved 1973 effective working budget among the appropriation sections, taking account of the adjustments referred to above, is shown in Annex 11.

**United Nations Development Programme**

15.15 Under the UNDP system of country programming, projects are planned, approved and implemented within “indicative planning figures” (IPF) established for individual countries for a five-year period (see paragraph 13.11). For 1973 WHO received financial authorizations for the execution of UNDP-financed health projects to the amount of US $29,498,002, bringing to a grand total of US $65,450,894 the amount allocated by UNDP for health projects during the initial IPF period 1972-76.

**United Nations Fund for Population Activities**

15.16 During 1973 the Organization received a total of US $11,993,537 from the United Nations Fund for Population Activities to carry out projects relating to health aspects of human reproduction, family planning and population dynamics (see Chapter 9) in accordance with the policy established by the Health Assembly.

**United Nations Fund for Drug Abuse Control**

15.17 A total amount of US $198,664 was allocated to the Organization in 1973 by the United Nations Fund for Drug Abuse Control to carry out projects of assistance in the field of drug dependence (see Chapter 4).
15.18 Contributions in cash and in kind received in 1973 for the Voluntary Fund for Health Promotion amounted to US $12 224 367, bringing the total of contributions credited to the Fund since its inception to US $62 282 316 as at 31 December 1973. These contributions related to the following sub-accounts.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Account for Medical Research:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unspecified activities</td>
<td>749</td>
<td>2 010 957</td>
</tr>
<tr>
<td>Expanded programme on human reproduction</td>
<td>6 231 195</td>
<td>10 888 112</td>
</tr>
<tr>
<td>Specified activities—other</td>
<td>2 748 802</td>
<td>12 056 342</td>
</tr>
<tr>
<td>Special Account for Community Water Supply</td>
<td>—</td>
<td>1 036 302</td>
</tr>
<tr>
<td>Malaria Eradication Special Account</td>
<td>252 392</td>
<td>21 540 687</td>
</tr>
<tr>
<td>Special Account for Smallpox Eradication</td>
<td>1 288 137</td>
<td>4 848 572</td>
</tr>
<tr>
<td>Special Account for the Leprosy Programme</td>
<td>—</td>
<td>761 646</td>
</tr>
<tr>
<td>Special Account for the Yaws Programme</td>
<td>—</td>
<td>71 1086</td>
</tr>
<tr>
<td>Special Account for the Cholera Programme</td>
<td>54 475</td>
<td>2 023 558</td>
</tr>
<tr>
<td>Special Account for Assistance to Zaire</td>
<td>—</td>
<td>342 680</td>
</tr>
<tr>
<td>Special Account for Accelerated Assistance to Newly Independent and Emerging States</td>
<td>—</td>
<td>2 829 118 796</td>
</tr>
<tr>
<td>Special Account for Miscellaneous Designated Contributions</td>
<td>1 488 525</td>
<td>6 523 482</td>
</tr>
<tr>
<td>General Account for Undesignated Contributions</td>
<td>4 700</td>
<td>60 096</td>
</tr>
</tbody>
</table>

15.19 The obligations incurred in 1973 and the status of the collection of contributions and of advances to the Working Capital Fund at the end of 1973 are shown in the Financial Report, which is published as a supplement to the Annual Report of the Director-General for submission with the Reports of the External Auditor to the Twenty-seventh World Health Assembly.

15.20 The Twenty-sixth World Health Assembly decided, in resolution WHA26.23, that Part I of the Working Capital Fund, composed of advances assessed on Members, should remain at the amount of US $5 000 000, to which should be added the assessments of Members joining the Organization after 30 April 1965. Part I amounted to US $5 109 000 at 31 December 1973. In the same resolution, the Assembly decided that Part II, made up of transfers of casual income, should remain established at US $6 000 000. The amount of the Working Capital Fund thus totalled US $11 109 000 at 31 December 1973.

15.21 The status of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training is shown in the Financial Report. During 1973, 39 requests, amounting to US $576 330, were accepted (see also paragraph 15.31).

15.22 The status of the Real Estate Fund, which was established by the Twenty-third World Health Assembly, is shown in the Financial Report. No additional amount of casual income was appropriated to the Real Estate Fund in 1973.

15.23 The following changes in the organizational structure were made during 1973. The Division of Malaria and other Parasitic Diseases was created through the merger of the former Division of Malaria Eradication and the Parasitic Diseases unit. Following the adoption by the Twenty-sixth World Health Assembly of resolution WHA26.61 on the long-term planning of international cooperation in cancer research, the Cancer unit was separated from the Division of Noncommunicable Diseases. The units of Mental Health and of Drug Dependence and Alcoholism were also separated from that Division, and combined to form the Office of Mental Health. The Division of Administrative Management and Personnel was renamed Division of Personnel and General Services to reflect more accurately its responsibilities. The Building Planning and Construction unit was disestablished (see paragraph 15.28).
programme in the Volta River basin, for which WHO is executing agency (see paragraph 2.42).

15.25 The Information Systems Development group in the Headquarters Programme Committee was renamed Headquarters Programme Information and fulfills specific tasks concerned with the provision of information to users within and without the Organization as well as continuing to work in close contact with those involved in information systems development.

15.26 Organizational changes were also made in the South-East Asia Region whereby the unit of Chronic and Degenerative Diseases was renamed Noncommunicable Diseases, and the responsibilities and functions both of the Assistant Directors of Health Services and of the WHO Representatives were further defined.

Staff

15.27 On 30 November 1973 the total staff (excluding staff of the Pan American Health Organization) was 3813 as compared with 3758 on 30 November 1972, an increase of approximately 1.5%. Details of the numbers and distribution of the staff and of its composition by nationality on 30 November 1973 are given in Annexes 12 and 13. The latter shows that on that date the number of Members whose nationals were employed by the Organization in posts subject to geographical distribution was 104, or about 74.3% of the total membership of the Organization.

Headquarters and regional office accommodation, and related matters

15.28 Preliminary plans and estimates for the construction of a permanent addition to the headquarters building were submitted to the Executive Board in January 1973 and to the Twenty-sixth World Health Assembly in May. In resolution WHA26.46 the Health Assembly decided not to proceed with the further development of plans for the extension of the headquarters building at present, and requested the Executive Board to review the position at its fifty-third session.

15.29 In the African Region, work on the extension of the Regional Office building was virtually completed. In the Region of the Americas, the construction of the new Zone Office building in Brasilia began in October 1973 on the land donated by the Government of Brazil. The construction cost—estimated at US $580,000—will be financed by WHO’s contribution of US $100,000 decided by the Twenty-fifth World Health Assembly in resolution WHA25.39 and by borrowing up to US $400,000 as authorized by the Pan American Health Organization Executive Committee, the remainder being raised through the sale of the former Zone Office building in Rio de Janeiro. In the South-East Asia Region, construction of the annex to the Regional Office building and additional shelters for vehicles was completed and reallocation of office space was undertaken. In the Eastern Mediterranean Region, the modest extension of the Regional Office was completed and the construction of several housing units for WHO project staff in Southern Sudan, authorized by the Twenty-sixth World Health Assembly’s resolution WHA26.48, was started. As a result of a management survey in the Western Pacific Region, a better office layout was achieved. Improvements were made in respect of protection against flooding and fire, and in the canteen facilities.

Supply services

15.30 The volume of supplies and equipment provided for programme activities, as well as the procurement services rendered on a reimbursable basis again represented an increase over the previous year. The total value of supplies and equipment purchased through headquarters during 1973 approached US $14,800,000, not including approximately US $1,800,000 required to cover freight and insurance charges. Line items ran to 45,400. Some 8700 purchase orders were placed with about 2000 suppliers in 36 countries for shipment to approximately 2000 projects, institutions and receivers in 120 countries.

15.31 The above figures include purchases made on a reimbursable basis for 29 governments, and for the United Nations, UNICEF, the Office of the United Nations High Commissioner for Refugees, the specialized agencies, and intergovernmental and nongovernmental organizations in official relations with WHO, amounting to US $4,650,000. Of this total, US $690,000 were for purchases made out of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training. Purchases from research grants awarded to individual investigators or institutions amounted to US $825,000.

15.32 Serious difficulties were encountered in all procurement services owing to the fluctuation of the
US dollar and other currencies; in respect of a number of reimbursable or funds-in-trust procurcments, it was necessary to request additional deposit of funds before purchase commitments could be finalized. Another characteristic of the past year was the effort to encourage local purchases at regional and project levels where no significant economies could be expected from central buying; to economize on the insurance of consignments; and to arrange for centralized procurement of the items required by various organizations in the United Nations system.

Supplies for emergency and relief operations

15.33 Large purchases of medical supplies were undertaken for disaster relief operations with funds provided by the Office of the United Nations Disaster Relief Coordinator, the Office of the United Nations High Commissioner for Refugees, and other sources. They included provision of supplies for the relief and reconstruction programme in Southern Sudan, for the six countries affected by the drought in the sub-Saharan Sahelian area of Africa, and for the emergency flood situation in Pakistan. In these emergency and relief operations, WHO was responsible for the screening and coordination of the requirements considered most essential from the public health point of view and also for recommending lists of items for procurement and/or donation by governments and various assistance-providing organizations.

15.34 As regards the drought-stricken countries in West and Central Africa which were faced with widespread starvation, coupled with threatened outbreaks of cholera, smallpox, measles and other diseases, purchases were executed and arrangements made for emergency air shipments of intravenous feeding fluids, mineral electrolytes for oral rehydration, antimicrobials, vaccines, antimalarial and multivitamin tablets, and disposable syringes. This was done in close coordination with FAO, designated as the focal point for the United Nations system’s assistance to these countries. Urgently needed medicaments and free air transportation of medical supplies were provided by several countries.

15.35 Supplies and equipment valued at US $70,000 were purchased through the Regional Office for the Americas to assist in the emergency relief operations in Nicaragua, following the earthquake in December 1972. The material was used both for immediate relief purposes and for long-term rehabilitation; the measures taken concerned not only the reconstruction of Managua’s health services system and water supply, but also assistance for other towns whose water-pumping facilities had been severely taxed by the influx of persons from Managua who had been rendered homeless.

15.36 A new arrangement has been worked out for emergency supply operations in general, whereby the United Nations Disaster Relief Coordinator, in accordance with the International Air Transport Association’s resolution 200, may arrange for free air transport of emergency medical supplies requested from WHO. Emergency shipments of cholera and smallpox vaccine and related supplies were made in this way to several countries during 1973.

Coordination in administrative, budgetary and financial matters within the United Nations system of organizations

15.37 The standard provisions for the financial regulations relating to custody and investment of funds, delegation of authority, internal control and the accounts, as approved by the Administrative Committee on Coordination for application throughout the United Nations system, were endorsed by the Twenty-sixth World Health Assembly in resolution WHA26.26 with some adaptations necessary to meet the Organization’s constitutional provisions. The consideration of other subjects—mainly concerned with budgeting, appropriations and the establishment of various types of funds—must await the results of studies at present under way in some of the organizations in connexion with biennial budgeting, programme budgeting, the surrender of surpluses, and the use of working capital funds,

15.38 Four organizations, including WHO, started as from 1 January 1973 the implementation of phase I of the cost-measurement system developed on an interagency basis to determine, inter alia, the reimbursement to executing agencies of overhead costs for the execution of UNDP-financed programmes. It was agreed, however, that the whole of 1973 should be regarded as an experimental period for testing the system, and that the data collected during this period would subsequently be analysed and assessed in order to detect any anomalies or variations that might occur due to differences in the application of the system.

15.39 The elaboration of a draft statute for the International Civil Service Commission was among the preoccupations of the organizations of the United Nations system during 1973. The establishment of this Commission was approved in principle by the
United Nations General Assembly in resolution 3042 (XXVII), upon the recommendation of the Special Committee for the Review of the United Nations Salary System, the Administrative Committee on Coordination, the International Civil Service Advisory Board, and the Advisory Committee on Administrative and Budgetary Questions. The Twenty-sixth World Health Assembly, in resolution WHA26.51, welcomed the decision of the United Nations General Assembly to establish in principle an International Civil Service Commission and authorized the Director-General to continue to collaborate fully in the preparation of detailed proposals for the establishment of the Commission, to be submitted to the United Nations General Assembly at its twenty-eighth session.

15.40 The organizations also drew up recommendations for consideration by the United Nations General Assembly at its twenty-eighth session with regard to adjustment in the payment of pension benefits to compensate for currency fluctuations, and the consolidation of five classes of post adjustment in the base salary scales for staff in the professional category and above.

15.41 Other studies carried out within the United Nations system, and in which WHO took an active part, dealt with the effects of currency instability on the budgets of the organizations; trust funds and other extrabudgetary resources; accounting treatment of capital assets; budgetary techniques used in the various organizations; and the budgetary treatment of overhead costs of executing agencies for UNDP-financed programmes.

15.42 Four formal reports received from the Joint Inspection Unit were considered by the Executive Board at its fifty-first and fifty-second sessions—in January and May respectively—together with the Director-General’s comments. One report dealt with the activities of the Joint Inspection Unit for the period July 1971 to June 1972; the three other reports related to the treatment of water resources development, communications, and the introduction of cost accounting in the organizations of the United Nations system. The Director-General’s comments and the decisions of the Executive Board on these reports were transmitted to the Economic and Social Council, to the Chairman of the Joint Inspection Unit and to the External Auditor.

15.43 The Twenty-sixth World Health Assembly, after having considered the United Nations General Assembly’s resolution 2924 B (XXVII) on the continuation of the Joint Inspection Unit beyond 31 December 1973, decided in its resolution WHA26.50 that WHO should continue to participate in the Joint Inspection Unit on the existing experimental basis for a further period of four years beyond 31 December 1973. The Health Assembly also took note of the United Nations General Assembly’s intention to evaluate at its thirty-first (1976) session the work of the Joint Inspection Unit in conjunction with the overall review of the machinery of the United Nations and of its system for administrative and budgetary control, investigation and coordination.
PART II

THE REGIONS

In order to present an integrated overall account of the Organization's work during the year, WHO's various programme activities have been reported together in Part I of this volume, whether they were carried out directly from headquarters or—as applies to by far the greatest part of the work—through the six Regional Offices.

Part II is concerned with some of the important developments, trends and problems within each Region. Brief accounts are also given of the meetings of the Regional Committees since these (unlike the World Health Assembly and the sessions of the Executive Board) are not covered in other volumes of the Official Records of the World Health Organization.

Fuller descriptions of the work within each Region separately are contained in the Annual Reports of the Regional Directors to the Regional Committees.
Fig. 3. WHO Regional Offices and the areas they serve

AREA SERVED, AS AT 31 DECEMBER 1973, BY:

- Regional Office for the Americas/PASB
- Regional Office for the Eastern Mediterranean
- Regional Office for Europe
- Regional Office for the Western Pacific

Legend:
- ○ Regional Office
- □ Regional Office for Africa
- ■ Regional Office for South-East Asia
- ○ Regional Office for the Americas/PASB
- □ Regional Office for Europe
- ■ Regional Office for the Western Pacific
- ○ Regional Office for the Eastern Mediterranean
16. AFRICAN REGION

16.1 In the African Region, most countries are now seeking ways of health progress appropriate to their individual circumstances. As regards the key problem of manpower resources, the aim is to define educational objectives in terms of real health needs, and this almost always involves the training of national teachers of health sciences and the increased use of auxiliaries as members of the health team. Each year brings a wider acceptance of the fact that control of communicable diseases must depend on the strengthening of epidemiological, statistical and laboratory services and, where appropriate, the integration of specific disease control programmes into the basic health services. It is also becoming more generally recognized that only through painstaking planning can a country set up adequate health structures providing protective and curative care designed to meet the real needs of the community concerned.

Communicable diseases

16.2 The two regional epidemiological surveillance centres in Abidjan and Nairobi have reinforced the support given to national surveillance and control activities and have also been able to initiate coordinated surveillance activities at the regional level.

16.3 In regional terms, the smallpox eradication campaign seems to be attaining its objectives; no case has been reported from West and Central Africa since 1970 or from East and southern Africa—except for a focus in Botswana—since the middle of 1972. In most countries of the Region, eradication campaigns have now been integrated with epidemiological or basic health services projects.

16.4 WHO participated in measles vaccination campaigns in 20 countries of West and Central Africa. These programmes were usually combined with smallpox vaccination but were limited in scope because of operational difficulties and the high cost of the vaccine. The surveillance of yellow fever was intensified. Specific assistance was provided for the control of yellow fever and poliomyelitis. A regional seminar on the epidemiological surveillance and control of yellow fever was held in Bangui in October. It was attended by participants from 15 countries in the African Region, and by some from the Eastern Mediterranean; they reviewed present knowledge on the subject and considered the urgent epidemiological investigations and initial control measures that would be necessary in the event of an epidemic.

16.5 Tuberculosis immunization programmes were under way in 27 countries of the Region and more than 9 million BCG vaccinations were given to children in the most susceptible age-group, 0-15 years. In 17 countries BCG and smallpox vaccines were given simultaneously. In 14 countries the tuberculosis control programme reached the maintenance phase and case-finding and treatment of infectious tuberculosis became a part of either epidemiological or basic health services. An evaluation of leprosy control activities undertaken in several countries has influenced plans for further assistance and has pointed the way to the integration of leprosy field work in the general health services.

16.6 Thanks to sanitation measures, health education and greater vigilance by national health authorities, the earlier cholera outbreaks were more or less contained. However, the disease remains endemic in several West and Central African countries, and fresh epidemics appeared in south-eastern Africa. It is thus essential to maintain full activities in surveillance and reporting.

16.7 It is estimated that 96 million persons in the Region are infected with the malaria parasite at any given moment and that the number of deaths attributable to the disease is of the order of one million per year, mostly among children under 4 years of age. In view of the manifold difficulties of undertaking eradication campaigns under the conditions prevailing in the Region, WHO-assisted antimalaria activities remained largely limited to the treatment of suspect cases, the provision of chemotherapy for some of the most vulnerable groups and support for control programmes in urban areas. As far as possible, antimalaria measures were undertaken as part of the general health services. In 1973, Mauritius was accepted for inclusion in the WHO official register of countries where malaria eradication has been achieved.

16.8 The report of the preparatory assistance to governments mission to the seven countries concerned in the onchocerciasis control programme in the Volta
River basin area was presented at an intergovernmental meeting held in Accra in October and November, attended also by the four sponsoring agencies—UNDP, FAO, IBRD and WHO. The report was adopted as providing an effective strategy for onchocerciasis control in the area over a 20-year period at an estimated cost of US $120 million. The IBRD agreed to assist in mobilizing this amount from bilateral-aid sources to constitute a world fund for onchocerciasis control. To give effect to the programme, which is scheduled to start in 1974, an operational agreement was signed in Accra between the seven participating governments and WHO as executing agency.

16.9 Assistance was continued to schistosomiasis and trypanosomiasis projects, particularly in the field of epidemiological assessment. Long-term schistosomiasis control programmes were drawn up following investigations in Ghana and the United Republic of Tanzania, and important measures were taken to control residual foci of trypanosomiasis.

Noncommunicable diseases

16.10 In view of the growing importance attached to noncommunicable diseases by governments in the Region, administrative steps were taken in the Regional Office to enable more assistance to be given in the fields of cancer, cardiovascular diseases, and mental health including alcoholism and drug dependence. Consultant services were provided in cancer and in dental health. In the latter field, the Organization assisted the Institute of Odontology and Stomatology of the University of Dakar, where national personnel of all categories from auxiliaries to postgraduates are trained.

16.11 Following the Technical Discussions held at the twenty-third session of the Regional Committee in September on the subject “The place of mental health in the development of public health services in Africa”, it was recommended that, in the interests of economy and greater efficiency, mental health services at all levels should be integrated in the public health services. Six countries were given advice on the training of personnel for mental health work and several governments in the Region sent participants to an interregional seminar on the organization of mental health services, held in Addis Ababa in November.

Environmental health

16.12 Sanitation measures in both peri-urban and rural zones were carried out in 21 countries through 23 integrated basic health services development projects, many of them assisted by UNICEF. The Organization has collaborated with UNDP in 14 planning and pre-investment programmes for water supply, drainage and sewerage in urban zones. In collaboration with IBRD a number of surveys or sectoral studies have been or will be carried out to discover suitable development projects which cannot be undertaken without substantial financial assistance.

16.13 Advisory services in occupational health were also provided for several countries, and help was given in drawing up occupational health legislation. The Organization provided assistance to five countries in improving radiation health through the training of national technicians for the maintenance and repair of X-ray equipment.

Strengthening of health services

16.14 During the year, WHO continued its assistance to 42 basic health services development projects in 31 countries of the Region. Efforts were made to make demonstration zones less insular in nature, to stimulate the extension of basic health services and to widen the support given them by hospital services and also by the community, including the practitioners of traditional medicine. Two new developments were, first, the use of project systems analysis in Kenya, inaugurating in the Region a more scientific approach to the planning and organization of health services, and, second, the financing of a basic health services development project in Zambia as a UNDP country project. Planning and pre-investment techniques could very suitably be applied in developing basic health services as well as for large-scale environmental health projects.

16.15 A new strategy for the delivery of effective low-cost public health services in 20 countries of West and Central Africa was worked out at a meeting in Brazzaville in February, sponsored by USAID and WHO and attended by representatives of the governments and other agencies concerned. Participants discussed the best ways to strengthen epidemiological surveillance, to develop basic facilities and train the staff needed for their efficient operation, and even more important, to coordinate external assistance to those ends. Discussions were continued at a further meeting of the governments, USAID and WHO held in Lagos in September after the twenty-third session of the Regional Committee.

16.16 Most countries in the Region have formulated a national health plan. Planning is at present included in the objectives of 19 basic health services projects
out of the 42 now operating. Ten countries have specific health planning projects and four governments have been assisted in formulating a new plan or in executing already established plans. Preparations have been made to set up an African Institute of Health Planning, possibly in conjunction with the Institute for Economic Development and Planning, in Dakar, which already receives assistance from WHO.

16.17 The development of health laboratory services in the Region is uneven, varying from country to country and also between different administrative levels in the same country. Laboratory facilities are concentrated in the larger centres, leaving little to the rest of the country and almost nothing to rural areas; and coordination between laboratories and the health administrations is often poor. WHO gives particular emphasis to assisting laboratory services for the diagnosis and control of communicable diseases and aims at developing services with a central laboratory and a network of intermediate and peripheral laboratories. Ten epidemiological services projects have a laboratory component and 11 projects for the development of basic health services include a WHO laboratory technician, to assist in improving laboratory services in rural areas.

16.18 WHO continued to assist vaccine production laboratories in the Region and to arrange for the testing of their products by WHO reference laboratories. Some countries of the Region are showing increasing interest in developing national drug production, and in a few of them WHO has already been asked to assist in the control of drug safety, efficacy and quality.

Family health

16.19 WHO-assisted family health programmes are usually developed as part of the basic health services, and almost all countries in the Region have requested or are already receiving help, particularly for programmes in maternal and child health. The Organization is also being called on to assist governments that have decided to set up family planning services designed to protect the health of mothers and to give children (especially the last-born) a better chance of survival and normal growth. WHO collaborated with UNFPA in projects of this description in six countries and preparations were made for similar projects in three others. In some countries assistance is sought in connexion with infertility rather than with a high birth rate.

16.20 The assistance given in improving nutrition standards was directed mainly to strengthening the nutrition component of basic health services, nutritional surveillance including the use of weight-for-age charts for young children in health centres, and nutrition training for health personnel adapted to local conditions. Summaries were compiled of the food and nutrition situation in countries of the sub-Saharan Sahel affected by drought and in several other countries of the Region. Reviews were made of the nutrition projects jointly assisted by WHO and UNICEF and of the health aspects of several World Food Programme projects.

16.21 The sponsoring organizations of the Joint FAO/WHO/OAU Food and Nutrition Commission for Africa met in Brazzaville in March and agreed on a basis for the first meeting of the Commission, to be held in 1974.

Health statistics

16.22 More and more health administrations in the Region are seeing the need to organize statistical services at the central level, to collaborate with the national statistical centres, and to set up an efficient system for the collection and dissemination of statistical information, thus reinforcing epidemiological surveillance and facilitating health planning.

16.23 During 1973, WHO assisted 12 countries of the Region to strengthen their health statistical services at the central level, in epidemiological services projects, or in connexion with basic health services development. Teaching assistance was provided to the statistical training centres in Abidjan, Dar es Salaam and Yaoundé. An interregional training workshop on the statistical aspects of family planning was held at Cotonou, Dahomey, in April.

Development of health manpower

16.24 The situation created by the continuing shortage of qualified health personnel can be met only through better national health planning, which implies the training of national health planners. This, together with the emphasis constantly given to the training of auxiliary workers, particularly nursing auxiliaries, laboratory staff and X-ray technicians, are two of the main points in the Organization's programmes in education and training.

16.25 Following the courses in health planning for national staff held in 1970 and 1971, a special course for 22 WHO field staff was organized at the Institute for Economic Development and Planning at Dakar. A second course to train laboratory assistants was started in connexion with the health laboratory
services project in Cotonou, Dahomey, and courses for different grades of laboratory technicians were held at the Training Centre for Health Personnel at Lomé. The first health education course in the Region was also held at the Lomé centre in January. A guide for the development of postgraduate and undergraduate training in health education in the Region was issued in April.

16.26 The postbasic nursing education centres in Ibadan (Nigeria), Dakar and Yaoundé have made it possible for increasing numbers of national staff to take over responsible posts from international staff and to undertake the training of all categories of nurses. A study group on nursing education held in Brazzaville in June was the first of its kind in the Region; it studied nursing needs and resources and discussed norms for the training and use of nursing personnel.

16.27 Sectoral studies on health manpower planning were carried out in several countries of the Region. Information was collected on medical training at both undergraduate and postgraduate levels, on the training of other professional categories such as nurses and sanitary engineers, and also on the training of auxiliary personnel. In all such surveys an effort was made to assess the needs as regards both the quality and the quantity of staff in any given category.

16.28 Provision for the continuing education of several categories of health staff is made through the retraining courses at the two regional training centres at Lagos and Lomé.

16.29 Efforts were made to introduce teacher training in schools, medical faculties, university centres of health sciences and other establishments for the professional education and training of health personnel. A seminar on education methods for monitors and other national teaching staff was assisted by WHO in the Kibaha Centre (United Republic of Tanzania) in February.

16.30 The teaching of sanitary engineering was introduced into the programmes of civil and rural engineering schools in Lagos, Nairobi, Ouagadougou, and Zaria (Nigeria). Most countries in the Region have schools for sanitarians.

16.31 The fifth interregional meeting of directors or representatives of schools of public health in Africa, South-East Asia, the Eastern Mediterranean and the Western Pacific was held in Brazzaville in March; it endeavoured to re-evaluate the aims and responsibilities of public health schools and discussed the role of such schools in health planning, health manpower planning, and in research on new health problems arising from economic development, industrialization and urbanization.

The Regional Committee

16.32 The twenty-third session of the Regional Committee for Africa was held at Lagos from 4 to 10 September 1973. It was attended by representatives of 31 Member States and an observer from Botswana. Swaziland, which had been admitted to membership of the Organization during the year, was represented on the Committee for the first time. ECA, UNICEF, ILO, FAO, and the Office of the United Nations High Commissioner for Refugees were represented, as were three intergovernmental and 10 nongovernmental organizations. The Director-General and an Assistant Director-General attended.

16.33 The Committee adopted a resolution to mark the twenty-fifth anniversary of the Organization.

16.34 The discussion of the Annual Report of the Regional Director for the period 1 July 1972 to 30 June 1973 concentrated on three major questions: the development of health manpower resources, communicable diseases, and basic health services. The Committee noted with interest the introduction of public health principles into training programmes, and the increasing use of modern teaching methods, and reaffirmed its decision to set up regional training centres for teachers and for health planners.

16.35 In the field of communicable diseases, stress was laid on the need for close coordination and collaboration. A review was made of the programmes for the control of the most common communicable diseases in the Region and it was agreed that they could be effective only if there was a parallel strengthening of basic health services.

16.36 During the discussion it was pointed out that the actual distance between a health facility and the persons for whom it was intended was a much more meaningful index of efficiency than was the number of population per doctor, since the majority of physicians had their practice in urban areas. It was evident that the main concern of an increasing number of health authorities was to improve their health services by the process of integration. It was noted that the health effects of the drought affecting countries in the Sahelian zone might well be aggravated by the cumulative effects of the poor nutritional state already existing there. Stress was laid on the need for
planned development to ensure national self-sufficiency particularly in the field of pharmaceutical production.

16.37 The Committee approved the report of the March meeting in Brazzaville of representatives of sponsoring organizations of the Joint FAO/WHO/OAU Food and Nutrition Commission for Africa.

16.38 The programme and budget proposals for the African Region in 1975 were approved for transmission to the Director-General. It was explained that the presentation of the programme and budget was somewhat different from that of previous years and represented an attempt, in response to Assembly resolution WHA25.23, to apply a programme-planning-budgeting system and to place more emphasis on the health objectives as defined in the different national plans for social and economic development. It was pointed out that the regular budget estimates had increased by 5.87% over the corresponding figure for 1974 and that 84% of this proposed increase was devoted to country activities. However, the overall proposed budget from all sources for 1975 represented a decrease of 6.86% from the 1974 figure due to the continuation in many countries of the country programming exercise whose financing from the UNDP and other sources was not yet assured.

16.39 The Committee approved the report of the Regional Director on long-term planning in epidemiological surveillance and control of communicable diseases in the African Region.

16.40 The Committee confirmed its previous decision to hold its twenty-fourth session at the Regional Office in Brazzaville and decided that the twenty-fifth session would be held in Yaoundé. It noted an invitation from the Government of Uganda to hold its twenty-sixth session in Kampala.

16.41 The subject of the Technical Discussions was “The place of mental health in the development of public health services in Africa”. The Committee confirmed its previous choice of the subject “Health care in rural areas” as the subject for the Technical Discussions in 1974. “Dental health and the development of health services in Africa” was selected as the subject for 1975.
17. REGION OF THE AMERICAS

17.1 The assistance given by the Organization to the governments of countries in the Region of the Americas was modified during 1973 in keeping with the recommendations in the ten-year health plan\textsuperscript{1} approved at the III Special Meeting of Ministers of Health of the Americas in 1972 and subsequently incorporated into the Organization's policy for the Region. Although worldwide currency fluctuations caused some operational difficulties, they did not unduly affect the conduct of the regional programme as a whole.

Communicable diseases

17.2 Interest in the Region in the development and improvement of national and regional systems of epidemiological surveillance increased significantly in 1973. Departments of epidemiology were strengthened in several ministries of health. A regional seminar on systems of epidemiological surveillance of communicable diseases and zoonoses held in Rio de Janeiro in December was attended by physicians and veterinarians from 24 countries. Three regional courses on epidemiological surveillance were conducted in Atlanta, Ga., USA, Caracas, and Rio de Janeiro. At the Fifth Caribbean Health Ministers Conference a system of surveillance for the Caribbean area was studied, and it was recommended that an intercountry centre for surveillance should be set up based on the already existing Trinidad Regional Virus Laboratory.

17.3 The Region continued to be free from smallpox in 1973. No new cases were diagnosed in spite of an intensive investigation throughout Brazil. A meeting for the final assessment of smallpox eradication in the Americas organized in Rio de Janeiro in August concluded that eradication of smallpox has been achieved in the Region (see also paragraph 17.50). Vaccine donations were continued to assist the smallpox programmes in Africa and Asia.

17.4 Dengue continued to be endemic in four countries and sporadic cases were reported elsewhere. In accordance with a recommendation of the PAHO Scientific Advisory Committee on Dengue, a “Dengue Newsletter” was started and the first four issues were distributed during 1973.

17.5 Special tuberculosis control projects were assisted by WHO in eight countries of the Region. Their main purposes were to integrate services for the bacteriological diagnosis and ambulatory treatment of tuberculosis into the local health services and to promote general BCG immunization programmes covering most of the child population. Expert advice was given to BCG-producing laboratories in five countries.

17.6 An international centre for training and research in leprosy and related diseases has been established in Caracas, with assistance from the Organization, to serve as a clearing house for information from all the countries of the Americas, with a view to obtaining greater uniformity of control methods.

17.7 The Organization continued its assistance to national programmes to complete the eradication of yaws which continued to smoulder in the Caribbean. The venereal diseases remained on the increase in the Americas in general. The Organization assisted in designing control programmes based on the resources of the countries concerned, but emphasizing reliance on basic health services and cooperation in case detection with the maternal and child health, family planning and other clinics. Efforts were made to establish in each country at least a central laboratory service for the diagnosis of venereal diseases.

17.8 The 12 political units in the Region that had eradicated malaria remained free of the disease. Of the 22 others with originally malarious areas, two reached the consolidation phase or the maintenance phase over their entire territories and 20 continued to apply attack measures where necessary. Of the latter, seven made good progress towards eradication. The use of propoxur in Central America, where the principal vector is largely resistant to DDT, continued by and large to provide promising results. In November, the WHO Expert Committee on Malaria recommended the certification of malaria eradication in Cuba.

Veterinary public health

17.9 The Organization took part in the special programmes of the VII Pan American Veterinary Congress held in Bogotá in July and assisted in

organizing a special two-day symposium on the laboratory diagnosis of animal diseases of importance to man.

17.10 Antirabies activities were assisted in eight countries. In several rabies pilot programmes the consolidation phase was completed or the maintenance phase achieved. In some, emphasis was placed on wildlife rabies control, for instance, by reducing the populations of vampire bats or mongooses. Technical assistance for national programmes to control foot-and-mouth disease in the countries affected in the Region was provided by the Pan American Foot-and-Mouth Disease Centre in Rio de Janeiro, and the Organization assisted in preparing for brucellosis control programmes in three countries and in ongoing activities in two.

Noncommunicable diseases

17.11 In order to help relieve the shortage of mental health personnel, the Organization sponsored courses in basic psychiatry for general practitioners in five countries, assisted seven schools of medicine with regard to curricula in mental health and psychiatry, and helped to improve the libraries of ten hospitals that provide residency training in psychiatry. Two countries were assisted in evaluating their services for the mentally retarded and three in organizing the rehabilitation of long-term mental patients. Epidemiological studies on epilepsy and alcoholism were undertaken in four countries. In February, a training course on the subject of alcoholism was held in San José where a centre for the study of alcoholism had been opened with assistance from the Organization.

17.12 In 1973, the Organization initiated support for comprehensive cardiovascular disease programmes, particularly those providing services to the chronically ill patient at home after discharge from hospital. Initial steps to support such programmes on a community-wide basis were undertaken.

17.13 The Organization’s cancer control programmes in the Region emphasized mass detection and early treatment of cervical cancer; the preparation of epidemiological research on cancer of the stomach, which in certain countries ranks as the leading cause of death from malignant neoplasms among men; and the development of comprehensive community programmes for the detection, registration, prompt diagnosis, treatment and follow-up of cases. Data-processing techniques were used to analyse the results of a survey of smoking patterns in eight Latin American cities.

17.14 On the occasion of a seminar on dental materials, held in Caracas, the Organization convened an advisory group to establish guidelines for the development of dental materials programmes in the Region.

Environmental health

17.15 Industrial development, with its attendant problems of environmental health and pollution, is proceeding rapidly in Latin America and the Caribbean area. Efforts to improve water supply and wastes disposal, the construction of sewage treatment plants and other antipollution measures have not kept pace with the demand, and most Latin American cities of over one million population already have grave difficulties in this respect.

17.16 At the end of 1973, 70% of the urban population and 27% of the rural population were served with adequate water supplies. Approximately 40% of the urban population was provided with sewerage services, while it is estimated that only 22% of the rural population had some sanitary means of excreta disposal. Since 1961, over US $3000 million have been invested for the construction of new services. A meeting was held in Washington, D.C., with representatives of the Canadian International Development Agency (CIDA) to review the programme which CIDA is implementing in the Caribbean area. Grants and loans from CIDA for water supply systems already amount to almost US $9 million.

17.17 Many countries initiated or expanded activities to combat environmental pollution, in a number of cases with UNDP support. For instance, programmes on environmental pollution in Rio de Janeiro and São Paulo, sponsored by UNDP and the Government of Brazil, were started during the year with the Organization as executing agency. At the end of 1973, the Pan American air pollution network, which is coordinated by the Pan American Centre for Sanitary Engineering and Environmental Sciences (CEPIS) in Lima, included over 100 air sampling stations. CEPIS completed its fifth successful year of operation, during which it provided countries with technical advisory services in the following areas: air pollution; industrial hygiene; laboratories; environmental chemistry; physical planning; systems analysis and computation; water resources and water pollution; and wastewater treatment.

17.18 The Organization assisted in developing national radiation protection programmes within the ministries of health of nine countries and advised on
field trials conducted by the radiation protection services of three countries.

**Strengthening of health services**

17.19 During 1973, most of the countries in the Region engaged in a review of national health policies, strategies and programmes in the light of the ten-year health plan for the Americas. It became necessary to revise basic concepts of community health care to take account of the progress in medical techniques, rapid population growth and the consequent increased demand for services, and the disproportionate rise in the costs of health care.

17.20 One recommendation of the Ministers was to regionalize the hospitals and other health services, to set up different levels of care within the regionalization scheme, and to develop ambulatory medical care through health centres coordinated with the hospitals. A project to make a comprehensive inventory of the technical, financial, physical and manpower resources of hospitals was formulated, which will serve to provide baselines for planning within the Region. During the year, five newly established hospitals were assisted to overcome difficulties in financial management, administration, architectural design, or needs and specifications for equipment.

17.21 Comprehensive health laboratory services were assisted through 20 projects in individual countries and three intercountry projects. In 11 countries advice was given on the production of biological substances for human use, and in some countries on such substances for use in animals; in Mexico, for instance, assistance was given for the production of rabies vaccine for human and canine use.

17.22 A system of nursing adequate to meet the demands of the ten-year health plan will require an increase in nursing personnel ranging from 134% to 184%, and the provision of better nursing care in a high proportion of the hospitals and health centres of Latin America. The Organization assisted a number of countries in defining their system of nursing by giving 22 nurses specialized training to enable them to collaborate in health planning and programming.

17.23 The report of the findings of a study carried out in 50 hospitals of the six countries of the Central American isthmus was used by a working group of nurses from that area which met in San José to establish basic standards of nursing care for hospitalized patients. Similar studies are under way in 30 hospitals in Mexico and 10 in the Dominican Republic.

17.24 Five working groups, with a total of 169 nurses and midwives from 12 countries, were convened at which strategies for nursing services with respect to the maternal and child health goals included in the ten-year health plan were discussed. The Organization provided assistance for the development of the nursing and midwifery component of maternal and child health and family planning services in eight countries.

17.25 A guide was prepared to assist in the extension of health coverage to rural areas where nursing auxiliaries serve as multipurpose workers. The practice of trained and supervised traditional birth attendants providing care for mothers and children is increasing within the Region. During 1973, training programmes for such workers were designed and implemented in six countries.

17.26 A major event was the publication of the report of the Inter-American Investigation of Mortality in Childhood, which has been proceeding since 1966 and has involved the collection of data on deaths of some 35 000 children under 5 years of age in 15 project areas in the Region.

17.27 Major activities in rehabilitation included training courses in the management of stroke patients and of cerebral palsy for the national rehabilitation programme in Mexico; the training in Brasilia of physical therapists from the north and northeast of Brazil; and the convening of a study group in Washington, D.C., to discuss the provision of services for disorders of human communications and the training of appropriate personnel to provide these services.

**Family health**

17.28 More and more countries have recognized the adverse effect that existing fertility patterns have on the health of mothers and children. A proposal was therefore submitted to UNFPA for financial assistance in implementing regional and intercountry family planning programmes in the Americas; and the Organization was named as the executing agency for UNFPA activities in the health sector in eight countries.

17.29 The Organization, in collaboration with UNICEF, ECLA, UNESCO and FAO, continued to promote and give technical support for coordinated and well defined food and nutrition policies in the countries of the Region. Governments were assisted

---

through 35 nutrition projects, 23 of which were country projects and 12 regional or intercountry projects. Among the latter were the Institute of Nutrition of Central America and Panama and the Caribbean Food and Nutrition Institute. Efforts were directed to strengthening nutrition units in the health services, expanding nutrition education and supplementary feeding programmes for the most vulnerable groups, improving the technical operation of institutional food services, developing nutrition surveillance, training personnel, and supporting research.

17.30 The role of health education in promoting the active and informed participation of communities in the prevention and cure of disease was stressed in the new ten-year health plan for the Americas. The development of a number of school health education and family life education programmes was promoted through seminars, training courses, and knowledge, practice and attitude surveys in schools. Two countries were assisted in introducing health teaching into the general education system.

17.31 A health education survey which was completed in 12 Caribbean countries served as basis for the discussions in Kingston in November at a Caribbean workshop on health education. The workshop was able to outline a long-range plan for the development in the Caribbean of health education services and programmes.

Health manpower development

17.32 Activities in health manpower development in 1973 included planning; preparation of personnel at the auxiliary, intermediate, graduate, and multiprofessional levels of public health; training for research; improvement of educational methodology and technology; provision of teaching, reference, and information materials; and the award of fellowships. In addition to direct assistance to schools of medicine and public health, a series of workshops, short courses, seminars and laboratories were sponsored to improve the training of a greater number of teachers in their own countries. There were altogether 675 participants in training activities of this type during the year.

17.33 With a view to pooling information on tested methods and experience in projecting health manpower requirements, a Pan American Conference on Health Manpower Planning was organized in Ottawa, in September, with the participation of senior teaching staff and health executives from the countries in the Americas.

17.34 The Pan American Centre for Health Planning in Santiago continued its assistance to countries through three international courses, two national courses, and four seminars.

17.35 The third workshop on education in the health sciences, held in Washington, D.C., in June and July, dealt with the development of an interdisciplinary centre of health sciences at the National Polytechnic Institute of Mexico. Twenty professors of medicine, nursing, dentistry, veterinary medicine, and the social sciences from Cuba, Honduras, Mexico, and Peru participated.

17.36 Postbasic training in different branches of nursing was given at universities in Colombia and Panama. The Organization assisted about 50 educational programmes for nursing personnel at the intermediate level; the subject of modern educational technology was included in many of the curricula. At the basic level of nursing training a seminar was conducted in Peru and a six-month course was held in Bolivia for instructors in auxiliary nursing. Nursing and midwifery services in 14 countries and territories were strengthened and their performance improved through in-service training and continuing education.

17.37 A supporting programme has been initiated for the training of health laboratory personnel in Central America and Ecuador. The programme seeks to determine the available facilities for training health laboratory personnel, the ability of health agencies to absorb newly trained personnel, and the manpower resources that will be needed to carry out the ten-year health plan for the Americas. Training programmes at the national level were initiated in five countries.

17.38 In the Organization's sanitary engineering education and training programme, activities were organized for the first time by certain universities in Argentina, Brazil, Ecuador, Guyana, Haiti, Mexico and the USA. Water supply agencies also began to organize training courses. Continuing education in environmental health was provided through 118 short intensive courses and 12 national seminars.

17.39 The concept of "service unit management" is being applied in five large teaching hospitals in Belo Horizonte (Brazil), Santiago, Bogotá, Callao (Peru), and Montevideo. During 1973 more than 60 unit managers were trained. The Organization assisted five new intensive training programmes on medical care and hospital administration, organized for a total of 135 medical directors, non-medical hospital administrators, and directors of nursing departments from four countries.

17.40 To assist in ensuring a high-quality drug supply, the Organization arranged for special training for
analysts and inspectors from Latin American and Caribbean national drug control agencies at the United States Food and Drug Administration and the Canadian Food and Drug Directorate.

17.41 The centre for educational technology in Rio de Janeiro assisted countries in applying the teaching/learning concept by organizing courses in programmed instruction, developing audiovisual materials and applying computer technology to instruction, especially in teaching centres with large numbers of students. The centre in Mexico City carried out similar work and developed an experimental programme in community medicine integrated with other basic sciences.

17.42 During the year the medical textbooks programme, which was in operation in 130 medical schools in the Region, was extended by agreement with the Government of Spain to the Universities of Barcelona, Bilbao, Madrid and Zaragoza.

17.43 Since the inception of its education programme in 1970, the Regional Library of Medicine in São Paulo, Brazil, has trained 40 assistant librarians, given in-service training to 54, and offered advanced seminars to 66 biomedical librarians from Brazil and other Latin American countries. The Library has increased its collection of biomedical journals to nearly 2800 current titles and has satisfied almost 45 000 interlibrary requests for the reproduction of scientific articles and approximately 1000 demands for special bibliographies and references.

The Nicaragua earthquake disaster

17.44 In the earthquake that devastated the city of Managua at the end of 1972, more than half the houses were destroyed, about 10 000 people were killed and ten times as many injured. The loss to the health sector alone was estimated at US $25 million. The Organization immediately gave assistance in evaluating the damage to the water supply and sewerage systems in Managua and advising on their repair, and recommended the action necessary to prevent the outbreak of epidemics and provided some of the vaccines required. Pursuant to resolution EB51.R43, adopted by the Executive Board in January 1973, the Organization assisted the Government of Nicaragua with the rehabilitation and reconstruction of the health services. It also helped to formulate projects to obtain from the Inter-American Development Bank low-interest loans for this rehabilitation and reconstruction phase.

PAHO Advisory Committee on Medical Research

17.45 The PAHO Advisory Committee on Medical Research reviewed in June many of the 133 active projects that make up the Organization's research effort in Latin America. Special emphasis was given to parasitic diseases—Chagas' disease, hydatidosis, and leishmaniasis—and to surveillance of and research on infectious diseases along the Trans-Amazon Highway. On that occasion two symposia were also held: one on biomedical research in Latin America, which aimed at providing guidelines for strengthening the Organization's programme in support of health sciences research in the Region, and the other on the use of medical auxiliaries for correcting the inadequacies of delivery of medical care in the Americas.

The Regional Committee

17.46 The XXII Meeting of the Directing Council of the Pan American Health Organization, which was also the twenty-fifth session of the WHO Regional Committee for the Americas, was held in Washington, D.C., from 8 to 18 October 1973. With the exception of the Dominican Republic, all the Member States in the Region were represented, as were France, the Netherlands and the United Kingdom on behalf of certain territories in the Region. Observers from UNICEF, UNDP, ILO, FAO, the Organization of American States, the Inter-American Development Bank and nine nongovernmental organizations attended. Also present were a Vice-Chairman pro tempore of the PAHO Executive Committee and an Assistant Director-General of WHO.

17.47 Appropriations for PAHO for 1974, amounting to US $24 852 035, were approved and the proposed WHO programme and budget estimates for the Region for 1975 were endorsed for transmission to the Director-General.

17.48 The Committee approved changes in the Financial Regulations of PAHO in keeping with those made in the Financial Regulations of WHO as approved by the Twenty-sixth World Health Assembly (see paragraph 15.37).

17.49 The Committee was informed of the steps being taken by the countries and the Organization to implement the recommendations of the III Special Meeting of Ministers of Health of the Americas held in 1972. It was recalled that the Ministers of Health had taken the position that, if the goals of the ten-year health plan for the Americas were to be met, it was essential for each country to define a policy consistent with its economic and social development, clearly specifying the objectives, strategies, and programmes for attaining them. Moreover, the working group on evaluation of the ten-year plan, convened by the
Regional Director, had stated that the process of evaluating the plan would depend on the way in which the national health policies were defined. The Committee therefore adopted a resolution urging the governments to continue and, if possible, intensify the review and formulation of their health policies during 1973 and to draw up and develop their priority programmes, and recommending to the Director that he continue to render to the countries the collaboration of the Organization in these activities.

17.50 The Committee took note that, according to the criteria established by the WHO Expert Committee on Smallpox, that disease had been eradicated in the Region of the Americas. The interruption of smallpox transmission in the Americas since 19 April 1971 had been confirmed on the basis of documents presented to, and conclusions reached by, the Commission for the Assessment of the Smallpox Eradication Programme in South America, which met in Rio de Janeiro in August. Health authorities were requested to devote special attention to maintenance and epidemiological surveillance programmes, without interrupting prematurely the application of the measures recommended by the International Health Regulations.

17.51 Governments were encouraged to continue research on mechanisms for the control of diseases transmitted by Aedes aegypti, including the development and testing of an effective vaccine against dengue, and were urged to organize or intensify activities for the epidemiological surveillance of these diseases, without prejudice to the continuation of action for the eradication of the vector.

17.52 The Committee noted the report of the 1st National Health Convention of Mexico, held in that country in July, and recognized that it contained important indications concerning a new methodology for health planning, which could be of great assistance to all countries. The Government of Mexico was requested to keep the governing bodies of the Organization informed about further progress in that sector.

17.53 A discussion of the problems created by the earthquake of December 1972 in Managua, Nicaragua, led the Committee to a consideration of the frequency and regularity with which disasters due to seismic disturbances occur in certain countries of the Americas. As a result, a resolution was adopted recommending inter alia that steps be taken, in consultation with appropriate bodies of the United Nations and inter-American systems, to convene a group of experts to study the criteria, standards and methods of inspection for buildings in force in the Member States, especially those most at risk from disasters due to seismic disturbances.

17.54 After studying the final report of the Technical Discussions on “Community health services and community involvement”, held during the meeting, the Committee recommended that governments assign a high priority to programmes designed to develop in the community a sense of responsibility and the ability to participate in the provision of health services. “Studies and strategies to reduce morbidity and mortality from enteric infections” was selected as the topic for the Technical Discussions in 1974.
18. SOUTH-EAST ASIA REGION

18.1 An important event was the admission of the Democratic People's Republic of Korea to membership of the World Health Organization on 19 May 1973 and its assignment, at its own request, to the South-East Asia Region. With this addition the number of Members in the Region has risen to ten.

18.2 WHO's activities in the South-East Asia Region during 1973 were closely related to the endeavours of governments to speed up the provision of essential health services to populations hitherto deprived of them, especially in rural areas, to make more effective use of existing facilities and resources, and to ensure community participation in these efforts.

**Strengthening of health services**

18.3 Interest in health planning continues to grow and in almost every country of the Region the health planning units were reinforced. Health planning studies of varying degrees of complexity and efficiency were conducted. Bangladesh, Indonesia, Sri Lanka and Thailand were operating a structured system of health planning. The basis was laid for an inter-country project to strengthen health services administration through training in planning, to be financed from UNDP funds.

18.4 The development of health services, with emphasis on rural health, is a predominant concern in all countries. Assistance was given in the form of multidisciplinary teams or by assigning experienced health planners to work with health ministries. An intercountry meeting on operations research was held in Bangkok. A three-day discussion group on medical care, convened at the Regional Office in April and attended by 15 senior national health administrators from eight countries, produced results of value in developing WHO's programme.

18.5 All the countries of the Region maintained a constant interest in the health of the mother and the child; in many, family planning has become an integral component of health care. In Indonesia, Sri Lanka and Thailand, comprehensive family health programmes presenting clinical, public health and training aspects were supported by UNFPA funds and coordinated with the work of UNICEF and other United Nations agencies; similar programmes were planned in Bangladesh, India and Nepal. The Organization's programme and budget for 1973 included a total of 33 family health projects for the Region as a whole. Teaching in paediatrics and in obstetrics and gynaecology was further developed, and in those countries that showed a growing interest in this sector the subjects of human reproduction, family planning and demography were given special attention both in country projects and in organized teaching and group education activities.

18.6 Assistance was given in developing training facilities in maternal and child health and these are now able to meet the major needs of countries in the Region. Support was provided for national nutrition organizations and for applied nutrition programmes. The activities undertaken in Burma to promote the general growth and development of children warrant special mention, and the countrywide programme to correct vitamin-A deficiency among preschool children in Bangladesh was one of the first of its kind to be undertaken on a large scale in the Region.

**Health manpower development**

18.7 The development of national health planning activities has led to a realization of the urgent need to conduct health manpower studies and to develop health manpower. One comprehensive manpower study which has been assisted by WHO since 1971 in Sri Lanka has now been concluded, and similar activities are under way in Bangladesh and Nepal. Health manpower development activities were extended to specialized fields such as health laboratory services, health statistics, health education, public health engineering, epidemiology, nutrition, medical education, paediatrics, nursing and community health services including family planning.

18.8 Further opportunities for teachers to be trained in the use of modern educational methods were provided in the teacher-training centres in Sri Lanka and Thailand. An intercountry course to provide continuing education for doctors and nurses that took place in Indonesia is the first of what is intended to be a continuing series of such courses.

18.9 WHO assisted in integrating the teaching of human reproduction, family planning and population dynamics in eight medical colleges in India following guidelines prepared by experts who met in New
Delhi in 1972 and revised at a regional training course on those subjects held in Dacca in July 1973.

18.10 In an attempt to stimulate health personnel in both public and private sectors to introduce better care of the newborn in their own day-to-day work, three-day refresher courses for different categories of health personnel were held in Jakarta and Medan, Indonesia.

18.11 Nursing education programmes were improved and nurses were prepared for key positions such as teachers, supervisors and administrators. Greater efforts were made to develop expert nursing care in paediatrics, orthopaedics, psychiatry, public health and other specialties.

18.12 Graduate training programmes in sanitary engineering continued to be provided at the Institutes of Technology at Bandung, Indonesia, and Rangoon. The training of medical physicists was upgraded to the Master's level in Thailand. Assistance was provided to Indonesia in preparing a Master's degree programme in health education for 1974, and plans were made for a similar university programme in Sri Lanka.

18.13 The large numbers of auxiliary workers that are urgently required cannot be prepared by the traditional and leisurely methods hitherto employed, and a more realistic approach to their training and retraining must be adopted. An example is found in Bangladesh, where the Organization provided assistance in conducting courses for the retraining of health personnel of the rural health and family planning services and pre-assignment orientation for the health administrators of the “thana health and family planning complex” which aims to provide comprehensive health care to the rural population.

18.14 To meet the needs of the integrated health services at the health centre and subcentre levels, auxiliary nursing and midwifery personnel were trained in India, Indonesia, Nepal and elsewhere. Bangladesh took steps to prepare family planning visitors and health visitors to assume broader functions.

18.15 Some 60 seminars, workshops, refresher courses and in-service training programmes were organized during 1973 at intercountry, national and institutional levels. Among the subjects dealt with were public health, virology, tuberculosis, leprosy, air pollution, operational research, health economics, health planning, health and family life education, social and cultural factors in the planning of infant health care, public health administration and supervision, psychiatric patient care, and postgraduate paediatric education.

18.16 The regional documentation centre in human reproduction, family planning and population dynamics, established in the Regional Office in 1971, expanded its work to include the collection of unpublished material on these subjects from all over the Region. Three bibliographies were brought out for distribution to interested institutions and workers.

**Disease prevention and control**

18.17 Despite some setbacks, antimalaria programmes continued to progress satisfactorily, and the disease has ceased to be a serious public health problem in most areas of the Region. In India there was an increase in the number of cases, but vigorous efforts were made to counteract the trend. The programme in Indonesia was expanded to cover the outer islands. In Nepal, areas with more than 80% of the population under risk moved into the consolidation phase. There were reverses in Sri Lanka, where 128,000 cases were recorded in the first eight months of 1973. In Thailand, in spite of the gradual increase in the number of malaria cases, nearly three-quarters of the population of the country live in areas which are now in the consolidation phase.

18.18 Bangladesh and India had very severe epidemics of smallpox during the year although these were restricted to smaller geographical areas than in 1972; in both countries an intensified surveillance campaign was begun in September. Nepal has attained a nonendemic status and, once again, no cases were recorded in Indonesia. Burma, Maldives, Mongolia, Sri Lanka and Thailand maintained their smallpox-free status.

18.19 Cholera continued to be a problem, with cases reported from a number of countries. The case-fatality rate in the Region is still around 15%. Assistance in rehydration therapy continued to be provided. Plague cases were reported only from Burma.

18.20 Assessments or reviews of different aspects of national tuberculosis control programmes with WHO participation were carried out in Burma, Indonesia, Mongolia and Nepal. In Indonesia, the redeployment of smallpox vaccinators for the BCG campaign has resulted in a great increase in the BCG vaccination coverage—from about 4 million in 1971 to 16 million in 1972 and even more in 1973.

18.21 Epidemiological and operational assessments of the national leprosy control programmes in Burma and Nepal were carried out by teams provided jointly by WHO and the respective governments. As a result it is expected that large numbers of leprosy patients in Burma will be released from control. In Indonesia,
a new leprosy project was initiated with the assistance of the Danish Save the Children Organization.

18.22 The dengue haemorrhagic fever situation is highly complex; for the ultimate control of the disease, long-term multidisciplinary action must replace the emergency measures hitherto employed. In 1973, the disease was again reported from Rangoon, from all provinces in Thailand and, for the first time, from Padang and Semarang in Indonesia.

18.23 During 1973, national health laboratories in the Region have been encouraged to establish closer cooperation both between each other and with international or regional reference laboratories. WHO has supported and reinforced the efforts of governments to set up health laboratories in the rural areas.

18.24 The overall production of smallpox vaccine in South-East Asia has more than doubled since 1970. Many vaccine-producing countries of the Region have established the capacity to produce diphtheria, pertussis and tetanus vaccine, and two have made progress in the manufacture of rabies vaccine. WHO has continued to assist national efforts to establish or strengthen facilities for vaccine manufacture.

18.25 There has been a rise in the morbidity and mortality rates of cardiovascular diseases. Rheumatic fever and cardiovascular sequelae are common manifestations. To help governments counteract this trend, WHO assisted in strengthening public health services for the management of heart diseases, establishing pilot projects for the control and prevention of rheumatic fever, and organizing a number of intensive coronary care units.

18.26 The development of WHO programmes of assistance in setting up national cancer registries and cancer control services and training the necessary personnel will follow the lines suggested by the seminar on cancer epidemiology held in New Delhi in November under the joint auspices of the Indian Council of Medical Research, WHO and IARC. During 1973, six countries were helped in assessing the pattern of cancer morbidity and mortality and evaluating existing facilities for cancer treatment and control.

Environmental health

18.27 Although large-scale assistance in providing basic sanitation is available from bilateral and multilateral sources, faster progress is essential to meet the needs of both urban and rural communities. Ministries of health must take the lead if substantial environmental improvements are to be achieved. The major emphasis in WHO-supported environmental health programmes continued to be on community water supply and sanitation and the training of personnel. WHO and UNICEF assisted rural water supply and sanitation programmes in six countries. Assistance in formulating water supply project proposals was provided to India, Indonesia and Nepal under the WHO/IBRD cooperative programme.

18.28 Surveys of environmental pollution problems were started in selected countries with WHO assistance, and steps for the control of air pollution were recommended. Help was given to the Government of India in conducting a training course in air pollution control and preparing a manual on the subject.

18.29 Occupational health services were further strengthened, especially in regard to legislation, training and the development of medical rehabilitation and physiotherapy. Assistance was provided, for instance, to Indonesia, which is requesting UNDP help in developing the National Institute of Occupational Health.

18.30 With a view to developing a proposal for possible UNDP assistance to a project for the control and safe use of pesticides, arrangements were made for a survey of pesticide control activities to be carried out in several countries. Earlier in the year a review was made in five countries of the measures for the control of pesticides used in agriculture, and assistance was given to the Industrial Toxicology Research Centre, Lucknow, India, in improving the laboratory procedures of the medical toxicology unit and the establishment of an epidemiological unit. WHO assisted an interregional seminar on the safe use of pesticides in agricultural practice organized by FAO in Bangkok in September.

18.31 The importance of quality control of pharmaceutical and biological products gained further recognition in the countries of the Region. An intercountry workshop on the quality control of drugs was held in Jakarta in June.

The Regional Committee

18.32 The twenty-sixth session of the Regional Committee for South-East Asia was held in New Delhi from 18 to 24 September 1973. Representatives were present from all Member countries of the Region, including the Democratic People's Republic of Korea, which was represented on the Committee for the first time. The session was also attended by representatives of UNDP, UNICEF, United Nations Information Centre (New Delhi), United Nations High Commissioner for Refugees, ILO, FAO, UNESCO, IBRD
and one other intergovernmental and 13 non-
governmental organizations in official relations with
WHO. An observer from the Colombo Plan also
attended. The Director-General of WHO was present.

18.33 The year 1973 marked the twenty-fifth anni-
versary not only of the World Health Organization
but also of the Regional Organization for South-
East Asia, and special celebrations were held. The
session and the celebrations were inaugurated by the
Minister for Health and Family Planning of the
Government of India, who delivered an address,
as did the Director-General and the Regional Director.
Messages of congratulation received from heads of
state of Member countries and from the United
Nations and specialized agencies were read out.

18.34 At the outset of the Committee's discussions,
the Director-General made a policy statement on the
future role of the Organization.

18.35 In its discussion on the Annual Report of the
Regional Director, the Committee approved the
emphasis placed on the need for countries to be self-
reliant and on WHO's coordinating role. It was
agreed that assistance to countries could be improved
by further strengthening their relationships with the
technical services of the Organization. Stress was
laid on the importance of adequately staffed national
health planning units at various levels, and on the
need for further assistance if those units were to
undertake responsibilities in data analysis and the
formulation of alternative approaches.

18.36 In connexion with the organization of health
services to meet the needs of rural areas, it was
considered essential for countries to make relevant
studies of the health situation with a view to solving
their own problems and planning to meet their
specific priorities. To that end developing countries
should try to understand and make suitable use
of modern techniques, including systems analysis. The
Committee noted with satisfaction the steps already
taken to implement WHO's programme for assistance
in this area.

18.37 The Committee welcomed WHO's intention
to carry out a multinational study of the international
migration of selected health personnel. Among the
suggestions made in this connexion were that WHO
fellows should be more carefully selected, that govern-
ments might take steps to ensure the return of the
fellows on completion of their studies, that maximum
use be made of regional and national training
facilities, and that more auxiliary personnel be trained.

18.38 In reviewing the efforts of countries to augment
training facilities, the Committee emphasized the
need to review curricula, to make more teachers
conversant with modern teaching methods and to
improve coordination between teaching institutions
and health services. Importance was attached to the
critical evaluation and follow-up of the large number
of group educational activities organized with WHO
assistance.

18.39 The Regional Director drew the Committee's
attention to the efforts of the Governments of Bangla-
desh and India to meet the target of smallpox eradi-
cation by 1975. Among the factors responsible for
the recrudescence of malaria in some countries were
the shortages and higher prices of insecticides, and
the increased costs of their delivery, vector resistance
and, especially, operational failures. It was considered
that it might be possible in some countries to combine
leprosy and tuberculosis programmes. The Com-
mittee noted that cholera mortality had been greatly
reduced but agreed that considerably more emphasis
on improved environmental sanitation was essential.
It stressed the importance for governments to take
further action in improving their national health
laboratory systems and to make greater use of regional
training facilities.

18.40 The Committee discussed the development of
a proposed health charter for Asia and noted the
steps taken by the Regional Office since its last
session. It agreed to the suggested priority areas of
communicable disease control, family health, nutrition,
and provision and maintenance of water supply and
drainage suggested by the subcommittee which had
met in February 1973. It adopted a resolution re-
questing the Regional Director to pursue efforts to
formulate and implement an Asian health charter.

18.41 The Committee approved the proposed pro-
gramme and budget estimates for 1975 for transmission
to the Director-General.

18.42 The Committee confirmed its previous decision
to hold its twenty-seventh session in Indonesia and
agreed that this session should be held in September
1974, in Bali. The Committee also accepted the
invitation of the Government of Bangladesh to hold
its twenty-eighth session in that country in 1975.

18.43 Technical Discussions were held on the subject
of "Application of modern management methods
and techniques for the improved delivery of health
services", "Provision of safe water supply to rural
communities in South-East Asia" was chosen as the
subject for the Technical Discussions to be held in 1974.
19. EUROPEAN REGION

19.1 In the quarter of a century since the First World Health Assembly in 1948, improvement in health conditions has gone hand in hand with economic recovery in many European countries, and within the international community Europe is now an important donor area. Now that the German Democratic Republic has become a Member of WHO the Organization will be able to draw upon the resources of the whole of Europe. At the same time, nearly 45% of the activities carried out in the European Region depend on sources other than the regular budget.

19.2 Despite the progress made, the countries of the Region realize that they are facing new health hazards or are still confronted with unsolved problems related to the prevention of disease or the elimination of dangerous human habits. To these difficulties should be added the lack of funds and of trained personnel which still makes it impossible for people everywhere fully to benefit from modern developments in the health sciences. Sound priorities, acceptable to all concerned, must be set, so that medical care does not grow more expensive without making a correspondingly increased contribution to human prosperity and happiness.

**Strengthening of health services**

19.3 It is increasingly apparent that the examination of the costs, effectiveness and efficiency of the health services provided is an essential prerequisite for health planning. This necessity is influencing several regional activities and will be discussed at the European Conference on National Health Planning to be held in March 1974. In this context, regional models of the health planning process in different socioeconomic conditions have been examined in the course of some feasibility studies.

19.4 The UNDP-assisted programme for the development of the Scientific Centre for Hygiene and Epidemiology in Sofia, for which WHO was the executing agency, was completed and the new Centre was inaugurated in September.

19.5 The risk of importation of communicable diseases is intensified by the yearly movements of millions of people in Europe from north to south for holidays and other millions in the opposite direction for work; such migrations, together with the international trade in food and animal feeds, create an unstable epidemiological situation which calls for continuous watch and intercountry cooperation. This risk was exemplified in southern Italy where more than 250 cases of cholera with 23 deaths occurred in the second half of 1973. Several other countries in Europe had a few imported cases. These events bear witness to the fact that, whilst cholera may be imported into any country, outbreaks occur only in areas where general sanitation—including food sanitation—requires improvement.

19.6 An important new venture in 1973 was the organization of two working groups on the health hazards of population movements; one on the public health aspects of tourism was convened in Torremolinos, Spain, in July, and the second, in Algiers in November, studied the health aspects of labour migration.

19.7 In the programme on the organization and delivery of medical care, attention was given to questions of cost and effectiveness, and operational research methods and other management techniques were applied. Studies in hospital management were conducted with regard to functional design, hospital utilization and the relationship between hospitals and other medical care services.

19.8 The questions of health care and social security were taken up at a symposium on the role of social insurance in preventive medicine, held in Nancy, France, in October. The subjects of rehabilitation and prevention of disability were considered of particular interest since the extent of disability is not only a public health, but a national economic problem, and one that grows more serious with the increase in the number of aged persons in the population.

19.9 The European countries are gradually developing health information systems and subsystems that will compile the information required for the planning and management of health services. A conference
19. EUROPEAN REGION

was held in June to review general problems connected with the planning and management of health information systems.

19.10 Efforts were continued to improve nursing education systems which have not proved able to supply countries with the nursing teachers and administrators they require. The programme of European studies in nursing, midwifery and medico-social work continued to be linked to a number of country projects.

19.11 An ad hoc working group of senior officers from the WHO-supported international nursing schools in Edinburgh, United Kingdom, Lublin, Poland, and Lyons, France, reviewed the work of the three schools, formulated recommendations for future WHO assistance, and examined trends in advanced education for nurses and midwives in Europe.

Family health

19.12 The adaptation of the traditional maternal and child health services to a changing social environment, the integration of curative and preventive action for mothers and children, and the influences of society on the child, were among the matters considered by a working group that met in September to analyse the results of the study on the evaluation of maternal and child health services in certain countries of the Region.

19.13 With financial support from UNFPA and sources of bilateral aid, WHO has assisted or helped to prepare maternal and child health programmes and family planning projects in Algeria, Morocco and Turkey; these also have a nutrition component. The first training course on family health and family planning was arranged in Paris and Brussels in January under the joint auspices of WHO and the International Children’s Centre.

19.14 Most of WHO’s health education activities in the Region are multidisciplinary and are carried out in conjunction with three of the long-term programmes, e.g., in correcting dietary and smoking habits as part of the control of cardiovascular diseases, in mental health work in connexion with drug abuse among young people, and in environmental pollution control.

Health manpower development

19.15 During the year, further efforts were made to gain acceptance for the introduction of modern concepts in the education and training of health personnel. In a series of meetings, postgraduate and undergraduate medical education was scrutinized and teacher training in pedagogy was discussed. Possible steps to relate medical education to health planning were examined at a conference of deans of medical schools attended also by a number of senior health administrators, and in the course of the two-year capacity study on medical education in the Region which was completed during the year.

19.16 Assistance was given to national activities in teacher training and curriculum development and preliminary discussions were held with several governments on the feasibility of setting up teacher-training centres at the national or regional level.

19.17 The Organization assisted in UNDP/UNESCO programmes for higher education and health manpower planning in Morocco and for the establishment of five higher technical education centres in Greece; it also participated in UNDP-assisted programmes to support the Institute of Medical Technology in Constantine, Algeria, and the teaching of preventive and social medicine in Turkey.

Communicable disease prevention and control

19.18 In the programme for the development of national surveillance activities, poliomyelitis surveillance was carried on in several countries and further efforts were made to standardize diagnostic laboratory techniques and reporting procedures, thus facilitating international comparison. Surveillance of rubella was introduced in several countries and measles vaccination programmes were intensified in others.

19.19 Information on legislative and administrative aspects of venereal disease control was collected and distributed throughout the Region, and a directory of treatment centres in the Region was made widely available.

19.20 A study was initiated of the entomological aspects of the receptivity to malaria in southern Europe. Of the few countries classed as malarious in the Region until recently, two, Portugal and Yugoslavia, were accepted for inclusion in the WHO official register of countries where eradication has been achieved.

Noncommunicable disease prevention and control

19.21 The long-term programmes being carried out in the Region on mental health and cardiovascular
diseases have been well accepted by most of the countries and have begun to exert a certain influence on the evolution of national services.

19.22 Activities in the long-term programme in mental health have been pursued in four main sectors: services and personnel; organization and planning; child and adolescent mental health; and alcoholism and drug dependence. As part of a study to clarify the functions of different members of the psychiatric team, and to lay more stress on prevention, a working group on the role of the psychologist in mental health services was held in Cracow, Poland, in May. Another working group that met in Norway in April was concerned with preparing the general practitioner to shoulder the burden of diagnosing and treating mild mental illnesses in his patients.

19.23 For any attempt to improve the effectiveness of existing mental health services, an accurate picture of their current distribution and degree of utilization is clearly needed but is often not provided by national data reporting systems. A new feature of the long-term programme was the establishment of national pilot areas with populations of between 300,000 and 600,000 in nine countries. In these areas, precise details of mental health services and the use made of them by patients will be collected and analysed.

19.24 There are reasons to believe that the methods used in almost all campaigns against the abuse of alcohol or other drugs are largely unsupported by scientific evidence or evaluation. A group met in May to examine the principles that should be followed in organizing and evaluating such health education programmes and in developing comparative studies of health education measures in schools. The question of social behaviour and delinquency and the problem of suicide and attempted suicide in young people were studied by separate groups meeting in August and October respectively. A basis was laid for inter-country collaborative research on methods for the treatment and rehabilitation of drug dependants at a meeting held in Frankfurt, Federal Republic of Germany, in March.

19.25 In the long-term programme on cardiovascular diseases, a network of collaborating centres has been set up covering the whole Region. In several of these, pilot areas have been established around which comprehensive community programmes can eventually be built up. In its first phase, the programme was concerned largely with ischaemic heart diseases but it is now being extended to include cerebrovascular diseases, hypertension and other conditions.

19.26 The question of how to introduce community programmes for the prevention and control of cardiovascular diseases into existing medical care systems was discussed at a conference held in Brussels in June which emphasized the need for further support from the responsible public health authorities and for the stimulation of community activities in individual countries.

19.27 Particular stress is laid on prevention, and three types of multifactor preventive trials, based on different population groups, were under way during the year with the aim of evaluating primary preventive measures against ischaemic heart diseases. The prevalence data for risk factors were presented to a working group in March which agreed on priorities among such measures. The comprehensive programme of prevention and control of ischaemic heart disease, cerebrovascular disease and hypertension being carried out in North Karelia, Finland, with WHO assistance is the first attempt to promote all components of a community control programme in a well-defined population. Its progress was evaluated during the year.

Prophylactic and therapeutic substances

19.28 A second European symposium on clinical pharmacological evaluation in drug control took place in Heidelberg, Federal Republic of Germany, in September with participants from 25 countries. A regional course in French on the quality control of drugs, held in Rennes, France, in October, was also attended by trainees from other regions of WHO. The facilities provided to train national personnel in drug control and toxicology were continued.

Environmental health

19.29 The advance of cholera in certain European countries since 1970 has shown that basic environmental sanitation conditions still require improvement, particularly in the southern part of the Region where priority must be given to water supply, basic sanitation and training.

19.30 The regional long-term programme on environmental pollution control tries to respond to the needs of the Region by developing criteria of environmental quality and internationally agreed methods of pollution control. The analysis of the environmental situation in the densely populated industrial areas of the Region shows that there are several pollution problems that can be controlled only by international collaboration. Intercountry projects are therefore needed and cooperation between riparian countries
has been intensified, in particular with regard to the Danube and the Rhine.

19.31 The long-term programme included a comparative pilot study on manpower requirements in environmental health, studies on the sublethal effects of pollution on marine organisms as an indicator of human health hazards, and provision for training in environmental health. In collaboration with a number of governments, pollution control programmes are being organized at national level, institutions are being strengthened, and environmental administrations studied.

19.32 The manuals on water analysis and air quality management, prepared in the European Region, provide material suitable for use in all Regions. Manuals on industrial air pollutants and on protection from non-ionizing radiation are in preparation. Documentation was collected for the survey and evaluation of legislation and regulatory measures for radiation protection. An international symposium on the biological effects and health hazards of microwave radiation was arranged in Poland in October with support from the United States Government, in the framework of the UNDP-assisted programme.

19.33 Accidents are the leading cause of death for the age-group 5-15 years in 21 European countries, and nearly 50% of all male deaths in the age-group 15-24 years are caused by road accidents. The burden placed on medical care services by accidents is heavy, and there are considerable economic consequences of the resulting deaths and injuries.

19.34 The Organization has been active in organizing liaison meetings in the Region to discuss measures for traffic control and accident prevention, in coordinating the many disciplines involved and in studying the economic consequences of, and the high-risk groups involved in, road accidents.

Health statistics

19.35 The information collected by the Regional Office on health services organization, staffing and activities was combined with epidemiological data and used to assist in more rational planning of health services and in assessing their adequacy and efficiency. Some aspects of national health statistics on causes of death were analysed in the course of a study on medical certification of causes of death. The study revealed that only two of the six participating countries adhered strictly to the format of the death certificate recommended by WHO and indicated that greater efforts would be required to achieve universal acceptance of the WHO standard.

19.36 Studies completed in 1973 were devoted to the occurrence of suicide in Europe, to the occurrence and distribution of chronic respiratory disease in relation to environmental factors such as air pollution, and to national health statistical services.

The Regional Committee

19.37 The twenty-third session of the Regional Committee for Europe was held from 11-15 September in Vienna at the invitation of the Government of Austria. It was attended by representatives of 31 countries in the Region including, for the first time, the German Democratic Republic. Representatives of the Commission of the European Communities, the Council of Europe, the Intergovernmental Committee for European Migration, the International Committee of Military Medicine and Pharmacy and a number of nongovernmental organizations were also present.

19.38 Introducing his report for the period 1 July 1972 to 30 June 1973, the Regional Director said that, despite the tremendous economic recovery and improvement of health that had taken place, there was still a tendency in European countries to develop curative at the expense of preventive health services. He went on to stress the importance for the Region of the programme newly designated as “strengthening of health services”. He made particular mention of the Helsinki Conference on Security and Cooperation in Europe and raised the question of the action arising from that conference that the Regional Office might take in the fields of science and technology.

19.39 The Committee heard a report on the cholera epidemic in Italy. It noted with satisfaction the progress of the long-term programmes on cardiovascular diseases and environmental pollution control. It considered proposals for the continuation of the long-term programme in mental health for the period 1976-80, and noted that one of the principal features of the second phase of this programme would be the initiation of operational research studies in pilot zones. After a long discussion, the Committee approved the continuation of the programme on the lines suggested, and requested the Regional Director to take note of the comments made during the discussion.

19.40 After a detailed review, the Committee endorsed the proposed programme and budget estimates for the Region for 1975 for transmission to
the Director-General. There was considerable discussion of the new form of presentation of the budget.

19.41 The Committee confirmed its decision to hold its twenty-fourth session in Bucharest in September 1974, and accepted the invitation of the Government of Algeria to hold its twenty-fifth session in Algiers in September 1975.

19.42 The Technical Discussions were on “Environmental factors in the etiology of chronic and degenerative diseases”. The Committee confirmed the selection of “The health protection of the elderly” as the subject for the Technical Discussions at the twenty-fourth session and selected “The place of occupational health in public health activities” as the subject for the Technical Discussions at the twenty-fifth session.
20. EASTERN MEDITERRANEAN REGION

20.1 Although demographic, social and economic situations vary greatly in the countries of the Eastern Mediterranean Region, all governments are showing greater concern to provide more adequate health care for their expanding populations. At the same time, with rising economic standards and better education, more people are becoming aware of their right to the best available health services. In general, a place is given to health in the context of overall social development, and all but four countries of the Region have initiated basic national health plans, in most cases with WHO assistance. Yet, in some countries, investment in the health sector is still insufficient when contrasted with the growth of the economic and education sectors.

Communicable diseases

20.2 Despite rapid progress in recent years in the control of malaria, schistosomiasis, smallpox, trachoma and tuberculosis, these diseases still represent a major challenge in the Region as a whole. Substantial assistance was required during the year in laying firm foundations for the overall control of communicable diseases by strengthening national services for epidemiological control and surveillance as components of basic health services. Help was continued for campaigns to eradicate or control specific diseases such as smallpox and malaria and, in countries with the requisite facilities, support was given to surveillance programmes—in particular, for diarrhoeal diseases.

20.3 Of the four countries where smallpox was endemic, Afghanistan and Sudan have interrupted transmission and have started on the maintenance phase. In Ethiopia good progress was made in limiting endemic smallpox to only five provinces. Pakistan, however, suffered serious epidemics in two provinces, inhabited by a little over 20% of the country's population. Specially intensive campaigns were mounted in both countries in the autumn.

20.4 Most malaria eradication programmes made satisfactory headway, but those in Afghanistan and Pakistan experienced considerable setbacks. Elsewhere the disease prevailed with varying degrees of endemicity. Nine countries were conducting eradication programmes. In three countries, Cyprus, Israel and Lebanon, there was no malaria transmission during the year.

20.5 Communicable eye diseases are endemic in almost all countries of the Region, trachoma being the greatest single cause of blindness and impaired vision. There are many national programmes for the control of communicable eye diseases, but only for those in the Libyan and Syrian Arab Republics was assistance requested from WHO.

20.6 Tuberculosis control projects in Afghanistan, Ethiopia, the Libyan Arab Republic, Pakistan and Somalia took on the form of national tuberculosis programmes. The increasing degree of integration of specific control programmes into the general health services made it necessary to train sufficient numbers of general health staff in tuberculosis control work. The remaining specialized tuberculosis centres kept up their role, which is mainly to provide a practical training ground for staff.

Noncommunicable diseases

20.7 The importance of noncommunicable diseases in the morbidity and mortality patterns of countries in the Region is increasing in proportion to the decline in communicable diseases. The rate of development of new activities in cardiovascular diseases, cancer, mental illness, and dental disorders including dental caries and periodontal disease reflects the growing concern of governments. Information was gathered and advisory services rendered in selected countries on the socioeconomic effects and health hazards of opium dependence, hashish smoking, khat chewing and alcoholism. However, the magnitude and complexity of these problems are somewhat beyond the power of the existing resources to combat them. The organization of mental health services in general was discussed at an interregional seminar held in Addis Ababa in November.

Environmental health

20.8 The development of community water supplies has been given a high priority both by governments and by the Organization, which assisted projects in five countries while three others were helped to define
problems and to plan programmes. Advice was given on an ad hoc basis to countries where the water supply was reasonably well developed. A few countries that continue to lag behind the targets set for the current development decade, because of lack of funds and trained personnel, still require considerable assistance from international sources. Wastewater and solid wastes disposal projects were assisted in six countries.

20.9 The environmental pollution control activities undertaken by WHO were mostly of a promotional nature. Iran, Israel and Jordan were assisted with the problem of air pollution. In the large-scale UNDP project for a sewerage and drainage system for Teheran, preliminary engineering and economic feasibility studies were undertaken with WHO supervision.

20.10 The maintenance and repair of X-ray and other medical equipment continued to be a major problem, many countries having to rely solely on external assistance with the result that valuable equipment may often lie idle for long periods. WHO gave practical assistance to seven countries in effecting repairs and imparting skills to national technicians.

**Strengthening of health services**

20.11 Most countries of the Region have sufficient financial, manpower and technological resources to provide services for young children and mothers, the control of infectious diseases, health and nutrition education, and the improvement of water supplies and environmental health. These resources are not yet sufficient, however, to enable them to plan and develop more sophisticated health services. In 1973, WHO assisted a number of governments in re-examining their current health projects and preparing realistic future plans. Countries whose health services are as yet at an early stage of development were helped to review the organization of their services and to formulate health legislation.

20.12 All the larger countries of the Region, those with a sizable programme assisted by WHO, or those in need of immediate technical advice now have WHO Representatives to advise governments on the health aspects of their socioeconomic planning and to help in coordinating ongoing health activities. WHO Representatives have proved particularly useful in assisting ministries of health to prepare the health sector of UNDP country programmes.

20.13 Following the settlement of disturbed conditions in the Southern Sudan, WHO, in collaboration with the Office of the United Nations High Commissioner for Refugees (UNHCR) and other agencies, assisted in the promotion of health services and the rehabilitation of persons returning to their homes. The epidemiological and water supply situations were surveyed and advice was given to the Government in preparing future health plans for that area. With funds made available to it, WHO purchased urgently needed medical supplies and initiated projects for a health training institute, trypanosomiasis control, health advisory services, and water resources development. Certain long-term projects will be further developed with funds to be provided by UNICEF and UNDP.

20.14 Floods caused by heavy late monsoon rains combined with snow-melt waters from the Himalayas affected more than 10 million people in Pakistan. To help meet this emergency, WHO provided technical advice and coordinated the provision of medical supplies by UNICEF and by the League of Red Cross Societies and other voluntary agencies. To combat possible outbreaks of epidemic diseases, the Organization undertook to procure a considerable quantity of medicines paid for by cash contributions made by governments and other donors through the Office of the United Nations Disaster Relief Coordinator (UNDRO), and provided smallpox vaccine and antimalarial drugs from its own stocks. WHO also helped to work out medium- and long-term health programmes for the rehabilitation and reconstruction phases.

20.15 By October, the drought situation in Ethiopia had become so serious that the Government requested international assistance of various kinds, including the provision of certain medicaments and medical supplies. At the request of UNDRO, WHO assisted by investigating the needs and giving technical clearance for the procurement of such supplies.

20.16 The provision of health services for nomadic populations was discussed at a seminar on the health problems of nomads, held in Shiraz, Iran, in April.

20.17 The need to strengthen managerial skills in ministries of health is now widely realized. An opportunity was afforded to several countries of the Region to discuss modern techniques at a seminar on the management approach in health administration, held in Cairo in October.

20.18 A project that aims to help bridge the gap between the institutions responsible for training health workers and the services that use them was set up during the year at the Regional University Centre for Health Sciences, Negev University, Beer
Sheba, Israel. The results obtained in the long term will certainly be of assistance to other countries needing to integrate the training and development aspects of health services.

20.19 In efforts to develop health laboratory services, many laboratories were assisted in building up an internal quality control proficiency mechanism, especially in clinical chemistry. Six countries participated in the glucose and urea standardization programme jointly sponsored by WHO and the Center for Disease Control, Atlanta, Ga., USA, and more than ten cooperated in the syphilis serology proficiency testing study organized by the Center. Other countries were assisted in improving the quality and increasing the quantity of vaccines produced or were advised on the development of blood banks.

Family health

20.20 The high rates of maternal and child mortality and morbidity in the majority of the developing countries of the Region are mainly the result of poor nutrition, widespread infection and haphazard reproduction. In many countries, maternal and child health activities have now been integrated into the basic health services at the peripheral level and several have been assisted by WHO in strengthening these services. Nevertheless, in rural areas, due to shortage of trained personnel, inadequate communications and lack of transport, maternal and child health services are often poor both in quantity and in quality. WHO is assisting specific projects to develop and strengthen services to meet the health needs of mothers and children in Afghanistan, Iraq, the Libyan Arab Republic, and Tunisia.

20.21 The importance of family planning and birth spacing as a preventive health measure for mothers and children is being increasingly recognized, even in countries that do not have a population control policy. Integrated maternity-centred family planning programmes were assisted in four countries which also had broad-based family planning programmes with population control objectives. However, to get family planning included in rural health services involves great difficulties; one way that is now being tried is to give some training to traditional birth attendants and to encourage them to provide family planning services in rural maternity homes, under proper supervision.

20.22 Assistance was given to a number of countries in the Region in formulating food policies, planning nutritional intervention and improvement programmes, developing weaning foods, improving food hygiene standards, and training personnel. Several countries were operating large-scale group-feeding programmes, particularly in schools, with donations of food from WFP and other bodies. To improve the technical benefit and operational efficiency of these programmes, a course on group feeding was given at the Nutrition Institute, Cairo, in March and April, with participants from nine countries of the Region.

20.23 The second regional food and nutrition seminar was held in Beirut in September under the joint auspices of UNICEF, FAO, UNESCO and WHO. Participants were drawn from the ministries of planning, health, food and agriculture, etc., in nearly all countries of the Region. A number of other seminars and a workshop on the teaching of nutrition and the planning of nutrition programmes were organized.

20.24 With support and encouragement from UNICEF, FAO, WHO and other bodies, a Federation of Middle East Nutrition Societies was established during the year.

Health manpower development

20.25 Although new medical schools are established each year and training institutes are constantly being expanded, the development of effective health services in the Region is still impeded by an inadequate, ill-balanced and maldistributed supply of health manpower. It is generally accepted that present patterns of education and training of doctors and health workers are unable to satisfy the real needs of the countries, yet unsuitable models are still too much followed. It is particularly urgent to develop more effective data on which to base the prediction of future manpower needs. Assistance to improve education and training programmes therefore received, and must continue to receive, high priority. For example, with a view to preparing medical students more closely in accordance with the real situation in their country, increasing attention was given to the teaching of community medicine, and WHO professors in schools of medicine were constantly involved in curriculum revision.

20.26 The Regional Teacher Training Centre at Pahlavi University, Shiraz (Iran) carried out a number of seminars and workshops on educational planning. Assistance was given to the newly established Centre for Educational Technology in the Health Sciences, Cairo, which will play an important role in the development of audiovisual teaching materials for use in training programmes in Arabic-speaking countries. A number of medical schools were advised on the most effective use of audiovisual aids and on educational planning.
20.27 The provision of health services to large populations will depend more and more on the availability of auxiliary personnel. During the year, information was collected on auxiliary training programmes, of which there are about 600 in the Region. Four of the Gulf states were assisted in preparing long-term plans for training institutions, and direct assistance continued to be given to large-scale projects funded by the UNDP in Democratic Yemen, the Libyan Arab Republic and Yemen.

20.28 Nursing education programmes have continued to place emphasis on the coordination of theory and supervised clinical experience, the development of public health nursing, including family health and family planning, and health education. A health manpower study of nursing resources and the utilization of nurses in Egypt has furnished data of value in future planning to meet the nursing needs of health services in other countries of the Region. WHO assisted all levels of nursing education and midwifery training and the development and strengthening of the nursing component of health services in the Region. It also assisted nursing courses at university and postbasic levels in seven countries.

20.29 A workshop on nutrition teaching in medical schools which was organized in Isfahan, Iran, in October and November was attended by 20 staff members from the departments concerned with nutrition teaching in selected medical schools.

20.30 Assistance was given to the engineering faculties at Pahlavi University, Shiraz, Iran, and at the University of Engineering and Technology, Lahore, Pakistan, in establishing or strengthening sanitary engineering courses, and the training of sanitarians and health inspectors was continued at various WHO-assisted institutes in a number of countries.

The Regional Committee

20.31 Sub-Committee A of the Regional Committee for the Eastern Mediterranean met in Bludan, Syrian Arab Republic, from 8 to 11 September 1973. Sub-Committee B did not meet.

20.32 The meeting of Sub-Committee A was attended by representatives of Afghanistan, Bahrain, Cyprus, Democratic Yemen, Egypt, Iran, Iraq, Jordan, Kuwait, Lebanon, Libyan Arab Republic, Oman, Pakistan, Qatar, Saudi Arabia, Somalia, Sudan, Syrian Arab Republic, Tunisia, United Arab Emirates, and Yemen. The United Nations, UNDP, UNICEF, UNESOB and UNRWA were represented, as well as other intergovernmental, nongovernmental and national organizations. An Assistant Director-General of WHO represented the Director-General.

20.33 In the discussion on the Regional Director’s Annual Report for the period 1 July 1972 to 30 June 1973 there was general agreement on the necessity in each country for a realistic national health plan, within the context of the overall socioeconomic plan. Such health plans should be flexible to allow for rapidly changing conditions and should emphasize the strengthening of health services in the rural areas. In this connexion, the need was stressed for strong representation of ministries of health in meetings of national coordinating authorities in order to ensure that a reasonable share of funds from external sources, such as UNDP or other United Nations bodies, was devoted to the health sector. The recent decline in such allocations was regretted.

20.34 Mention was made of the need to re-evaluate the health situation in each country in the light of experience gained, so that priorities could be realistically established, and more attention given to new health problems as communicable diseases were more or less successfully controlled or eradicated.

20.35 It was felt that the rapid increase in the population of certain countries in the Region called for urgent control measures, and governments were asked to make the greatest possible use of UNFPA assistance for broad family health programmes.

20.36 The need for continued emphasis on the development of health manpower, and particularly of auxiliary personnel, was endorsed. Special attention was given to the subject of teacher training for health professionals, and satisfaction was expressed with the assistance to teacher training provided by the Organization.

20.37 The proposed programme and budget estimates for the Region for 1975 were endorsed for transmission to the Director-General.

20.38 Sub-Committee A noted a request from the United Arab Emirates that, owing to unforeseen circumstances, their invitation to hold the 1974 session in that country be postponed to a later date, and agreed that the 1974 session would be held at the Regional Office in Alexandria, Egypt. It accepted an invitation from the Government of Iran to hold the 1975 session in that country.

20.39 The “Epidemiological surveillance of communicable diseases in the Region, with particular reference to peripheral areas” was the subject of the Technical Discussions.
21. **WESTERN PACIFIC REGION**

21.1 Of great significance for the future health development of countries long under a state of war in the Region was the prospect of medical relief from a number of sources for large sectors of their populations and of the consequent resumption or speeding up of national health and economic development programmes.

21.2 The participation of the People's Republic of China in the Organization's activities began to take shape during the year and gave promise of bringing substantial reinforcements to international health work in the Region. Early in 1973, a Chinese mission visited the Regional Office in Manila and WHO headquarters in Geneva.

**Communicable diseases**

21.3 The communicable diseases continued to be the major cause of morbidity and mortality in the developing countries in the Region. Cholera, typhoid fever and other enteric infections were prevalent. There were outbreaks of dengue fever, some with haemorrhagic manifestations, in the Khmer Republic, Malaysia and the Republic of Viet-Nam. Plague remained endemic in the Republic of Viet-Nam and cases were reported in the Khmer Republic. Tuberculosis was still a major health problem in some areas. It is estimated that 80 million persons were under malaria risk. Parasitic infections, such as filariasis, paragonimiasis and schistosomiasis were prevalent in a number of countries.

21.4 The main factors responsible for the continuing high prevalence of communicable diseases were: the almost stationary adverse conditions, related to the physical, biological and socioeconomic environment, prevailing in many of the developing countries; the inadequate health services and, in particular, the lack of epidemiological and other supporting services; and the dearth of adequately trained epidemiologists and other health personnel.

21.5 The regional communicable disease control programme is aimed primarily at developing and strengthening epidemiological services and surveillance mechanisms including statistical services. The help given in strengthening and improving laboratory services and especially laboratory diagnosis was also expected to result in better epidemiological surveillance and earlier action in controlling disease.

21.6 The progress of the antimalaria campaigns in the Region has been steady. In-depth studies of the programmes in four countries and territories were made by independent assessment teams.

21.7 A regional BCG vaccine production centre is being established in the Philippines with assistance from WHO and UNICEF.

**Noncommunicable diseases**

21.8 Advisory services were provided to help develop the manpower to meet present and future needs of the dental care services and to strengthen facilities for training dental health personnel in the Region. In the South Pacific, periodontal disease appears to be of greater public health significance than dental caries and, following a WHO-assisted seminar on the subject held in Fiji in June, governments are showing increased interest in projects for its control and prevention.

21.9 Following a decision taken by the Regional Committee in 1972 at its twenty-third session, a pilot study was started in Malaysia in September to investigate the epidemiology of drug abuse, to assess the resources available to combat the problem, and to make proposals for future action. The United States Government and a voluntary agency in Hong Kong are supporting the study which, together with a similar undertaking planned for the Philippines, will provide a basis for a long-term regional programme on drug dependence.

**Environmental health**

21.10 Although WHO's assistance in environmental health now covers a wide range of activities, it is still largely directed to basic sanitary measures and the development of large-scale water supply and wastes disposal projects. Basic sanitary measures are being integrated into health service development projects in five countries or territories. Five countries received assistance in the organization of courses for health inspectors and food handlers.
21.11 In view of the concern expressed by Member
governments during the twenty-third session of the
Regional Committee in 1972 about the quality of
food and water on international flights, information
was collected from countries in the Region on the
safeguards currently in effect to control the sanitary
quality of food served on international flights and
on studies done in Member countries to assess the
risk of foodborne disease on international flights
(see also paragraph 21.38).

21.12 An in-depth evaluation was made of the
intercountry project in the South Pacific that is sup-
ported by UNDP and assisted materially by UNICEF.
This showed that remarkable results had been achieved,
particularly in developing water supplies.

21.13 Proposals were drawn up for the expansion
of the long-term intercountry programme for the
prevention and control of environmental pollution.
One conclusion reached at the first regional seminar
on air pollution, held in Manila in May, was that
planning for pollution control was urgent even in
countries where the degree of pollution was still low.
Suggestions were made for the exchange of informa-
tion and technology within the Region.

21.14 A regional seminar on radiation health and
radiation protection was held in Manila in February.
This was the first of its kind in the Region and it
emphasized the importance of establishing adequate
health physics, engineering and radiation protection
services for the satisfactory development of radiation
medicine and the prevention of radiation hazards.

**Strengthening of health services**

21.15 The overall objective of WHO's collaboration
with governments in strengthening health services is
to provide adequate health care to wider segments of
the population. Since, however, national health
budgets are likely to remain within present limits in
the foreseeable future, WHO's assistance places less
emphasis on the expansion of existing services and
more on improving their planning, organization and
management. The grouping of health service devel-
opment projects under a master plan of operation
was completed in Papua New Guinea. This brings
the number of countries or territories with such plans
to nine.

21.16 National health planning in the context of
overall national development has gained wide accept-
ance among Member States. Nevertheless, further
encouragement and additional technical assistance
are frequently needed for national health adminis-
trations that are as yet unable to undertake planning
on a continuing basis. In 1973, a course in Malaysia
and an area course for the South Pacific replaced the
regional health planning course; they provided training
in health planning for middle- and local-level staff.

21.17 Assistance was given in coordinating special
health programmes, such as those for tuberculosis
control, with community health programmes, in
strengthening supervision, particularly over auxiliary
health personnel, and in improving reporting and
recording systems.

21.18 Operational research techniques were employed
in a study of the staffing pattern and utilization of a
standard rural health unit in the Philippines, and
alternative methods for improving the operational
performance of such units were formulated. The
results should provide a basis for planning improve-
ments to the country's local health services under the
current national development plan.

21.19 Although medical care takes up between
60% and 70% of national health budgets, the demand
is far from being met. Assistance in this field is
directed towards improving facilities and management
of medical care institutions. UNDP provided funds
for an intercountry consultant team to undertake feasibility studies on the design, organization and
management of hospitals and the maintenance of
equipment. The team's findings are expected to
provide the basis for a long-term programme of
advisory and training services in these fields.

21.20 The possibility of using new types of health
auxiliaries and community health aides in clinics and
health centres is arousing wide interest. In general,
however, WHO-assisted projects for health services
development were more concerned with standardizing
the duties and training of already recognized auxiliary
health workers, particularly those who will under-
take multipurpose activities. An effort has been made
to revive interest in teaching village midwives and
other traditional health workers to observe the
principles of hygiene and to make referrals to the
health services.

21.21 Health laboratory services are now accepted
as an essential component of general health services
and even of those at the periphery, and more and
more hospitals in the Region have undertaken to
serve as reference laboratories for requests from
health centres. WHO assistance was provided prin-
cipally to improve the organization and raise the
standards of health laboratories so that their results
are reliable and comparable, to enable them to carry out specialized programmes for the surveillance and control of communicable diseases, and to train laboratory workers through educational meetings, fellowships and courses.

21.22 A total of 16 countries in the Region participated in the programme undertaken by WHO and the Center for Disease Control, Atlanta, Ga., USA, to assist laboratories in the quality control of serological testing for syphilis. Twelve countries have joined the interregional programme for quality control in clinical biochemistry.

21.23 Nursing and midwifery practices were further adjusted to changing health needs and postbasic training produced concrete results in several countries. A technical advisory committee on nursing met in December to review past activities and formulate proposals for the further development of nursing administration, services and education in the Region.

Family health

21.24 The family health programmes supported by WHO in 10 countries of the Region were carried out as comprehensive projects with components of maternal and child health, family planning, nutrition and health education. Particular emphasis was placed on the operational links between family health programmes and the basic health services in different country situations.

21.25 Training of health personnel in maternal and child health and family planning formed an integral part of all family health programmes. A number of educational activities in population dynamics, family planning and human reproduction were undertaken at country and intercountry levels.

21.26 WHO gave considerable support to the health education aspects of the rapidly expanding family health services involving family planning, and of the education and training of professional and auxiliary health workers. An intercountry team provided assistance through national workshops in the production of a variety of information and educational materials on family health.

21.27 The expansion of nutrition activities within the basic health services and the family health programmes was encouraged by setting up in some countries a small pool of national staff with the necessary technical experience and by incorporating WHO nutrition advisers in the staffing pattern of those services and programmes. Nutrition education was strengthened and assistance given in establishing school feeding programmes, malnutrition wards and follow-up services for severely malnourished children.

Health manpower development

21.28 The continuing acute shortage of trained health manpower has given rise to operational research activities to determine the specific categories of health personnel best suited to meet particular needs. Consequently, many countries are now reconsidering the training required for different types of health workers and have requested the Organization to assist in the planning and development of appropriate programmes.

21.29 For the first time a regional seminar was held on health manpower planning (in Manila in September). This helped to gain wider acceptance of the vital need for long-term planning of health manpower in the Region.

21.30 The International Malaria Eradication Training Centre in Manila, which was closed in June after ten years of existence, had conducted a total of 57 regular courses attended by 1326 participants from 43 countries throughout the world. Arrangements were made to continue similar courses at national centres within the Region.

21.31 The strengthening of health training institutions was pursued by continuing to provide short-term advisory services rather than long-term assistance, and by developing undergraduate curricula in specific departments in medical schools, schools of public health, nursing schools and government institutions.

21.32 The training of nurses and nursing auxiliaries received higher priority in several countries and assistance was given in developing or reviewing national systems of postbasic education for nurse administrators and educators.

21.33 The regional teacher-training centre at the University of New South Wales, Australia, which began to function during the year, represents a milestone in the Organization's long-term plan to help establish a network of national teacher-training centres. The interest of health training institutions in educational technology has grown tremendously as knowledge of the new developments in this field becomes more widespread.

The Regional Committee

21.34 The twenty-fourth session of the Regional Committee for the Western Pacific was held in
Wellington from 28 August to 4 September 1973. The meeting was attended by the representatives of 17 Member States, including those responsible for territories in the Region, and of Papua New Guinea, an Associate Member. Representatives of the United Nations, UNDP, UNICEF, the South Pacific Commission and 15 nongovernmental organizations in official relations with WHO were also present. The Director-General attended the session.

21.35 An afternoon was set aside for the celebration of the twenty-fifth anniversary of the World Health Organization. Statements were made by representatives of 14 Member States and the Associate Member, and by the Director-General.

21.36 The Annual Report of the Regional Director for the period 1 July 1972 to 30 June 1973 was reviewed. The Committee examined the proposed regional programme and budget estimates for 1975 and requested the Regional Director to transmit them to the Director-General.

21.37 The Committee expressed the hope that governments would cooperate with WHO in its effort to strengthen the planning and implementation of health programmes assisted by UNDP.

21.38 It reviewed reports on the action taken in connexion with previous resolutions of the Committee on the quality of drinking-water and food on international flights, and adopted resolutions urging the Director-General to bring to the attention of Member States the need to maintain and enforce WHO standards for potable water on airlines, and requesting him to bring the matter of the control of the food served on international flights to the attention of the Executive Board so that urgent attention could be given to bringing up to date the WHO Guide to Hygiene and Sanitation in Aviation (1960) and to establishing international standards in this connexion for application both on the ground and in the air.

21.39 The Committee requested the Regional Director to obtain from Member States information on the nature and extent of drug dependence, and the availability of treatment and rehabilitation centres in their respective countries.

21.40 The Committee expressed its satisfaction at the establishment of the regional teacher-training centre in the University of New South Wales, Australia, and expressed the hope that the fullest possible use would be made of the Centre by the countries of the Region.

21.41 The Committee confirmed that its twenty-fifth session would be held in Kuala Lumpur and decided that the twenty-sixth session would take place at the Regional Office in Manila. It was decided that annual sessions of the Regional Committee could be held in another country at the invitation of a Member State, but that this should not happen in two consecutive years and that all other sessions would be held at the regional headquarters.

21.42 The theme of the Technical Discussions was “The role of the hospital in the community and the financing of hospital-based medical care”. The topic “Control of vector mosquitoes of dengue haemorrhagic fever” was selected for the Technical Discussions in 1974.
PART III

PROJECT LIST
PROJECTS IN OPERATION IN 1973

This part of the Annual Report contains a list of projects in operation for the whole or part of the period from 1 December 1972 to 30 November 1973. It does not include projects in which the only WHO assistance given during the period was technical advice from headquarters or regional offices, or projects concerned only with the award of fellowships. (The numbers of fellowships awarded in 1973, by subject of study and by Region, are given in Annex 7.)

The dates following the project title indicate the duration of assistance to the project, whether such assistance is continuous or intermittent. For projects not completed during the period under review, the date of estimated termination has been given (in italics) where possible.

For projects—or phases of projects—completed during the period, details of the assistance provided by the Organization and a brief description of the work done between the dates indicated are given. For continuing projects such details have not as a rule been included.

As in former Annual Reports, an attempt has been made to summarize the immediate results of completed projects and, where the nature of the work has permitted, to show the extent to which the objectives of the projects have been achieved.

The projects are grouped by Region in the following order: Africa, the Americas, South-East Asia, Europe, Eastern Mediterranean, and Western Pacific. In order to present a balanced account of the health programme in the Americas, the list for that Region includes the projects assisted by the Pan American Health Organization (PAHO) in addition to those assisted by WHO. For each Region, projects in individual countries are given in the alphabetical order of countries; intercountry projects follow, under the acronyms AFRO, AMRO, SEARO, EURO, EMRO and WPRO. Interregional projects are listed at the end of this part of the Annual Report.

The abbreviations used for sources of funds are as follows:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>WHO regular budget</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNDP/UN</td>
<td>Funds received from United Nations, ILO or UNDP-assisted projects</td>
</tr>
<tr>
<td>UNDP/ILO</td>
<td>FAO as executing agency for UNDP-assisted projects</td>
</tr>
<tr>
<td>FR</td>
<td>Reimbursable funds</td>
</tr>
<tr>
<td>PT</td>
<td>Funds-in-trust</td>
</tr>
<tr>
<td>UNFPA</td>
<td>United Nations Fund for Population Activities</td>
</tr>
<tr>
<td>UNFDAC</td>
<td>United Nations Fund for Drug Abuse Control</td>
</tr>
<tr>
<td>WI</td>
<td>Fund of the United Nations for the Development of West Irian</td>
</tr>
<tr>
<td>PN</td>
<td>Grants and other contributions to the Institute of Nutrition of Central America and Panama</td>
</tr>
<tr>
<td>PS</td>
<td>PAHO Special Fund for Research</td>
</tr>
<tr>
<td>PT</td>
<td>PAHO Textbook Fund</td>
</tr>
<tr>
<td>PW</td>
<td>PAHO Community Water Supply Fund</td>
</tr>
<tr>
<td>VC</td>
<td>Special Account for the Cholera Programme</td>
</tr>
<tr>
<td>VD</td>
<td>Special Account for Miscellaneous Designated Contributions (general)</td>
</tr>
<tr>
<td>VG</td>
<td>Special Account for Medical Research (Specified)—General</td>
</tr>
<tr>
<td>VK</td>
<td>Special Account for Miscellaneous Designated Contributions (DANIDA)</td>
</tr>
<tr>
<td>VL</td>
<td>Special Account for the Leprosy Programme</td>
</tr>
<tr>
<td>VM</td>
<td>Malaria Eradication Special Account</td>
</tr>
<tr>
<td>VR</td>
<td>Special Account for Medical Research (Unspecified)</td>
</tr>
<tr>
<td>VS</td>
<td>Special Account for Smallpox Eradication</td>
</tr>
<tr>
<td>VW</td>
<td>Special Account for Community Water Supply</td>
</tr>
</tbody>
</table>

Names or acronyms of any other agencies or entities cooperating in a project are given in parenthesis after the source(s) of funds.
AFRICAN REGION

Botswana

3201 Management assistance to the Water Utilities Corporation (1973– ) UNDP—To improve the operation of the Water Utilities Corporation and train the necessary staff.

4001 Development of basic health services (1969– ) R UNDP UNFPA—To develop basic health services, integrate maternal and child health activities into them, strengthen measures for the epidemiological surveillance and control of communicable diseases, and incorporate the teaching of public health into training programmes for health personnel.

6101 Training centre for health personnel (1973– ) UNDP FT—To establish a centre for training health personnel, including nurses, midwives and sanitarians.

Burundi

1001 Epidemiological services (1972– ) R UNFPA—To establish an epidemiological service for the surveillance and control of communicable diseases, strengthen the health statistics services, develop laboratory services, train personnel, and plan and evaluate control programmes for all communicable diseases.

1801 Smallpox eradication (1967– ) R—In conjunction with project Burundi 1001 (see above), to carry out maintenance and epidemiological surveillance work, and to evaluate the programme.

3301 Master plans for sanitation and drainage, Bujumbura (1972– ) UNDP (African Development Bank)—To make engineering, administrative and financial studies in respect of sanitation and drainage in Bujumbura, draw up master plans, and prepare feasibility studies and final design for first-stage construction.

4001 Development of basic health services (1969– ) R UNDP UNICEF—To expand and improve basic health services, integrate into them activities in nutrition, environmental sanitation, maternal and child health and health education, and train personnel.

4201 Health laboratory services (1971– ) R—To develop the Bujumbura blood transfusion centre, establish subcentres in the interior of the country, and train staff.

6201 Medical school, Bujumbura (1971–72) R—Grants were provided towards payment of the salary of a professor of basic medical sciences for the medical school.

Cameroon

4001 Development of basic health services (1968– ) R UNDP UNFPA UNICEF—To develop basic health services by stages, setting up 6 public health demonstration areas from which health activities will be gradually extended, particular attention being paid to antimalaria measures; and to train the necessary personnel.

4002 Health services (1961–72) R—To improve the operation of hospital services in West Cameroon and strengthen the basic health services. Provided—6 general physicians, gradually reduced to 2. They carried out preventive and curative work in medical, surgical and obstetrical services, particularly in Victoria, Kumba and Buea, and also assisted with activities in maternal and child health, health education, and communicable disease control.

4402 Nursing schools, Ayos, Bamenda and Garoua (1969–73) R—Financial support was provided to the 3 nursing schools to assist in developing the teaching and in giving training in public health to student nurses. During the course of the project 203 state-registered nurses, 263 nurses, 36 nursing aides and 57 auxiliary midwives were trained.

6201 University Centre for Health Sciences, Yaoundé (1966– ) UNDP—To develop the Centre, draw up and implement a multidisciplinary teaching programme, give further training to staff already in service, and train teachers.

Central African Republic

1801 Smallpox eradication (1969– ) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

3301 Sanitation and drainage, Bangui (1969–74) UNDP—To plan and implement a sanitation and drainage programme for the residential districts of Bangui, train municipal sanitation workers, and set up a municipal organization for water supply and sanitation.

4001 Development of basic health services (1969– ) R UNICEF—To evaluate the 1967–70 health plan, draw up a health plan for 1971-73, and organize continuous planning; to reorganize the health services, particularly by developing and integrating into them activities in maternal and child health, sanitation, health education and statistics, and to train staff.

4401 Nursing education (1966– ) UNDP UNICEF—To plan nursing and midwifery services as part of the development of health services; to prepare national nurses to assume responsibility for the services, and to train nurses, midwives, and nursing teachers.

Chad

1801 Smallpox eradication (1968– ) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

4001 Development of basic health services (1964– ) R UNDP UNICEF—To develop and strengthen the basic health services, with emphasis on maternal and child health and environmental health, and to train personnel.

4401 Nursing education (1962– ) R UNICEF—To improve the national school of nursing, and to train professional and auxiliary nurses and nursing teachers.

Comoro Archipelago

4001 Development of basic health services (1970– ) R—To continue activities for the control of communicable diseases,
Comoro Archipelago (continued)

including leprosy; to study malaria epidemiology and plan and implement antimalaria measures; and to develop basic health services and train personnel.

Congo

1001 Epidemiological services (1972- ) R—To organize and develop communicable disease control services, carry out epidemiological surveillance, develop laboratory services and train personnel.

4001 Development of basic health services (1964- ) R—To draw up national health plans; to strengthen the facilities and improve the work of the basic health services; to implement measures for the control of communicable diseases; and to train staff.

4401 Nursing education (1967- ) R—To develop nursing education; to train nurses, midwives and other categories of staff for the health services; and to train teachers.

Dahomey

1801 Smallpox eradication (1968- ) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

4001 Development of basic health services (1968- ) R—To implement the plan for development of the health services, and integrate into them maternal and child health and environmental health activities; to develop a sanitation programme in urban areas; to improve methods and facilities for communicable disease control; and to train personnel.

4201 Health laboratory services (1970- ) R UNDP—To organize a national health laboratory service integrated in the public health services and train the necessary staff.

4401 Nursing education (1969- ) R—To plan nursing and midwifery services as part of the development of health services and prepare national nurses to assume responsibility for the services; to adapt curricula to the country's needs; and to train professional nurses and midwives and teachers.

6201 Department of Health Sciences (1970-71; 1973- ) R—To develop the Department of Health Sciences of the University of Dahomey.

Equatorial Guinea

4001 Consultant services (1969- ) R—To plan and develop health services, giving particular attention to general administration; to improve basic health services, develop medical care and strengthen environmental health measures; and to train personnel.

4002 Operational services (1969-72) R—The services of medical officers (3 in 1969, 2 in 1970, and 1 in 1971-72) were provided to the Santa Isabel and Bata hospitals to assist in the operation of curative and preventive health services and in training health personnel. A consultant was provided in 1969 to advise on the development of health laboratory services.

Gabon

3301 Master plans for sanitation and drainage, Libreville (1972- ) UNDP (UNIDO)—To draw up a master plan for a sewerage and drainage system for Libreville and prepare feasibility studies for first-stage construction.

3001 Environmental sanitation (1971-72) R—To prepare a master plan for the reorganization and development of the basic health services, and to develop a long-term environmental sanitation programme and plan and implement training programmes for professional and subprofessional environmental health staff. Provided—a sanitary engineer.

Following a survey to assess existing conditions and collect background information, a plan of work was drawn up and projections of population and their distribution by region and district were made for the years 1973, 1976 and 1980. Beginning in July 1972, a master plan was prepared for the reorganization and development of the Environmental Health Division of the Ministry of Health at central, regional and district levels. Training programmes for various categories of the Environmental Health Division were planned. Since the duration of the project, originally planned for 2 years, was reduced to 15 months, it was not possible to complete the preparation of a long-term environmental sanitation programme. The work is being continued by the Ministry of Health.

In addition to his work on the project, the sanitary engineer provided assistance in connexion with projects Ghana 3201 (Master plan for water supply and sewerage for the Accra-Tema metropolitan area), Ghana 3202 (Rural water supply and sanitation pilot project), and Ghana 3002 (Health component in the Volta Lake research project); for the last-mentioned he prepared schemes for pipe-borne water for the villages of Ntoboma and Ampare. In connexion with project Interregional 0658 (Research on the epidemiology and methodology of schistosomiasis control in man-made lakes), he prepared an outline for a small pipe-borne water supply and an excreta disposal system for staff housing, the laboratory and other buildings at the project field station at Anyaboni.

3002 Health component in the Volta Lake research project (1969-73) UNDP/FAO—To conduct research on waterborne diseases in the project area. Provided—a medical officer (epidemiologist).

Following the construction of the Akosombo dam and the formation of Lake Volta, the ecology of the surrounding area was considerably modified. Surveys showed that an increase had occurred in the transmission and prevalence of schistosomiasis. The transmission of the disease occurred throughout the lake through the schistosome snail host Bulinus truncatus rohlfsi, which had adapted itself thoroughly to this new environment. Although the formation of the lake has wiped out innumerable breeding sites of Simulium damnosum along the middle valley of the Volta River, this vector of onchocerciasis continues to breed freely in some of the tributaries that feed the lake. The most important of these is the Asukawkaw River, which has 4 major resettlement towns sited near its mouth, and where onchocerciasis is hyperendemic. The importance was demonstrated of man-
aining a close surveillance on the major health problems, of carrying out investigations into the incidence and trends of waterborne diseases and of evaluating the vector control programmes in cooperation with the appropriate regional health administrations.

3202 Rural water supply and sanitation pilot project (1972–)
UNDP—To draw up a long-term programme for rural water supplies, carry out preparatory surveys, and train staff.

4501 Health education (1967–73)
R UNDP UNICEF—To organize and develop health education services throughout the country, plan and develop health education in schools and teacher-training institutions, and train health staff for the health education aspects of their work. Provided—a health education specialist.

In 1968 the functions and organization of the health education division at the central level were formulated and 3 new posts were established (2 medical officers and a health education officer). Health education posts were also established at the regional level, in order to provide for supervising and guiding field health staff in the use of health education materials and media. In-service training was given to professional and para-professional staff in the collection and analysis of epidemiological data, development of health education materials, and train health workers attended eight-week training courses in health education held in Kintampo between 1969 and 1973. In addition, training in health education was integrated into the one-year postbasic course for public health nurses and into the training programmes for nursing tutors. Ten health campaigns on various topics related to safe water, vaccination, disease detection and prevention, and labour and productivity were carried out between 1968 and 1972 in cooperation with the press, radio and television. With regard to health education in schools, surveys were made in certain schools of pupils' health knowledge and practices, and teachers were given training in first aid and on how to recognize deviations from normal. A large number of manuals, posters, leaflets and other educational and training material were prepared by the project staff.

6201 Medical school, Accra (1968–)
R—To strengthen training at the medical school; to develop the physiology department—particularly the laboratories for practical training and research; and to train physiology teachers.

Guinea

1802 Smallpox eradication (1969–)
R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

4001 Development of basic health services (1968–)
R UNDP UNFPA UNICEF—To evaluate basic health service activities in the demonstration area and extend the services, by stages, to other areas; to strengthen the control of communicable diseases, particularly malaria; to develop health laboratory services; and to train staff.

4401 Nursing education (1973–)
R—To develop nursing education at the Secondary School of Health in accordance with the needs of the country.

6201 Training in health sciences (1969–)
R—To develop medical education at the Conakry medical school so as to train physicians able to carry out the tasks involved in ensuring health coverage of the population.

Ivory Coast

3201 Master plans for water supply and sewerage, Abidjan, phase I (1970–73)
R UNDP—To formulate an immediate programme for sewerage and storm drainage of a priority area of Abidjan, carry out surveys and special studies preliminary to the preparation of master plans for water supply, sewerage and drainage for Abidjan, and train personnel. Provided—a sanitary engineer (project manager), consultants, contractual services, fellowships, and supplies and equipment.

Phase I of the project was completed in mid-1973. Negotiations for phase II are proceeding.

4901 Vital and health statistics (1963–66; 1968; 1970–)
UNDP—To develop the statistical unit of the Ministry of Public Health, plan and carry out epidemiological surveys, and train personnel.

5101 Maternal and child health services (1964–)
R UNICEF—To strengthen maternal and child health services, organize BCG vaccination, and train health and social service personnel in maternal and child care.

Kenya

1001 Epidemiological services (1971–)
R UNDP UNFPA—To develop services for epidemiological surveillance and control of communicable diseases, organize campaigns for the control of certain diseases, including tuberculosis and smallpox, improve the collection and analysis of epidemiological data, develop laboratory services, and train personnel.

1801 Smallpox eradication (1968–)
R—To carry out a smallpox eradication campaign and maintain vaccination coverage of the population.

3001 Public health engineering education (1971–)
R—To strengthen the work of the Faculty of Engineering, University of Nairobi, in public health, chemistry and microbiology; to develop specialized laboratories and carry out research projects; to collect and disseminate documentation on public health engineering in East Africa; and to train teachers in the subject.

3202 Sectorial study and national programming for community and rural water supply, sewerage and water pollution control (1971–73)
FT (Swedish International Development Agency)—To carry out sectorial studies and design a national programme for community and rural water supply, sewerage and water pollution control. A project manager, 2 sanitary engineers and consultants carried out feasibility and engineering studies and submitted a series of reports to provide a basis for the implementation of a national programme.

3301 Master plans for sewerage and storm drainage and groundwater investigations, Nairobi (1971–)
UNDP—To draw up a master plan for sewerage and drainage in Nairobi; prepare preliminary engineering and feasibility studies to meet the immediate and short-term needs; carry out groundwater investigations for increasing the Nairobi water supply; prepare special studies in solid wastes disposal, waste water treatment, organization, legislation and financing; and train personnel.

4001 Development of basic health services (1962–)
R UNFPA UNICEF—To strengthen and develop the basic health services; to develop environmental sanitation measures and integrate them, and family health activities, into the work of the health services; and to train personnel.

4401 Postbasic nursing education (1967–)
R UNICEF—To initiate and develop postbasic nursing education at the University of Nairobi.

6101 Training centres for health personnel (1971–)
R—To develop training centres for health personnel and organize multidisciplinary and integrated courses, including courses for teachers.
Kenya (continued)

6201 Medical school, Nairobi (1965-73) R—A medical teacher was assigned to the school from October 1967 to April 1973 to assist in strengthening the teaching of community medicine, developing the department of community health, organizing a demonstration area for field practice and training teachers of community medicine.

Some supplies and equipment were also provided. A demonstration area was set up in Machakos district, which gave students the opportunity to work among rural communities for 12 weeks each year, together with other members of the health team. During the course of the project some 260 students followed the teachers' programme in community medicine. One national teacher was trained.

Lesotho

4001 Development of basic health services (1968- ) R UNDP—To improve the quality of public health nursing services, particularly in the fields of maternal and child health and school health; to reorganize the laboratory service, establish a statistics service, and train personnel.

Liberia

1001 Epidemiological services (1968- ) R UNICEF—To organize an epidemiological service; draw up programmes for the control of communicable diseases, including yaws, leprosy and tuberculosis; establish a vital and health statistics unit, and train personnel.

1801 Smallpox eradication (1968- ) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

4001 Development of basic health services (1968- ) R UNFPA UNICEF—To implement the national health plan; to organize and strengthen basic health services, particularly the network of health centres; to continue the control of communicable diseases, including malaria; to develop maternal and child health care activities; and to train personnel.

4701 Radiological services (1972- ) R—To strengthen the radiology and radiotherapy services of the John F. Kennedy Memorial Centre; to develop the radiological work of the National Public Health Service, particularly in the field of tuberculosis control; and to train the necessary staff.

6201 Medical school, Monrovia (1969- ) R—To develop the medical school.

Madagascar

3201 Pre-investment study on water supply and sewerage Tananarive (1971- ) UNDP—To carry out a pre-investment study on water supply and sewerage in Tananarive and the surrounding communities; to draw up a master plan covering 30 years and prepare financial, legal, organizational and management studies; to draw up feasibility studies for first-stage construction and an immediate programme of short-term measures; and to train staff.

4001 Development of health services (1968- ) R—To reorganize the health services, develop nutrition work, and train personnel.

Malawi

1801 Smallpox eradication (1968-73) R VS—To implement the eradication programme and organize epidemiological surveillance. Provided—funds for local costs, a technical officer (May 1971-Nov. 1972), and supplies and equipment, including vaccine.

A mass campaign of vaccination against smallpox was carried out, one third of the population being vaccinated each year. Starting in April 1972, BCG vaccination was performed simultaneously with smallpox vaccination. The campaign was temporarily suspended in November 1972, pending investigation of reports of severe reactions, and was resumed in February 1973. No cases of smallpox have been reported since 1971.

Further assistance to the programme is being provided under the project for the development of basic health services (Malawi 4001).

4001 Development of basic health services (1970- ) R—To implement the national health plan, develop maternal and child health services, establish measures for the surveillance and control of communicable diseases, including smallpox and leprosy, and train personnel.

4801 Physical rehabilitation services (1969- ) R—To set up a workshop for the production of orthopaedic appliances and to train staff.

Mali

1801 Smallpox eradication (1965- ) R—To implement the eradication programme and develop epidemiological surveillance.

3201 Study of the drainage system in Bamako and of water supply for selected provincial towns (1971- ) UNDP—To plan drainage systems for Bamako and Mopti, carry out water supply studies for the main towns, and train personnel.

4001 Development of basic health services (1969- ) R UNICEF —To implement the national health plan, organize a network of basic health services, strengthen the control of communicable diseases, develop maternal and child health, nutrition, and health education work, establish a central environmental health unit, and train staff.

4401 Nursing education (1964- ) R UNICEF—To develop nursing education at the Secondary School of Health, adapt curricula to the requirements of the country, and train nurses, midwives and medicosocial workers at both professional and auxiliary levels; and to strengthen nursing and midwifery services.

Mauritania

1801 Smallpox eradication (1968- ) R—To implement the eradication programme and develop epidemiological surveillance.

4001 Development of basic health services (1968- ) R VS UNICEF—To develop basic health services and integrate maternal and child health work into them; to improve the diagnosis and treatment of malaria; to strengthen environmental sanitation and health education work; and to train personnel.

4401 Nursing education (1963- ) R—To develop the teaching at the school for nurses and midwives, and train professional nurses and midwives, auxiliary nurses, and nursing teachers.

Mauritius

3001 Sanitary engineering education (1973- ) UNDP—To improve the training of professional, intermediate-level and auxiliary personnel in environmental health and organize courses for training health inspectors and sanitary engineering assistants at the University of Mauritius.

4001 Development of basic health services (1969-73) R—To reorganize the health services, establish peripheral services that
can undertake epidemiological surveillance of communicable diseases; to revise health legislation, improve environmental sanitation, and train health personnel.

4401 Nursing education (1970– ) R—To develop a basic programme for training nurses, and strengthen and improve teaching.

5101 Maternal and child health (1971– ) UNFPA—To reorganize and strengthen maternal and child health services; and to make family planning activities an integral part of basic family health care, and incorporate into them the activities of the Family Planning Association.

Niger

1801 Smallpox eradication (1967– ) R—To implement the eradication programme and develop epidemiological surveillance.

4001 Development of basic health services (1969– ) R UNDP FR—To develop the health services in accordance with the national health plan; to develop maternal and child health and health education activities and integrate them into the health services, to improve measures for the control of communicable diseases, including malaria; and to train staff.

4401 Nursing education (1966– ) UNDP—To develop the training provided at the nursing school, Niamey, raise the standard of admission of students and adapt curricula to the needs of the country; and to train nursing teachers.

Nigeria

1001 Epidemiological services, Federal (1968– ) UNDP UNICEF—To integrate the activities of the communicable disease control services, establish an epidemiological service at federal level, improve the epidemiological information system and develop health laboratory work.

1003 Epidemiological services, Western State (1968– ) R UNICEF; 1005 North-Western State (1971– ) R; 1006 North-Central, Kano and North-Eastern States (1968– ) R; 1013 Mid-West State (1968– ) UNDP UNICEF—To integrate and develop activities for the control of communicable diseases, including tuberculosis and leprosy, develop health laboratory work, improve the epidemiological information system and statistical analysis, and train staff.

1801 Smallpox eradication (1968– ) R—To implement the eradication programme and develop epidemiological surveillance.

3001 Public health engineering education (1972– ) R—To set up public health engineering departments in the civil engineering faculties of the Universities of Lagos and Zaria, train civil engineering students in public health engineering and give training in environmental health to other health personnel, train teachers, and organize applied research.

3006 Health component in the Kainji Lake research project (1968– ) UNDP/FAO—To carry out epidemiological surveys, implement communicable disease control programmes and plan public health services in the project area.

3008 Health component in the South Lake Chad irrigation project feasibility study (1972– ) UNDP/FAO—To conduct surveys on water-borne parasitic diseases, evaluate the health situation, and plan measures for disease control and improve environmental sanitation in the project area.

3303 Master plans for wastes disposal and drainage, Ibadan, phases I and II (1968–73) UNDP—To draw up master plans for waste water and refuse disposal and for drainage in Ibadan; to make preliminary engineering and feasibility studies and pilot studies on sanitary facilities; to organize a related health education programme; and to prepare and implement a programme of urgent measures. Provided—a project manager, a sanitary engineer and a health education specialist, consultants, 8 fellowships, and the services of a subcontractor.

During the first phase, a master plan, first-stage feasibility studies and a programme of urgent measures were drawn up. During the second phase, final plans and tender documents for the construction of sewerage and drainage facilities and for the repair of roads in selected districts were drawn up. A programme of demonstration and construction of comfort stations was carried out with the help of the population; during this operation, a programme of health education for the improvement of sanitary conditions was undertaken. Assistance in management was given by the project staff throughout the project, and a system of administrative supervision was set up.

4001 Development of basic health services, Federal (1968– ) R—To coordinate basic health service activities, organize antimalaria work in the states of the Federation, and train personnel.


4101 National health planning (1973– ) UNDP—To prepare a health plan within the framework of the socioeconomic development plan.


The organization of the health education unit at the federal level was approved by the Government. Eleven Nigerians received professional training at master of public health level. The health and home science part of a primary school syllabus for Lagos State was prepared and its teaching was introduced in the schools. Six teachers' handbooks on health and home science were also completed. Five school health education seminars were attended by some 1500 primary school teachers. Health education was included as a subject in the training given at the Colleges of Education of the Universities of Lagos and Ife. Two seminars were organized for health educators and representatives of state ministries of health and education to consider the extension of health education services throughout the country. Orientation and training of staff and advisory services in health education and school health education were provided to the state ministries of health and education.
Nigeria (continued)

4701 School of radiography (1968- ) R—To develop the federal school of radiography, and train technicians in radiography and radiotherapy and in the maintenance and repair of X-ray and electromedical equipment.

4901 Vital and health statistics, Federal (1971-73) R—To reorganize vital and health statistics services throughout the country, plan and carry out epidemiological surveys, and train staff. Provided—a statistician.

The statistician assisted in preparing weekly return forms for the collection of information on notifiable diseases, monthly return forms for hospital activities, individual case forms for inpatients, and a list of 50 diseases for use of outpatient health institutions in reporting morbidity statistics. He conducted 3 training courses—one for 13 statisticians from 7 states, one for 20 statistical clerks, and one for 12 statistical assistants. The statistician also made a survey of the health statistical organization in the country and formulated recommendations for the improvement of vital statistics, hospital statistics, and the reporting of infectious diseases.

5101 Institute of Child Health, University of Lagos (1971- ) UNFPA—To improve the utilization of maternal and child health personnel by determining which activities now carried out by medical officers could be entrusted to nurses; to integrate family planning activities into child care programmes; and to strengthen undergraduate multidisciplinary training at the local level.

5403 Mental health, University of Ibadan (1968- ) R—To strengthen the department of psychiatry, neurology and neurosurgery of the University of Ibadan medical school, organize the teaching of mental health, train teachers, and provide instruction in mental health to medical officers and other health personnel.

6201 Medical school, Butaré (1967- ) R UNDP—To develop the medical school.

Rwanda

1001 Epidemiological services (1972- ) R UNDP—To organize an epidemiological service, implement programmes for the control of communicable diseases, including smallpox and tuberculosis, strengthen the vital and health statistics service, and train staff.

3201 Pilot studies on water supply, Kigali and Butaré (1973- ) UNDP—To make pre-investment studies and draw up master plans for water supplies for Kigali and Butaré.

4001 Development of basic health services (1969- ) R UNICEF—To develop integrated basic health services, particularly in rural areas; to develop maternal and child health, nutrition, health education and environmental sanitation work; and to train personnel.

Senegal

1801 Smallpox eradication (1970- ) R—To implement the eradication programme and develop epidemiological surveillance.

3201 Phase I: Master plans for water supply and sewerage for Dakar and the surrounding area (1966-73) UNDP—To draw up a phased 30-year master plan for water supply in Dakar and the surrounding area, determine the administrative, legal and financial conditions necessary for implementation of the programme, and train personnel. Phase II: Study of groundwater resources on the north coast and technical assistance for wastes disposal and water supply (1973- ) UNDP—To continue groundwater investigations in the coastal area from Dakar to St Louis; to finalize engineering plans for first-stage implementation in Dakar; to carry out a sector survey in secondary centres; and to study the possibility of recharging the aquifer under the city with treated waste water.

4001 Development of basic health services (1968- ) R UNICEF—To develop a network of integrated basic health services, starting in the Fatick area and extending them to other rural districts; to organize and coordinate national and regional administrative services; to carry out maternal and child health and nutrition work in the Fatick area and plan its extension; to control endemic diseases, including malaria and tuberculosis; and to train personnel.

Sierra Leone

1001 Epidemiological services (1968- ) R UNDP—To organize an epidemiological service responsible for the planning, coordination and evaluation of programmes for the control of communicable diseases; to eliminate residual foci of yaws and organize the control of tuberculosis; to establish a vital and health statistics unit in the Ministry of Health; to organize national health laboratory services; and to train personnel.

4001 Development of basic health services (1968- ) R UNICEF—To implement the national health plan and strengthen basic health services, especially in rural areas; to develop communicable disease control measures, and activities in maternal and child health, nursing, health education and environmental sanitation; and to train personnel.

Swaziland

4001 Development of basic health services (1969- ) R UNDP UNFPA—To draw up and implement a plan for the development
of health services; to develop measures for the control of tuberculosis, smallpox and other communicable diseases; to develop health laboratory services and environmental sanitation work; to strengthen maternal and child health activities, including family planning; and to train personnel.

**Togo**

**1801** Smallpox eradication (1968– ) R—To implement the eradication programme and develop epidemiological surveillance.

**1801** Smallpox eradication (1968–73) R VS—To carry out a smallpox eradication programme and maintain vaccination coverage of the population. Provided—a consultant for 6 months in 1970, and supplies and equipment (including vaccine and transport vehicles).

**1801** Smallpox eradication (1968–73) R VS—To carry out a smallpox eradication programme and maintain vaccination coverage of the population. Provided—a consultant for 6 months in 1970, and supplies and equipment (including vaccine and transport vehicles).

**4001** Development of basic health services (1968– ) R UNDP—To develop an epidemiological service for the planning and implementation of communicable disease control programmes, continue the tuberculosis control programme, develop health laboratory services, and train personnel.

**1801** Smallpox eradication (1968– ) R—To implement the eradication programme and develop epidemiological surveillance.

**1801** Smallpox eradication (1968– ) R—To implement the eradication programme and develop epidemiological surveillance.

**4001** Development of basic health services (1968– ) R UNDP—To develop, by stages, a network of basic health services; to strengthen activities for the control of communicable diseases, including malaria; to carry out a sanitation programme; and to train personnel.

**Uganda**

**1001** Epidemiological services (1968– ) R UNDP—To set up an epidemiological and statistical service, develop a data collection and analysis system, organize epidemiological surveillance and control of communicable diseases (including tuberculosis and onchocerciasis), develop laboratory services and train staff.

**1801** Smallpox eradication (1968–73) R VS—To carry out a smallpox eradication programme and maintain vaccination coverage of the population. Provided—a consultant for 6 months in 1970, and supplies and equipment (including vaccine and transport vehicles).

**4001** Development of basic health services (1968– ) R UNDP—To develop, by stages, a network of basic health services; to strengthen activities for the control of communicable diseases, including malaria; to carry out a sanitation programme; and to train personnel.

**4001** Development of basic health services (1968– ) R UNDP—To develop, by stages, a network of basic health services; to strengthen activities for the control of communicable diseases, including malaria; to carry out a sanitation programme; and to train personnel.

**United Republic of Tanzania**

**1001** Epidemiological services (1969– ) R UNICEF—To establish epidemiological services and organize epidemiological surveillance; to strengthen the control of endemic diseases, including communicable eye diseases, tuberculosis and schistosomiasis; to develop vital and health statistics services; to strengthen laboratory services; and to train personnel. The work carried out under the smallpox eradication project (Tanzania 1801) is being continued under this project.

**1801** Smallpox eradication (1968–73) R VS—To carry out a smallpox eradication programme combined with a BCG vaccination campaign covering the age group 0-15 years; to train personnel; to maintain smallpox vaccination coverage of the population, and evaluate results. Provided—a medical officer and a technical officer, supplies and equipment, and local costs. The attack phase of the smallpox eradication programme, during which some 8 000 000 vaccinations were performed, was completed, and maintenance activities were organized throughout the country. BCG vaccination of the 0-15 age group was carried out along with smallpox vaccination. An evaluation methodology was worked out and introduced. The country has been free from smallpox since 1971.

The work of the project continues under the epidemiological services project (Tanzania 1001).

**2101** Schistosomiasis control (1967–73) R—To assess the schistosomiasis problem, plan a control programme that can be adapted for all districts of the country, and train personnel. Provided—a scientist and a technical officer.

Operations consisted of a pilot project for the control of *Schistosoma haematobium* infection in a highly endemic rural area around the village of Misungwi and an epidemiological and feasibility study for the control of *S. mansoni* in Mwanza town. Based on the results, recommendations were submitted for the setting up of a national schistosomiasis control programme and training curricula and job descriptions were prepared for the staff.

**3201** Water supplies for small communities (1972– ) R UNICEF—To organize an environmental health unit in the Ministry of Health, and plan and implement a programme of environmental sanitation, including water supplies and waste disposal facilities, especially for small communities.

**4101** National health planning (1973– ) R—To study the health problems in order to establish priorities for activities; to study the health services with a view to planning their utilization in the most efficient and economical manner; to analyse the present patterns of health activities for the purpose of adapting them to the needs of the country; to establish a health planning committee or board; to plan health services within the overall development plan; to review the training programme for health and health-related workers; and to establish a health planning agency in the Ministry of Health.

**4401** Nursing education (1970– ) R—To develop nursing education, draw up and implement staff training programmes, train teachers, and incorporate public health principles into nursing and midwifery training.

**5601** Nutrition programme (1963–73) R UNICEF (FAO)—To develop nutrition services as part of the health services and train personnel. Provided—2 medical officers (1963–65; 1967–70), a consultant for the testing of protein-rich foods (1971), and 13 fellowships. Consultant services were also provided under the intercountry project AFRO 5602 between 1965 and 1969.

Surveys were carried out in 6 regions. Annual six-month courses were organized in Dar es Salaam for staff of the Ministry of Health and other ministries engaged in nutrition work. A nutrition unit was set up in the Ministry of Health in 1965 and nutrition services were subsequently established at regional and district levels in 7 regions. Field research was carried out in the Coast Region and clinical research on protein-rich foods at Moshi. Coordination of food and nutrition activities was promoted through the Tanzanian Nutrition Committee. The work of the project continues under the epidemiological services project (Tanzania 1001).

**6101** Centre for training medical auxiliaries, Tanga (1972– ) R—To develop the centre.

**6201** Medical school, Dar es Salaam (1965– ) UNDP UNFPA—To develop the medical school.

**Upper Volta**

**1201** Tuberculosis control (1968– ) R UNICEF—To carry out BCG vaccination in the age group 0-15 years, detect and treat tuberculosis cases, train personnel in tuberculosis control methods and techniques, and develop a methodology for assessment of the programme.
Upper Volta (continued)

1801 Smallpox eradication (1967- ) R—To carry out a smallpox eradication programme, and to organize the maintenance phase of the programme and epidemiological surveillance.

4001 Development of basic health services (1968- ) R UNDP UNICEF—To plan, organize and develop the health services, develop activities in communicable disease control, environmental sanitation and maternal and child health, and train staff.

4401 Nursing education (1968- ) R UNDP UNICEF—To develop nursing education, train nursing teachers, and organize in-service training of nursing staff.

Zaire

1001 Epidemiological services (1968- ) R—To improve epidemiological services, develop health statistics services at central and peripheral levels, organize laboratory services, and train personnel.

1801 Smallpox eradication (1967- ) R VS—To carry out a smallpox eradication programme combined with a BCG vaccination campaign; and to develop epidemiological surveillance.

3001 Organization and development of environmental health services (1968-72) R UNICEF—WHO provided the services of sanitary engineers (3 for most of the period 1968-71, 2 until mid-1972 and 1 until the end of that year) and of a sanitary assistant to assist the Ministry of Public Health, the National Institute of Public Works and the Kinshasa sanitation services in organizing and developing environmental health services and an environmental sanitation programme, including plans for water supplies and wastes disposal for Kinshasa, Matadi and Kisangani. They also helped with the training of sanitation staff and took part in the work of the N'Djili health demonstration centre. WHO also provided supplies and equipment and fellowships for training sanitary engineers, 9 of whom completed their studies and returned to Zaire during the period covered by the project.

In the last quarter of 1972 a mission of the International Bank for Reconstruction and Development visited Zaire to discuss assistance from the Bank in connexion with a long-term programme for water supplies and wastes disposal for the main cities.

The work is continuing under the basic health services project Zaire 4001, into which this project was incorporated at the end of 1972.

4001 Development of basic health services (1968- ) R UNDP UNICEF—To develop integrated basic health services, formulate a long-term sanitation programme, study malaria epidemiology and organize malaria control measures, strengthen maternal and child health activities, and train personnel.

4301 Medical care services (1968-73) R—To strengthen pharmaceutical services and develop physical rehabilitation services. Provided—a medical officer (orthopaedics) from 1968 and a pharmacist from January 1972.

Physical rehabilitation work was developed at the Clinique Kinoise and the physical rehabilitation centre, Kinshasa. Auxiliary staff were trained. Monthly meetings on the radiological diagnosis of bone and joint disorders were organized for medical officers.

The Department of Pharmaceutical Services was reorganized and new legislation was drawn up on the operation of pharmacies and drug control. The further training of pharmacy inspectors was organized.

Since the beginning of 1973 the project has been incorporated in project Zaire 6201 (Training in health sciences).

4302 Health component in Yangambi agronomic centre project (1969-73) UNDP/FAO—A medical officer (Sept. 1969-Sept. 1970; Jan. 1972-Jan. 1973) and a nurse (Feb. 1968-Feb. 1970) were assigned to assist in the work of planning and providing a health service for the staff of the National Institute for Agronomic Studies and the population of the surrounding area, and in training health personnel in preventive and curative medicine. Supplies and equipment were also provided.

4401 Nursing education (1968- ) R—To study the needs for and resources in nursing and midwifery personnel; to develop nursing services, starting in the N'Djili centre; to set up a central nursing service; and to train nurses, midwives, and nursing teachers.

5601 Nutrition programme (1969-73) R—To incorporate nutrition activities in the general health services and train personnel. Provided—a medical nutritionist and a nutritionist stationed in Kinshasa and a dietician stationed in Kananga, and supplies and equipment.

Assistance was given mainly with nutrition training and education. Nutrition courses were organized in Kinshasa for various categories of staff, including nurses, nursing students and auxiliary nurses. Activities in Kananga included lectures at the secondary school and at various other institutions. Training was also organized for primary school teachers and social service auxiliaries. Nutrition education, including cooking demonstration, was given in a number of communities, medical centres, and hospital clinics. Two manuals on nutrition education were prepared. In addition, surveys on the feeding of children in the 0-3 years age-group were carried out with assistance from staff of the epidemiological services project Zaire 1001.

6101 Medical Training Institute, Kinshasa (1968-73) R—To train administrators (for hospitals and general health administration), X-ray technicians and dental health staff. Following a preparatory visit by 2 consultants in 1968, a consultant was assigned in 1969 to make a study of the health situation and advise on the training of auxiliary health personnel. A hospital administrator, an engineer (radiology) and a dentist were assigned to the Institute as from January 1970.

In 1973 the project was incorporated into project Zaire 6201 (Training in health sciences).

6201 Training in health sciences (1960- ) R—To develop the School of Medicine and Pharmacy, National University of Zaire; to train physicians, pharmacists, dentists and hospital administrators; and to implement in-service training programmes.

Zambia

1801 Smallpox eradication (1968-73) R VS—To carry out a smallpox eradication programme, train personnel, evaluate results, and organize the maintenance phase of the programme and epidemiological surveillance. Provided—3 technical officers.

4001 Development of basic health services (1969- ) R UNDP UNICEF—To develop integrated health services, improve maternal and child health, health education and environmental sanitation activities, develop laboratory services, and train personnel.

4101 National health planning (1969-73) UNDP—A consultant assisted in drawing up a health plan within the framework of the national development plan.

5601 National Food and Nutrition Commission (1972-73) UNDP/FAO—A consultant assisted, in 1972, in making an on-the-spot analysis of data collected during a survey of nutri-
tional status carried out by the Commission in a sample of 5582 people in 4 provinces, and, in 1973, in making a more detailed analysis, using the data-processing facilities at FAO headquarters. He also submitted recommendations on the incorporation of nutrition work into the basic health services and on goitre control.

5602 Food and drug control legislation (April–June 1973) UNDP/FAO—A consultant assisted in preparing draft regulations concerning the control of drugs, medical devices and cosmetics to permit the enforcement of these aspects of the Food and Drugs Act, 1972.

6201 Medical school, Lusaka (1968– ) R—To develop training at the medical school, particularly as regards pediatrics, obstetrics and gynaecology, psychiatry, and public health; and to train medical teachers.

AFRO

1001 Epidemiological services (1968– ) R—To study epidemiological problems in countries of the Region, assist with measures for the control of communicable diseases, and develop evaluation systems relevant to the measures taken.

During the period under review consultants advised the Governments of the Gambia and Upper Volta on leprosy control.

1101 Consultant services in treponematoses (1965– ) UNDP—To assist governments in assessing the public health importance of treponematoses and evaluating the results of former mass control campaigns; to carry out seroepidemiological studies of treponematoses, plan control programmes, and train personnel.

1401 Cholera control (1971– ) R VC—To assist governments in organizing national and regional cholera control programmes.

1501 Plague control (1968– ) R—To assist countries in reviewing the situation as regards plague and to advise them on control measures.

1801 Smallpox eradication (1965– ) R VS—To assist governments in planning and implementing mass smallpox vaccination programmes; in carrying out epidemiological surveys in areas where cases of smallpox have been reported, and in evaluating eradication programmes in progress; and to provide them with equipment and vaccine.

1902 Seminar on the Epidemiological Surveillance and Control of Yellow Fever, Bangui (22–27 Oct. 1973) R—To assess methods for the surveillance and control of yellow fever and consider the planning of activities for prevention and control of the disease under local conditions. The programme of the seminar included a review of the classical data on yellow fever (the virus, the disease, the vectors, laboratory diagnosis, surveillance and vaccination) and of the logistical resources of Member States. A case study was considered, centred on the epidemiological investigations to be carried out in the event of an epidemic. There were 17 participants from 15 countries and observers from the Organization for Coordination and Cooperation in the Control of Major Endemic Diseases, the Organization for Coordination in the Control of Endemic Diseases in Central Africa, and the Office de la Recherche scientifique et technique outre-mer. Provided—the services of a staff member who assisted in the planning and conduct of the seminar, and the cost of attendance of the participants.

2001 Training of public health personnel in malaria (1964– ) R—To enable senior personnel to study the methods employed in the Region for the development of basic health services and the control of malaria and other communicable diseases.

2002, 2003 and 2004 Consultant services in malaria, West, Central and East Africa (1967–) R—To provide for the assessment of the malaria situation in the countries of the Region, and to assist in the planning, implementation and evaluation of antimalaria activities feasible under local conditions.

2101 Consultant services in schistosomiasis (1967–71; 1973– ) R—To study the epidemiological pattern of schistosomiasis, develop control methods and assist in training staff.

2201 Consultant services in onchocerciasis (1966– ) UNDP—To identify foci of onchocerciasis in the Region, study the ecology and distribution of the vectors, assess measures (including the application of new larvicides) for their control, and assist in training the necessary staff; and to determine the causes of communicable eye diseases and assess their public health significance.

2901 Epidemiological surveillance centre, East Africa (Nairobi) (1960– ) R; 2902 West Africa (Abidjan) (1970– ) R—To participate in the collection, analysis and evaluation of statistical and epidemiological data, determine priorities and recommend measures for control of epidemics and major endemic diseases, standardize prevention, control and epidemiological surveillance procedures, distribute health information to Member countries, and help to train personnel.

3005 Training centres for sanitarians (1972– ) R—To provide facilities for training sanitarians in West Africa.

3006 Centres for public health engineering research, demonstration and training (1972– ) R—To establish public health engineering centres, develop training programmes, and promote the development and application of methods suited to conditions in the Region.

3202 Consultant services in water supply and sewerage (1969– ) R—To assist in planning, organizing, implementing and assessing water supply and sewerage programmes.

4105 Consultant services in economic development projects (1970– ) R—To study the health components and assess the public health implications of socioeconomic development projects, and assist in preparing and implementing such projects.

4107 Consultant services in health legislation (1971– ) R—To assist countries in drafting health legislation and regulations.

4110 National health planning (1973– ) R—To assist governments in setting up planning units in ministries of health and in formulating national health plans within the context of their socioeconomic development plans.

4202 Consultant services in health laboratories (1971– ) R—To assist governments in developing and strengthening health laboratory services and blood transfusion centres.

4301 Centres for training technicians in the repair and maintenance of medical equipment (1970– ) R—To train technicians for the installation, maintenance and repair of X-ray apparatus and other electromedical equipment.
AFRO (continued)

4302 Consultant services in hospital administration (1972–) R—To assist in improving hospital administration in the countries of the Region.

4401 Centre for postbasic nursing education, Ibadan (1962–) R; Dakar (1967–) R UNICEF; Yaoundé (1972–) R—To assist in the organization and operation of the centres.

4405 Study Group on Nursing Education, Brazzaville (4–8 June 1973) R—To consider the design of simple methods for determining the nursing needs and resources in the countries of the Region and the establishment of norms for the training and utilization of nursing personnel. A consultant was provided to assist with the meeting of the group, whose participants included 6 nurses, a hospital administrator, 2 public health administrators, and a social economist from 9 countries of the Region.

4406 Consultant services in nursing (1973–) R—To assist the countries of the Region in studying nursing needs, planning for nursing services and improving nursing administration.

4501 Consultant services in health education (1971–) R UNFPA—To assist in strengthening health education services, particularly in the field of school health education.

4503 Centres for training in health education (1972–) R—To assist in developing undergraduate and postgraduate training in health education.

4901 Training in health statistics (1965–73) R—To assist in training senior, middle-grade and clerical staff in vital and health statistics. Provided—consultants (for a maximum of 3 months per year) to teach health statistics at the statistical training centres in Abidjan, Dar es Salaam, Lomé and Yaoundé, and fellowships for training at one or other of these centres to 33 health statistical staff from 13 countries of the Region.

4902 Consultant services in vital and health statistics (1970–) R—To plan the development of vital and health statistical services, establish working methods for epidemiological research, and train personnel.

5102 Maternal and child health (1972–) UNFPA—To assist in training nurses and midwives in matters related to maternal and child health, including family planning.

5201 Consultant services in occupational health (1971–) R—To assist countries of the Region in developing medicosocial services for workers and their families and in training the necessary personnel.

5401 Consultant services in mental health (April–May 1973) R—A consultant assisted in making a plan for the delivery of mental health services in Swaziland and reviewed the situation as regards the rehabilitation of mental patients.

5601 Joint FAO/WHO/OAU Regional Food and Nutrition Commission for Africa (1964–) R—To assemble data on nutrition problems, analyse studies carried out in this field in Africa, and prepare and distribute bulletins and nutrition briefs.

5602 Consultant services in nutrition (1965–) R—To assist the countries of the Region in developing nutrition work within the framework of the health services, carrying out nutrition surveys, and training personnel.

6201 Workshops on medical education methodology (1969–73) R—Seven workshops were held with the aims of teaching the participants how to define educational objectives on the basis of duties to be performed, and how to draw up curricula in accordance with the objectives and to evaluate them. Some 80 national medical teachers took part, along with 58 WHO health teaching staff from projects in the Region.

6203 Staff exchanges between medical schools of the African Region (1968–) R—To promote the interchange of views and experience among teachers in medical schools.

6204 Faculty of Medicine, Makerere University, Kampala, Uganda (1968–) R—To assist in developing the Faculty of Medicine.

6205 Schools of medicine and other teaching institutions in health sciences (1968–) R—To provide health teaching institutions with educational material and equipment.

6206 Regional teacher-training centres (1971–) R—To train teachers of health staff training centres of the Region in modern educational techniques.

6401 Training centre for health service personnel (English language), Lagos (1961–) R VD; Training centre for health service personnel (French language), Lomé (1962–) R—To organize, for health personnel, special courses on public health measures and antimalaria techniques.

6404 Consultant group on public health education (1971–73) R—Consultants made detailed analyses of the teaching of public health in a number of faculties of medicine in the Region and formulated recommendations for its improvement.

6405 Departments, institutes and schools of public health (1971–) R—To assist in establishing and developing departments, institutes and schools of public health in the Region.

7401 Consultant services in prophylactic and therapeutic substances (1969–) R—To assess the situation with regard to the quality control of pharmaceuticals in the Region, make recommendations concerning the organization of regional control laboratories, and meet requests of governments for advice on drug manufacture and distribution.
REGION OF THE AMERICAS

Argentina

0100 Communicable disease control (1969-70; 1972- ) R PR—To develop the epidemiological surveillance systems, reduce the prevalence of leprosy, tuberculosis, venereal diseases and Chagas' disease, conduct immunological studies for determining the level of protection against diseases for which there are effective vaccines, and increase the vaccination coverage of the population.

0200 Malaria eradication programme (1951- ) PR

0300 Smallpox eradication (1967-74) R—To ensure a sufficient level of immunity to smallpox through vaccination of 90% of the population in 5 years, and to organize epidemiological surveillance services.

0400 Tuberculosis control (1973- ) PR—To improve tuberculosis control activities and integrate them into the medical care programmes of the provincial health services.

2100 Engineering and environmental sciences (1967-76) PR—To strengthen the organization of environmental sanitation services and programmes at the federal and provincial levels and to train professional and technical personnel.

2200 Water supplies (1960-75) R—To construct and improve the administration of water and sewerage services and to train personnel.

3100 Health services (1966- ) R PR—To improve the health services. Under this project assistance is provided to the Ministry of Welfare and Public Health in health planning, the supervision and evaluation of programmes, training and research.

3200 Nursing services (1973-75) PR—To strengthen and coordinate the nursing services, improve the utilization of available resources, and train personnel.

3500 Health statistics (1972-75) PR—To organize and develop vital and health statistics systems.¹

3504 Centre for utilization of computers in health programmes (1968- ) UNDP—To develop the medical computing centre at the Faculty of Medical Sciences, University of Buenos Aires, which provides computer services in connexion with health planning and programming and carries out training and research.

4202 Applied nutrition (1972-73) UNDP—To define the main nutrition problems in the north-west region as a basis for nutrition programme planning, using the existing health services and academic resources in the region. Provided—5 consultants in 1972 and 2 in 1973, technical advisory services of regional headquarters and Zone VI staff, and fellowships.

The work was carried out by the Institute of Nutrition, Salta, and the University of Tucumán. A detailed plan for a nutrition survey in the north-west region (provinces of Salta, Jujuy, Tucumán, Catamarca and Santiago del Estero, with a total population of 1 500 000) was completed, but had to be rescheduled for 1974. (See also project Argentina 4203, below.)

4203 Nutrition studies (1971-73) UNDP—To investigate and control problems of malabsorption and parasitosis affecting communities in north-east Argentina. Provided—consultants, advisory services of regional headquarters and Zone VI staff, and fellowships for postgraduate studies in nutrition and public health.

A survey of nutrition teaching in the medical schools was carried out in 1971 and the results were discussed at a seminar, following which a coordinating group for such teaching was established. In 1972, 7 physicians attended a seminar on the standardization of methods for anthropometric measurements, as part of a simplified system of evaluating nutritional status in Latin America. A detailed plan was approved for a nutrition and dietary survey to be carried out in the north-east and north-west provinces in 1973; the material prepared included a manual of procedures and forms and cards for data collection and processing.

It is planned to combine the work of the project with that of project Argentina 4202 in a new project for the prevention and control of nutritional diseases of high prevalence in the less developed regions of the country.

4300 Mental health (1966- ) PR—To implement a national programme in social psychiatry, develop community mental health work, and train personnel.

4400 Dental health (1972- ) PR—To install a demineralization plant for testing and demonstrating to students of the Institute of Sanitary Engineering the extraction of excess fluorine and arsenic from water.

4500 Radiation protection (1967-75) PR—To develop a national radiation protection programme, including a census of all radiological equipment and certification of its safe functioning and provision of a radiation monitoring service; and to train personnel.

4803 Latin American Centre for Medical Administration (1967- ) R PR PH PG: Government of Argentina—To develop the Centre, which studies national problems in the provision and administration of medical care services, trains personnel for technical and administrative posts in hospitals and other health institutions, and serves as a Latin American centre for research in the use and financing of medical services and the development of human resources.

4900 Latin American Institute of Physiology of Reproduction (1972) PH—A grant was made to cover the cost of a liquid scintillation spectrometer for the Institute's fertility research unit.

6100 School of public health (1958-75) R—To strengthen the teaching programme of the School of Public Health of the University of Buenos Aires.

6200 Medical education (1958-75) R PR—To improve the teaching at the schools of medicine.

Argentina (continued)

6400 Sanitary engineering education (1960–) PR—To improve the teaching at undergraduate and postgraduate levels at the Institute of Sanitary Engineering, University of Buenos Aires, and at other schools of engineering.

6500 Veterinary medical education (1972–) PR—To strengthen the preventive medicine and public health aspects of the training of veterinarians.

6700 Training of statistical personnel (1965-75) PR—To train statistical personnel for work in local and regional health statistics offices, and in departments of statistics and of medical records in hospitals and health centres.

Bahamas

3110 Health services 1 (1972–75) R PG: Government of Bahamas—To improve and extend the health services, integrating the preventive and curative services.

4810 Hospital administration (1973–74) UNDP—To plan and organize the delivery of personal health services through 2 community health oriented hospital complexes (Rand Memorial and Princess Margaret Sandilands) and other health facilities.

Barbados

0700 Veterinary public health (1972–75) PR—To establish a national animal health and veterinary public health programme.

2100 Engineering and environmental sciences (1970–75) PR—To plan and implement environmental health programmes.

2201 Water supply and sewerage services administration (1971–) PW—To improve the administration and management of water supply and sewerage services.

2300 Aedes aegypti eradication (1969–) PR

3100 Health services (1968–) R PR—To improve, expand and integrate the curative and preventive health services and train health personnel.

4801 Hospital administration (1965–) UNDP PR—To develop the Queen Elizabeth Hospital as the principal medical centre of the country and coordinate its activities with those of other hospitals.

6600 Dental education (1972–) R—To train staff for a comprehensive programme of dental care for schoolchildren and pregnant women and for indigent persons.

Belize

0200 Malaria eradication programme (1956–) PR UNICEF

2100 Engineering and environmental sciences (1971–75) UNDP PR—To develop a national programme of environmental sanitation, including the provision of water supply and sewerage services to urban and rural communities.

2300 Aedes aegypti eradication (1972–) PR

3100 Health services (1962–75) R PR UNICEF—To improve and extend the health services, giving particular attention to the control of communicable diseases, especially those preventable by vaccination.

6400 Sanitary engineering education (1966–75) PR—To develop short courses in sanitary engineering and environmental sanitation subjects.

Bolivia

0100 Epidemiology (1968–) UNDP PR—To carry out epidemiological studies, and establish and develop programmes for the surveillance, control and eradication of communicable diseases.

0200 Malaria eradication programme (1965–) PR UNICEF

0400 Tuberculosis control (1963–73) PR—To implement a national tuberculosis control programme, integrated into the general health services.

0701 Zoonoses control (1971–75) R—To implement demonstration programmes for the control of rabies and other zoonoses of public health importance, with a view to developing work methods adapted to the country's requirements and training personnel.

0901 Typhus (1968–) R PR—To carry out a pilot control programme.

2100 Engineering and environmental sciences (1969–75) R PR—To improve the environmental health and sanitation levels of the urban and rural population.

2200 Water supplies (1972–75) R—To provide water supplies and sewerage services to urban and rural communities.

2201 Water supply and sewerage services administration (1971–) PW—To strengthen the administration of the National Water and Sewerage Corporation.

2202 Water supply and sewerage services administration, Cochabamba (1971–) PW—To strengthen the Municipal Water, Sewerage and Drainage Service and improve its administration.

2203 Water supply and sewerage services administration, Potosí (1972–74) PW—To improve the organization of the Potosí sanitation works administration.

3100 Health services (1955–75) R PR—To improve and extend the health services in urban and rural areas and train health personnel.

3104 Health services, Cochabamba and Tarija (1966–73) UNDP—To develop the health services and improve basic sanitation services in Cochabamba, Tarija and some other departments.

3500 Health statistics (1968–) UNDP PR—To develop a national statistics system to provide the data required for planning and programming in the health sector.

4100 Maternal and child health (1972–) PR—To develop a comprehensive programme of maternal and child health care and family welfare.

4200 Nutrition (1971–75) PR—To formulate a national food and nutrition policy; to strengthen the nutrition component of health services, including supplementary feeding of vulnerable groups, nutrition education and institutional food services; and to develop the School of Nutrition and Dietetics of the University of San Andrés.

4201 Endemic goitre control (1973–) PH—To administer iodized oil, orally or intramuscularly, in 4 towns with a high

---

1 Formerly West Indies 3110; also covered the Turks and Caicos Islands.
prevalence of endemic goitre, in order to test the efficacy of both methods as an interim measure until iodized salt is readily available.


4600. Occupational health (1971– ) UNDP—To expand the industrial hygiene and occupational medical programmes in order to reduce mortality, morbidity and economic losses due to occupational diseases and accidents in the mining and other industries.

4800. Medical care services (1972– ) PR—To improve the administration of the medical care services, restructure the main hospitals, and train personnel in hospital administration.

6200. Medical education (1968– ) R—To revise the programme of the 3 medical schools and incorporate concepts of social and preventive medicine into the curricula.

6400. Sanitary engineering education (1964– ) PR—To improve the university training of sanitary engineers and train practising engineers and auxiliary staff in environmental sanitation subjects.

6500. Veterinary medical education (1967–75) R—To improve the teaching of veterinary medicine, and particularly the preventive and social aspects, at the University of Santa Cruz de la Sierra.

Brazil

0100. Epidemiology (1969–78) R PR: Harvard University, USA—To develop and coordinate programmes for the control of communicable diseases, organize epidemiological services and surveillance systems and train personnel in epidemiology.

0114. Surveillance and research on infectious diseases along the Trans-Amazon Highway (1973– ) PR PG: US Army Medical Research and Development Command—To carry out, in areas adjacent to the Trans-Amazon Highway, multidisciplinary studies on (i) diseases and their causative agents introduced by the work force and colonists coming from other parts of Brazil, and (ii) local diseases and infectious agents of the Amazon area that may affect the immigrants.

0200. Malaria eradication programme (1958– ) R PR

0300. Smallpox eradication (1956– ) R—To maintain the level of immunization against smallpox in the population and carry out epidemiological surveillance work.

0400. Tuberculosis control (1966–75) R—To develop a network of tuberculosis bacteriological laboratories as the first part of a programme for integrating tuberculosis control work into the general health services.

0700. Veterinary public health (1969–76) R PG: Government of Brazil—To develop veterinary public health services and education, particularly as regards control of zoonoses and food protection.

0901. Plague research (1965–75) R—To plan and carry out a research programme that could serve as a basis for a reorientation of the control of plague in the country.

1000. Schistosomiasis (1971–75) R—To study the epidemiological characteristics of schistosomiasis and determine the effectiveness of chemotherapy in preventing the development of severe forms of the disease in cases of continual re-exposure to infection.

1001. Chagas' disease (1973– ) R PR PG: Overseas Development Administration, United Kingdom—To continue the campaign against Chagas' disease (American trypanosomiasis) in Minas Gerais and extend it to the endemic areas in the states of Maranhão, Rio Grande do Sul, Goiás, and Mato Grosso.

2100. Engineering and environmental sciences (1952–75) PR—To carry out studies on environmental problems, implement environmental sanitation programmes, and train personnel.

2103. Environmental pollution control, São Paulo State (1971–75) UNDP—To develop an environmental pollution control programme (covering air, water and soil pollution) for the state.

2104. Environmental pollution control, Guanabara State (1973– ) UNDP—To find long-term solutions to the problem of environmental pollution through research, training and pre-investment studies.

2200. Water supplies (1962– ) R—To intensify the development of water and sewerage services in urban and rural areas.


2203. Water supplies, Espírito Santo (1972–74) PW—To improve the technical services and administration of the Espírito Santo Sanitation Company.

2204. Water supplies, Minas Gerais (1972–74) PW—To develop new criteria, procedures and manuals for the Water and Sewerage Agency and provide in-service training in their use and/or implementation.

2500. Air pollution (1967– ) PR—To collect information on air pollution through the Pan American Air Pollution Sampling Network.

3100. Health services (1971–72) R PR—To improve the infrastructure of the health sector for integrated medical care of the individual and the community. Provided—a medical officer and a nurse (1971), an administrative methods officer and a secretary (1972), and fellowships.

A basic health law was drafted to define the responsibilities of the Federal Government, the states and municipalities and the Ministry of Health in the formulation of national health policy and its coordination at the national and regional levels; also drafted was a bill providing for coordination of medical care throughout the country. The administrative reorganization of the Ministry of Health was continued, the work of its departments in support of health plans was programmed and plans were drawn up for the development of the health infrastructure and services at the state and municipal levels. Special attention was given to the development of a programme of training in the management of health services.

Activities are being continued under other projects.

3101. Health services in states and territories (1958– ) R PR—To reorganize the central agencies of the ministries of health of the 9 north-eastern states, coordinate their health institutions, organize a system of regionalization, establish health planning processes in the ministries of health, develop a uniform statistical system, incorporate nutrition work into the health plans, improve the structure of the institutions in charge of water and sewage disposal services, and train health personnel.

3104. Health services, south-east region (São Paulo) (1972–75) PR PS—To develop the administration and planning of health and sanitation programmes in the south-eastern states.
Brazil (continued)

3108 Health services in rural areas (1969- ) R UNICEF (ILO) (FAO) (UNESCO)—To improve the health services in rural areas as part of a general rural development programme.

3109 Health services, Amazon basin (1971-77) R PR—To implement the health plan forming part of the integration project for the Amazon region.

3110 Health services, southern region (1968-77) R PR—To strengthen the planning and administration of the health services in the southern region, including the states of Paraná, Rio Grande do Sul, and Santa Catarina.

3302 Yellow fever laboratory (1950-75) PR—To support the continent-wide campaign against yellow fever by providing laboratory diagnostic services and supplying yellow fever vaccine.

3315 Immunology research and training centre (1973- ) R PR—To provide, at the immunology research and training centre in the Butantan Institute, São Paulo, postgraduate training in immunology to students from Brazil and other countries of the Americas; and to develop, at the Institute, a research programme in basic immunological mechanisms and their application to public health problems.

3400 Health education (1968- ) R—To reorient health education activities in the technical health education units and in teaching institutions.

3500 Health statistics (1963- ) R—To improve health statistics and their use in the planning, implementation and evaluation of health programmes, and to train statistical staff.

3600 Administrative methods and practices in public health (1973- ) PR—To strengthen and develop administrative methods and procedures in the health services, and train administrative personnel at all levels.

4101 Maternal and child health (1971-75) R PR—To reduce maternal and infant morbidity and mortality by means of a coordinated programme of health assistance during the perinatal period, and carry out the necessary teaching and research work.

4203 Institute of Nutrition, Recife (1964-75) PR—To strengthen the structure and activities of the Institute of Nutrition of the Federal University of Pernambuco (formerly the University of Recife), to enable it to contribute more effectively to the solution of regional nutrition problems.

4300 Mental health (1968-75) PR—To improve the technical and administrative structure of the services for the prevention and treatment of mental illness.

4500 Radiation protection (1972- ) R—To develop a radiation protection programme and train personnel in radiotherapy physics.

4602 Toxicology of pesticides (1968- ) UNDP/FAO—To expand the toxicological studies of pesticides at the Biological Institute, São Paulo.

4701 Pan American Drug Quality Institute (1973- ) UNDP—To strengthen the capability of the drug control agencies to carry out inspection and testing of drugs.

4800 Medical care services (1966-75) PR—To plan and organize medical care services, integrating as far as possible the services provided by the general health programmes, social security agencies and social welfare institutions, and to train personnel.

4900 Teaching and research in health and population dynamics (1971- ) PG: USAID—To carry out research and provide university-level courses in population dynamics, with emphasis on the relationship between health and population structure.

5001 Rehabilitation training centre, Brasilia (1973-76) PR—To provide training in medical rehabilitation techniques for doctors, and refresher training for physical and occupational therapists and for prosthetists.

5101 Cancer control (1971-75) R—To carry out a cancer control programme including early detection and treatment of cancer, the setting up of cancer registries in certain areas, the promotion and organization of antismoking campaigns, and the putting into operation of integrated medical care systems.

6102 Development of human resources (1971- ) PR—To increase the number and improve the quality of health personnel, collect data on the supply of and demand for health personnel, and formulate and implement a plan for the development of human resources for health services.

6200 Medical education (1965-75) R PR—To strengthen the medical education programme and improve the administration of the School of Medical Sciences of the Guanabara State University.

6233 Latin American Centre of Education Technology for Health (1973- ) PR PH—To improve the teaching-learning process in health sciences education through the provision of services in education technology.

6302 Training of nursing auxiliaries (1963-72) PR—A nurse and fellowships were provided for this project, under which the courses for training nursing auxiliaries were improved and their number increased, and seminars were held for the preparation of instructors.

6305 Nursing education (1973- ) R—To improve nursing education through the training of teaching personnel, the reformulation of curricula, and the introduction of new educational methods.

6401 Sanitary engineering education (1973- ) PR—To establish a training programme, at undergraduate, graduate and continuing education levels, for some 60,000 staff working in, or to be recruited for, the water supply programme under which it is aimed to provide water to 80% of the urban population by 1980.

Canada

3700 Health planning (1973- ) PG: Government of Canada—To carry out activities related to health planning, teaching of biostatistics, and research design and operation.

6201 Conference on Health Manpower Planning, Ottawa (9-15 Sept. 1973) PR PG: Department of National Health and Welfare, Canada—To analyse the problems and establish objectives for the planning of human resources in the Region, consider mechanisms and methods for such planning, and determine priorities within the objectives established by the III Meeting of Health Ministers of the Americas. The conference was attended by some 100 delegates from 30 countries and 11 staff members of the Organization.

Chile

0100 Communicable disease control (1973- ) PR—To keep the country free from smallpox, maintain the reduction in the number of cases of tuberculosis, reduce the incidence of and
mortality from other diseases controllable through protective measures, and strengthen measures to control venereal diseases.

0700 Veterinary public health (1971-73) PR—To eradicate canine rabies, implement a programme for anthrax control in Nuble Province, and control other zoonoses.

2100 Engineering and environmental sciences (1968-75) R—To integrate sanitation programmes into the country's development plans, establish an environmental sanitation system to coordinate the work of various agencies operating in this field, establish a national waste disposal programme and a national air pollution control policy, and control air pollution in the Greater Santiago area.

3100 Health services (1961- ) R UNDP PR—To strengthen the administration of the national health services.

3105 Health manpower studies (1968-74) R—To carry out studies on health manpower requirements and utilization.

3301 Bacteriological Institute (1972- ) UNDP—To expand and improve the Institute, and strengthen the network of health laboratories.

4100 Maternal and child care (1967- ) R—To develop a programme of training and research on biological and social aspects of human reproduction and child growth and development; and to improve maternal and child health care.

4101 Maternal and child health and family welfare services (1972-76) R UNFPA—To improve maternal and child health and family wellbeing through extension of the coverage and improvement of maternal and child health services, including fertility regulation activities.

4103 Clinical and social paediatrics courses (1967-74) R—To provide intensive training in clinical paediatrics and in the administration of health services for infants and children.

4200 Nutrition (1971-75) PR—To reduce the prevalence of nutritional deficiency diseases and improve the nutritional status of the population by means of nutrition education, supplementary feeding, and the production of a high-protein vegetable mixture; and to train specialized staff.

4300 Mental health (1965- ) UNDP PR—To develop community mental health techniques in a health district of Santiago, with a view to their subsequent application in the rest of the country, and to conduct epidemiological studies on mental disorders.

4401 Centre for oral pathology (1973- ) PS—To develop, in the Department of Oral Pathology of the Faculty of Dentistry, University of Chile, a reference centre for the systematic collection, cataloguing and indexing of clinical pathological conditions in Latin America and for the training of oral pathologists and technical personnel from Latin American countries.

4601 Institute of Occupational Health and Air Pollution Research (1961-72) R UNDP—To establish the Institute and develop it to a point where it could conduct and promote research, prepare specialized staff, and provide technical advice to industry and government and private institutions. Provided—a sanitary engineer and 9 consultants (1965-68), 11 fellowships, supplies and equipment, and advisory services by regional headquarters and zone staff members and by staff of the Pan American Centre for Sanitary Engineering and Environmental Sciences (AMRO 2114).

A project request submitted to UNDP in 1961 was approved in 1962 and, following preparatory work, the Institute became operative in July 1963. UNDP assistance terminated at the end of 1968, by which time the main project objectives had been accomplished and the Institute was in full operation. Subsequent support was provided mainly to consolidate activities.

During the course of the project the Institute carried out some 40 research projects, mainly in work physiology, occupational medicine, industrial hygiene, air pollution, and radiation protection. Training, consisting of both short-term and academic courses, started in 1964. By 1972 some 1000 students had received short-term training, and more than 100 professional staff had completed academic courses leading to a public health degree (occupational hygiene); in-service training for professional and technical staff was also provided.

4800 Medical care and hospital administration (1966-73) PR PG: Cleveland Clinical Foundation of the USA; MacClure Foundation of Chile; USAID (World Food Programme)—To plan and organize medical care services, train personnel, carry out research on medical care administration and hospital maintenance, and establish intensive care units. Provided—5 consultants, advisory services by regional headquarters, zone office and project staff, 3 fellowships, supplies and equipment, and grants.

Plans for intensive treatment wards were studied at 2 hospitals and the intensive care unit of the J. J. Aguirre Hospital was organized. With the assistance of the Organization, an artificial kidney was installed and put into operation in the nephrology service of the Salvador Hospital, Santiago, and national medical and nursing personnel were given training in its use. Three hospitals, a rural health centre, and buildings for 10 clinics and 82 health posts were constructed in various parts of the country, and began operating, 51 with USAID cooperation and 25 with assistance from the World Food Programme. Investigation of hospital maintenance problems was started.

4801 Hospital maintenance (1973- ) PR—To develop a national programme for the maintenance of health care facilities.

5000 Rehabilitation (1960- ) UNDP—To implement a rehabilitation programme directed particularly to the training of specialists in the rehabilitation of the deaf.

5100 Chronic diseases (1973-75) PR—To organize a comprehensive programme for the control of chronic diseases that includes primary prevention, the strengthening and coordination of medical care facilities, the detection and treatment of early cancer, and radiation protection.

6200 Medical education (1962- ) R PR—To expand and strengthen medical education, and to develop a programme of medical internships in rural hospitals for students of the medical professions.

6400 Sanitary engineering education (1965-75) R—To strengthen and extend teaching and research in sanitary engineering.

6500 Veterinary medical education (1966- ) PR—To strengthen the teaching programmes in veterinary medicine, public health and epidemiology in the schools of veterinary medicine of the University of Chile and the Austral University of Valdivia.

Colombia

0200 Malaria eradication programme (1958- ) PR UNICEF

0300 Smallpox eradication (1967-75) R—To carry out a campaign aimed at vaccinating at least 80% of the population against smallpox and to organize epidemiological surveillance.
Colombia (continued)

0500 Leprosy control (1973) PR—A further grant was made in support of research work on experimental transmission of leprosy to animals.

0700 Veterinary public health (1971–75) R—To implement programmes for the control of the main zoonoses, and train the necessary staff.

0701 Rabies control (1971– ) R—To implement a pilot project for the control of rabies in the Cauca River valley, in preparation for a national control programme.


2100 Engineering and environmental sciences (1970– ) R—To improve the national, regional and local environmental sanitation programmes, including those covering provision of water supply and sewerage systems and water pollution control.

2102 Studies on water quality (1969–73) PW—To conserve and make the best possible use of the water resources of the Bogotá savanna and the Ubaté Chiquinquirá valleys.

2201 Water supply and sewerage services administration, Palmira (1971– ) PW—To improve the administration and management of the city’s water and sewerage authority.

2202 Water supply and sewerage services administration (1971–74) PW—To strengthen and improve the organization and administration of the National Institute of Municipal Development.

2300 Aedes aegypti eradication (1951–75) PR

2301 Dengue research and control (1972–73) PG: US Army Medical Research and Development Command—To intensify laboratory studies and epidemiological surveillance of dengue fever and similar virus diseases, and strengthen the staff of the national health laboratory for the diagnosis of arboviruses. Provided—advisory services by regional headquarters staff, supplies and equipment, and travel costs. Serological surveys and research on dengue fever were conducted in the Atlantic coast region. It was found that, out of 817 samples taken at random in the area affected by the 1971-72 epidemic, where about 2 300 000 people live, 20% had sera with complement-fixing antibodies, indicating that some 460 000 persons were probably infected. Fourteen strains of dengue 2 were isolated, 5 from human serum and 9 from batches of Aedes aegypti. Diagnosis based on tissue cultures was instituted at the national health laboratory in Bogotá.

3100 Health services (1951– ) R UNDP PR UNICEF—To extend the coverage of the health services and improve their structure and operation.

3300 Laboratory services (1973– ) PR—To improve and expand the national laboratory services by strengthening diagnosis, investigation, production of biologicals and training of personnel at the central level and installing a network of health laboratories at lower levels.

3301 National Institute of Health (Carlos Finlay) (1950– ) PR—To strengthen the work of the public health laboratory and the production of biologicals at the National Institute of Health and improve its diagnostic and reference sections and its administrative organization.

3501 Redesign of health information system (1972–75) UNDP—To redesign the system so as to provide the information required for decision-taking at all levels of the health system.

3600 Administrative development of health services (1972–77) UNDP—To develop the health services administration, in accordance with the policy for redesign of the health system.

4100 Social services (1970– ) PR—To carry out intersectoral programmes aimed at providing comprehensive care to children and young adults within the context of protection of the family.

4101 Clinical and social paediatrics (1964– ) R UNICEF—To improve the preparation of paediatricians through the provision of 3-month postgraduate courses, in order to prepare them better for dealing with problems that affect the health of children and for improving the administration of health services for children.

4200 Nutrition (1964– ) PR—To train academic staff to upgrade teaching in the schools of nutrition and dietetics.


4700 Food hygiene (1973– ) R—To develop a food protection programme covering all aspects of food production, processing, transport and commercial distribution, and training of personnel.

4800 Medical care (1973–74) PG: Government of Colombia—To strengthen the structure of the National Hospital Fund, which is the responsible organ, within the Ministry of Public Health, for the technical and financial management of the national hospital planning system.

4801 Hospital maintenance and engineering (1972– ) UNDP PR—To establish a national centre to train personnel and carry out repair and maintenance of hospital equipment.

4900 Health and population dynamics (1968–74) UNFPA PG: USAID—To extend maternal and child health care and family welfare services to the rural areas, improve their administration and the reporting system; and train rural health personnel.

5001 Medical rehabilitation (1973– ) UNDP—To develop medical rehabilitation services throughout the country and provide basic or refresher training for physical and occupational therapists and for prosthetists for these services.

6100 School of public health (1959–75) R PR—To strengthen the School of Public Health of the University of Antioquia.

6201 Medical education (1959–75) PR—To strengthen medical education and provide continuing education to practising physicians, especially those in rural areas.

6203 Centre for the teaching of pathology (1967–72) PR—To establish, in conjunction with the pathology departments of the National University and the Universities of Valle and Antioquia, an international centre to train Latin American teaching staff and hospital research personnel in pathology: to conduct training programmes in this field for technical and auxiliary personnel; and to promote research at postgraduate level. Provided—consultant services, 7 fellowships, and supplies and equipment.

Following the signing of an agreement between the Government, the Colombian Association of Medical Schools and the Organization, a coordinating committee was established and met regularly to draw up training programmes, budgets and plans for extending the project to other areas of instruction. An assessment was made of the progress of the planning work
being carried out under the Latin American Programme for Training in Pathology, and a prospectus describing the status of the programme was drawn up and distributed. A consultant pathologist visited 3 Central American countries and Mexico to promote the programme, interview fellowship candidates, and give lectures. Laboratory equipment and bibliographic material was supplied to the pathology departments of the 3 universities participating in the project.

The centre reached full operational capacity and its training activities were standardized.

6300 Nursing education (1968–75) PR PG: USAID—To speed up the training of nursing personnel, especially for maternal and child care.

6400 Sanitary engineering education (1964–76) R PR—To improve the teaching of sanitary engineering in the universities and provide short intensive courses in sanitary engineering subjects.

6500 Veterinary medical education (1969–75) PR—To improve the teaching of veterinary public health and related subjects in the schools of veterinary medicine and the veterinary medicine programme of the School of Public Health, University of Antioquia.

6600 Dental education (1961– ) PR—To develop the dental education programmes at the National University, Bogotá, and the Universities of Valle, Antioquia and Javeriana.

Costa Rica

0200 Malaria eradication programme (1957– ) R UNICEF

0400 Tuberculosis control (1957–75) PR—To incorporate tuberculosis control work into the general health services, and train personnel of the services in control methods and techniques.

2100 Engineering and environmental sciences (1969–75) PR—To plan and implement environmental sanitation programmes, including programmes for water and air pollution control, solid waste disposal, industrial hygiene, vector control and food hygiene; and to train auxiliary sanitation personnel.

2200 Water supplies (1960–75) PR PW—To improve the structure and administration of the national water and sewerage service; and to plan and carry out programmes for the construction and extension of water supply and sewerage systems in urban and rural areas.

2500 Air pollution (1970–75) PR—To determine the characteristics of air pollution in San José, and the trends in pollution levels.

3100 Health services (1959–75) R PR UNICEF—To improve the administration of the health services, and their quality, efficiency and productivity; and to prepare a general health law.

3300 Laboratory services (1970–75) PR—To improve and expand the health laboratory services at the central, regional and local levels.

3700 Health planning (1973–77) R UNDP—To carry out a programme of evaluation leading to reorganization of the infrastructure of the health sector; and to design the administrative and control units required in order to execute health programmes more scientifically.

4200 Nutrition (1960–73) R PH UNICEF (FAO)—To improve the nutritional level of the population through rehabilitation of malnourished children and nutrition education of the public.

Provided—a nutrition adviser and fellowships to nutritionists and dietitians for study at the Institute of Nutrition of Central America and Panama.

Nine nutrition rehabilitation centres and 185 nutrition education and supplementary feeding centres have been set up. With the cooperation of the World Food Programme, daily food supplements are being provided to some 9000 preschool children; 70% of schoolchildren are receiving dietary supplements at school and about the same proportion help with school or family gardens. In-service training in nutrition has been provided to health, education and extension services personnel.

4500 Radiation protection (1972–74) PR—To develop a national radiation protection programme in the Ministry of Public Health in cooperation with the Costa Rican Atomic Energy Commission.

4800 Medical care services (1967– ) R—To improve the organization and administration of the medical care services and to train personnel.

4900 Health and population dynamics (1971– ) PG: USAID—To provide family planning services through the maternity hospitals, to complement those provided through the Ministry of Public Health’s Population Bureau and the social security system.

6200 Teaching of the health sciences (1971–75) R—To strengthen the basic professional education of physicians and allied health personnel.

6300 Advanced nursing education (1959–75) PR—To improve the education programmes in nursing and obstetrics and incorporate them into the country’s higher educational system.

6400 Sanitary engineering education (1965–75) PR—To strengthen the teaching of sanitary engineering at the School of Engineering of the University of Costa Rica and provide short intensive courses on sanitary engineering subjects for personnel working on environmental health programmes.


Cuba

0100 Communicable disease control (1967–75) R PR UNICEF—To carry out programmes of vaccination against certain communicable diseases and integrate the programmes into the work of the general health services.

0400 Tuberculosis control (1969–72) PR—To extend the tuberculosis control programme to the whole country and integrate it into the general health services; and to train personnel in tuberculosis control methods and techniques. Provided—4 consultants (2 in bacteriology, 1 in BCG vaccine production, 1 to organize the national course on tuberculosis epidemiology and control), advisory services by staff of other projects, 8 fellowships, and supplies and equipment.

In 1970, 2 verification areas were set up—an urban area in Havana and a rural area in Oriente Province. The general health services assumed responsibility for case-finding, supervised ambulatory treatment, surveillance of contacts, and BCG vaccination of the newborn and of children completing primary school. The programme was gradually extended and by the end of 1972 had been started in all but 5 regions and was covering more than 90% of the population. Centres were established in the provincial capitals for training personnel in tuberculosis control work. A course in tuberculosis epidemiology and control
strengthen programmes for the improvement of environmental
for the control of zoonoses, particularly rabies, brucellosis and
0700
In 1972, 31 professional health workers
complement fixation techniques was held for 5 physicians and
suspected cases.
A programme was established for the notification, registration
and classification of all diagnosed cases, and standards were
prepared for strict epidemiological investigation of contacts or
suspected cases. In 1970 a course on immunofluorescence and
complement fixation techniques was held for 5 physicians and
2 laboratory workers. In 1972, 31 professional health workers
attended a course at Santa Clara, Las Villas Province.
The project was integrated into project Cuba 0100 at the end
of 1972.
0700 Zoonoses control (1969– ) R PR —To plan and imple-
ment, within the veterinary public health services, programmes
for the control of zoonoses, particularly rabies, brucellosis and
bovine tuberculosis.
2100 Engineering and environmental sciences (1969– ) R —To
strengthen programmes for the improvement of environmental
sanitation and train staff.
2200 Water supplies (1966–75) R —To strengthen the water
supply programme in urban and rural areas.
2300 Aedes aegypti eradication (1953–75) R —To

for physicians, laboratory workers and nurses was started in
1970 and continued in subsequent years.
The project was integrated into project Cuba 0100 at the end
of 1972.
0600 Veneréal disease control (1970–72) R —To intensify the
veneréal disease control programme and improve its epidemi-
ological and laboratory aspects. Provided—3 consultants (1 in
1970 and 2 in 1972), advisory services by regional headquarters,
zone office and project staff, 2 fellowships and supplies and
equipment.
A programme was established for the notification, registration
and classification of all diagnosed cases, and standards were
prepared for strict epidemiological investigation of contacts or
suspected cases. In 1970 a course on immunofluorescence and
complement fixation techniques was held for 5 physicians and
2 laboratory workers. In 1972, 31 professional health workers
attended a course at Santa Clara, Las Villas Province.
The project was integrated into project Cuba 0100 at the end
of 1972.
0700 Zoonoses control (1969– ) R PR —To plan and imple-
ment, within the veterinary public health services, programmes
for the control of zoonoses, particularly rabies, brucellosis and
bovine tuberculosis.
2100 Engineering and environmental sciences (1969– ) R —To
strengthen programmes for the improvement of environmental
sanitation and train staff.
2200 Water supplies (1966–75) R —To strengthen the water
supply programme in urban and rural areas.
2300 Aedes aegypti eradication (1953–75) R —To

Sanitary engineering education (1966–75) R —To strengthen
the training of specialized personnel engaged in sanitary
engineering work.

Dominican Republic

0200 Malaria eradication programme (1952–73) PR UNICEF—
A medical officer, consultants, and advisory services by staff
of the zone project AMRO 0201, as well as antimalarial drugs,
were provided for the programme. Malaria transmission has
been interrupted and the part of the originally malarious area
where 90 % of its population live is in the maintenance phase.
In addition to carrying out malaria vigilance, the malaria
eradication service is taking on other duties in the public health
services.
Assistance to the programme will continue under the health
services project Dominican Republic 3100.
0400 Tuberculosis control (1963–74) UNDP: Organization
of American States—To extend the national tuberculosis control
programme and integrate it into the general health services;
and to train personnel in modern control methods.
0700 Veterinary public health (1973–77) PR—To carry out an
animal health programme as part of an integrated programme
of agricultural development.
2100 Engineering and environmental sciences (1971–75) R —To
implement a programme for the installation of latrines, mainly
in the communities covered by the rural water supply plan of
the National Water Supply and Sewerage Institute.
2200 Water supplies (1962–75) PR —To provide water supply
facilities to 62 % of the urban and 25 % of the rural population
and sewerage facilities to 17 % of the urban population; to
integrate into the National Water Supply and Sewerage Institute
45 % of the systems operated by the municipalities; and to
strengthen the administration of the Institute.
3100 Health services (1953– ) R UNDP PR: Organization
of American States—To develop the health services and improve
their organization and functioning.
4200 Nutrition (1965–76) R PR —To improve the nutritional
status of the population through integrated action by the health,
agricultural and education services operating through a food
and nutrition council; to strengthen the nutrition programme
of the general health services; to develop and produce a high-
protein vegetable mixture; and to strengthen nutrition education
and the training of personnel.
6201 (6200)

Sanitary engineering education (1966–75) R —To strengthen
the training of specialized personnel engaged in sanitary
engineering work.

6400 Sanitary engineering education (1966–75) R —To strengthen
the training of specialized personnel engaged in sanitary
engineering work.

Cuba (continued)

4200 Nutrition (1965– ) UNDP PR —To establish a national
food and nutrition policy, coordinate the work of the various
entities with responsibility for food supply, form technical groups
entrusted with conducting nutrition programmes, and strengthen
the training of personnel.
4300 Mental health (1973–75) PR —To decentralize psychiatric
services, develop community mental health programmes, and
extend mental health care to the rural areas.
4600 Occupational health (1969– ) PR —To strengthen the
national programmes of industrial hygiene and safety and of
air pollution control.
6200 Health manpower development (1965–75) R PR —To
prepare teaching staff for the health professions and modernize
curricula.
The School of Nursing of the Madre y Maestra Catholic University, Santiago, which produced its first graduates in 1970, had trained 43 graduate nurses by the end of 1972; some 70% of its teaching staff were taking postbasic courses, and its material and technical resources were adequate for its needs. A new scheme to prepare nurses at different levels in 3-year and 4-year programmes was put into effect in the 1972/73 academic year.

By the end of 1972 the 2 nursing auxiliary training centres attached to the Ministry of Public Health had trained 1034 auxiliaries. Their study programmes were brought into line with the needs of the health programmes.

Activities under this project were incorporated into project Dominican Republic 6201 at the beginning of 1973.

6400 Sanitary engineering education (1969–75) R (National Water Supply and Sewerage Institute)—To revise and improve the teaching of sanitary engineering subjects in the regular civil engineering courses and organize short intensive courses in selected sanitary engineering subjects for the continuing education of professional and auxiliary sanitary engineering personnel.

6600 Dental education (1966–72) R—To reorganize the curriculum of the School of Dentistry of the University of Santo Domingo and formulate a programme for integrating basic and clinical sciences. Provided—consultants, advisory services by regional headquarters staff and the PAHO/WHO country representative, and fellowships.

In 1971 the School became the Department of Dentistry of the School of Medical Sciences, when the latter's academic restructuring and professorship integration plan went into effect. In 1972, after the first class trained under the new curriculum graduated, the Department evaluated the results achieved and found them far superior to those achieved under the former curriculum. The main benefits were reduction of the course (from 6 years to 5); a 50% increase in the faculty; an integrated approach to instruction, including clinical practice; and extramural work under the responsibility of the chair of preventive and social dentistry.

Programmes were designed for achieving better utilization of auxiliary personnel, and on the basis of an evaluation a new curriculum was planned for use as from the 1972/73 academic year.

Ecuador

0100 Epidemiology (1967–75) R UNDP PR—To organize programmes for the surveillance and control of communicable diseases.

0200 Malaria eradication programme (1956– ) PR UNICEF

0300 Smallpox eradication (1967–72) R—To keep the country free from smallpox by maintaining the necessary level of protection of the population and improving the epidemiological surveillance service. Provided—a consultant (in 1970), advisory services by regional headquarters staff and staff of other projects, fellowships for training in vaccine production, and supplies and equipment.

A vaccination programme was carried out in rural areas. As from 1971, special attention was given to children under 5 years of age and persons having no vaccination scar. In 1971, over 215,800 primary vaccinations were performed and in the first 10 months of 1972 over 353,200 persons were vaccinated. BCG, diphtheria/pertussis/tetanus and poliomyelitis vaccinations were carried out concurrently with smallpox vaccination. Since 1972 the production of freeze-dried vaccine has been sufficient for the country's needs. Epidemiological surveillance is actively maintained and all reports of cases are investigated.

0600 Venereal disease control (1969–75) PR—To improve the services for the control of venereal diseases and increase their coverage.

0701 National veterinary laboratories (1973– ) UNDP—To produce and control vaccines against diseases affecting livestock; to establish laboratories for diagnosis of such diseases and to improve diagnostic services in the field.

0900 Plague control (1965–72) R—To establish a programme of plague surveillance and control in the endemic areas. Provided—advisory services from the epidemiologist assigned to project Ecuador 0100 and supplies and equipment.

In 1965 and 1966 the central, regional and provincial services of a surveillance and control programme were set up and staffed; training of field staff was started and standards for the operation of the various services were drawn up. In 1967 the control work (rodent and vector control, treatment of cases, and preventive drug treatment) was supplemented by research to obtain better information on vectors and reservoirs in coastal and highland areas where sylvatic plague is found. In 1969 surveillance was intensified and serological examination of humans and of rodents was initiated so that the localities in which prompt control activities were needed could be determined. In 1972, 9 cases of plague were reported—3 in Chimborazo, 3 in Guayas, and 3 in Manabi.

Assistance to the plague surveillance and control programme is continuing under project Ecuador 0100.

2100 Engineering and environmental sciences (1968–75) R—To improve national, regional and local programmes for environmental sanitation, water supply and sewerage.

2201 Sewerage administration, Guayaquil (1972– ) PW—To develop the Guayaquil Municipal Sewer Company, which is responsible for the installation and operation of sewerage services.

3100 Health services (1953–75) R PR UNICEF—To organize a national system of health services.

3103 Modernization of rural life (1972– ) R UNDP/ILO—To organize a programme of integrated social and economic development in the rural areas, including basic medical services, vaccinations, promotion of maternal and child health, food supplementation, and improvement of environmental sanitation.

3105 Census of health resources (1972) PR—A grant was provided for this project, which covered the collection and analysis of data on physical and human resources in the health sector for use in the preparation of national health plans, as a first step in the development of an information system for evaluation, control and decision-taking.

The project was incorporated into project Ecuador 3106 in 1973.

3106 Strengthening of the health sector (1973– ) UNDP—To improve the health services and extend them to rural areas by building up first the infrastructure of the Ministry of Public Health and later that of the whole health sector, with emphasis on planning and management and on the use of statistical and epidemiological information.

3301 National Institute of Health (1952– ) PR—To strengthen the Institute and extend the health laboratory services.

3400 Health education/family planning (1972– ) UNFPA—To expand and consolidate health education services and train national staff and teaching personnel in health educational methods, with emphasis on family life education.
Ecuador (continued)

3500 Health statistics (1973- ) R—To improve the health statistical services and train statistical personnel.

3600 Administrative methods and practices in public health (1971- ) PR—To develop a system of financial and budgetary administration to facilitate the calculation of receipts and expenditures by programme categories in the health sector.

3700 Health planning (1969- ) UNDP PR—To establish the health planning process as part of the planning for socioeconomic development.

4200 Nutrition (1971-75) R—To develop a food and nutrition policy, strengthen nutrition and supplementary feeding programmes, organize a nutrition and rural development programme in the provinces of Cotopaxi, Bolivar and Los Rios, and train nutritional personnel.

4202 Goitre prevention (1966-74) PR—To study the feasibility of using iodized oil for the prevention of endemic goitre in the rural areas, and to evaluate its effectiveness.

4203 Nutrition, Portoviejo (1967-73) PG; Research Corporation, USA—A nutrition survey covering 4817 preschool children of Portoviejo (Manabi Province), begun in 1967, indicated a high prevalence of moderate and advanced protein-calorie malnutrition (25%). A nutrition rehabilitation pilot centre was established in Portoviejo by the National Institute of Nutrition and various activities, including the distribution of milk, were undertaken. As part of the training activities carried out in cooperation with the regional health service, a course in nutrition rehabilitation was given for 45 auxiliary nurses, and a seminar on public health nutrition, attended by 20 physicians from local health services, was held. Provided—technical advice and equipment for the centre.

4800 Training in hospital administration (1971; 1973- ) PR—To provide courses for hospital administrators.

4900 Maternity-centred family planning programme (1972- ) UNFPA PG; USAID—To improve the maternal and child health services provided by the Isidro Ayora Maternity Hospital, Quito, and provide services for the regulation of fertility; to develop programmes for the training of professional, technical and auxiliary personnel in maternal and child health; to develop research in the biology of human reproduction, fertility, sterility and maternal and child health; and to improve the administration of services for maternal and child health care in the area covered by the programme.

4909 Teaching and research in maternal and child health (1972- ) PG; USAID—To improve undergraduate and postgraduate teaching of maternal and child health, and develop a project for applied research in human reproduction, socioeconomic status and maternal and child health.

6200 Medical education (1968- ) R—To improve medical education at the undergraduate and postgraduate levels and carry out programmes of continuing education.

6210 Medical equipment for training (1972- ) PR—To provide equipment for use in the training of medical students.

6300 Nursing education (1957- ) R PR—To strengthen the teaching in the schools of nursing and expand in-service training for nurses and nursing auxiliaries.

6400 Sanitary engineering education (1965- ) PR—To strengthen the teaching of sanitary engineering in the universities, provide short intensive courses in specific sanitary engineering subjects, and train technical and auxiliary personnel working on environmental sanitation programmes.

6500 Veterinary medical education (1971-75) R—To increase the number of veterinarians and improve the quality of instruction given in the schools of veterinary medicine, in order to meet the need for an increase in the production of animal protein for home consumption and export.

6600 Dental education (1963- ) R PR PG: Government of Ecuador—To strengthen the teaching of dentistry at the undergraduate and postgraduate levels and provide continuing education for practising dentists.

El Salvador

0100 Epidemiology (1972-75) R—To improve the epidemiological services and communicable disease surveillance and control programmes.

0200 Malaria eradication programme (1955- ) R PR UNICEF (Government of the Federal Republic of Germany)

2100 Engineering and environmental sciences (1971-75) R UNDP PR—To plan and develop national environmental sanitation programmes, including programmes for water supply and sewerage, industrial hygiene, solid wastes disposal, housing and urbanization, food sanitation, and control of air and water pollution.

2200 Water supplies (1961- ) PR—To plan and develop national programmes of water supply and sewerage systems for urban and rural areas.

2500 Air pollution (1970-75) PR—To continue the work of the air pollution monitoring station in San Salvador, which is part of the Pan American Air Pollution Sampling Network.

3100 Health services (1963-76) R PR UNICEF (FAO) (UNESCO)—To carry out integrated health programmes as part of a national health plan.

3200 Nursing services (1972-76) UNDP PR—To improve the distribution and utilization of nursing resources; to define nursing duties at the various levels; and to improve the training of nursing personnel and increase the numbers, within 5 years, to 3.0 nurses and 7.4 auxiliaries per 10 000 inhabitants.

3300 Laboratory services (1970- ) PR—To develop and strengthen the national health laboratory services and train personnel.

3600 Administrative methods and practices in public health (1973- ) PR—To revise and improve the administrative methods and procedures of the Ministry of Public Health and Social Welfare.

4800 Medical care services (1970-76) R—To improve hospital organization and administration and extend medical care services to cover 70% of the population.

6200 Medical education (1965- ) PR—To strengthen undergraduate, postgraduate and continuing medical education, especially as regards the social and preventive aspects.

6400 Sanitary engineering education (1965- ) PR—To strengthen the teaching of sanitary engineering at the University of El Salvador and improve the preparation of professional and auxiliary personnel engaged in environmental sanitation programmes.
French Antilles and Guiana

0200 Malaria eradication programme (1963- ) PR

3300 Laboratory services (1967-75) PR To develop the virus research laboratory of the Pasteur Institute in Cayenne, which is carrying out research on the transmission, reservoirs and epidemiology of virus diseases in the rain forest of French Guiana.

Guatemala

0100 Communicable disease control (1973- ) PR To improve the surveillance and control of communicable diseases.

0200 Malaria eradication programme (1955- ) R PR UNICEF (Government of the Federal Republic of Germany)

0901 Measles control (1972) PR Supplies and equipment, and advisory services of staff of project AMRO 0103 were provided for a national measles immunization campaign during which 652,266 children (89.9% of target) were vaccinated.

2100 Engineering and environmental sciences (1969-75) PR To develop water supply and environmental sanitation programmes in urban and rural areas and to train personnel.

2500 Air pollution (1971-75) PR To install and maintain air sampling stations for determining the levels of air pollution in Guatemala City.

3100 Health services (1954-75) R PR UNICEF To improve the organization of the health services and develop them in accordance with the national health plan.

3200 Nursing services (1968-73) PH (Kellogg Foundation) To improve nursing care. Provided—a nurse and advisory services. (Two nurses and a consultant were provided by the Kellogg Foundation.)

A survey was made of nursing resources and requirements; 4 meetings were held with nurses in key posts to bring the findings to their attention, and a paper on the subject was presented to a medical congress.

The following training activities were carried out: a seminar on nursing programmes for 24 nurses in key posts; a workshop on in-service training for 18 nurses of 12 hospitals in urban and rural areas; a workshop on management of health posts for 11 auxiliary nursing personnel; a workshop on planning and evaluation of in-service training programmes for nursing aides for 12 hospital nurses in charge of such programmes; a workshop for the faculty of the School of Nursing in order to review the professional nursing curriculum; a course on public health for 16 area chiefs; a workshop on supervision of hospital patient care for 19 nursing supervisors; a seminar on aspects of unit management for 13 supervisors and 19 auxiliaries; and a seminar on evaluation on clinical practice for 19 nursing school instructors. Teaching staff of the School of Nursing were given in-service training in child care. A considerable amount of audiovisual teaching material was prepared.

A supplementary programme of nursing instruction at baccalaureate level was adopted by the Rafael Landivar University, and the Del Valle University decided to accept nurses in its baccalaureate degree programme in health education.

6500 Veterinary medical education (1962- ) PR To strengthen the teaching of veterinary medicine, with emphasis on extension services, epidemiology, and the preparation of zoonoses control programmes.

6600 Dental education (1969- ) PR To strengthen dental education through the training of teaching staff, the reorganization of the school of dentistry, and the orientation of teaching towards a knowledge of health problems and the factors influencing them.

Guyana

0200 Malaria eradication programme (1961- ) PR

0700 Veterinary public health (1972-75) PR To develop a coordinated zoonoses control programme including the establishment of a veterinary public health unit and laboratories, improve reporting and surveillance systems, and train personnel.

2100 Engineering and environmental sciences (1961-72) R PR To plan and implement programmes for improving environmental conditions and train the necessary professional and auxiliary staff. The work was started under the original health services project (British Guiana) and was continued under this project as from 1969. Provided—a sanitary engineer, consultants, advisory services by regional headquarters and project staff, and fellowships.

Initially assistance was provided mainly for the development of rural water supply and sanitation programmes; by 1964 the work had been expanded to include the planning of 10 rural water systems, the improvement of the Georgetown and New Amsterdam water systems, the installation of latrines, and designs for septic tank systems for 6 schools.

In 1965 a rural water supply programme, including construction of wells to serve 52,000 persons, was proposed. A school sanitation programme was also started; by 1968 it had covered 42 schools and plans had been made to extend it to another 70. Also in 1968, the Government received a loan from USAID to help finance the construction of water supplies for 100,000 persons.

Planning for a comprehensive environmental health programme as part of the national health plan began in 1969 and a committee was formed to collect relevant data. The report was

4802 Occupational medicine (1973) UNDP A consultant assisted in implementing a programme for the early diagnosis and treatment of occupational diseases, and in improving the occupational diseases programmes of the Guatemalan Social Security Institute.

4900 Health and population dynamics (1972- ) PG USAID To extend health care to 40% of pregnant women and of children under five years of age and family guidance services to 20% of women of childbearing age.

5100 Cancer control (1972) PK Advisory services by regional headquarters staff and grants were provided to assist in the organization of services for the control and treatment of cancer of the cervix uteri and in the training of cytootechnologists.

6200 Medical education (1966- ) PR To reorganize undergraduate and postgraduate medical education, and the education of allied health personnel, in accordance with the country's health needs; and to improve the training of teaching staff.

6400 Sanitary engineering education (1967- ) PR VD To improve teaching and research, and organize a programme of continuing education, at the Regional School of Sanitary Engineering for Central America and Panama, University of San Carlos.

6500 Veterinary medical education (1962- ) PR To strengthen the teaching of veterinary medicine, with emphasis on extension services, epidemiology, and the preparation of zoonoses control programmes.

6600 Dental education (1969- ) PR To strengthen dental education through the training of teaching staff, the reorganization of the school of dentistry, and the orientation of teaching towards a knowledge of health problems and the factors influencing them.
Guyana (continued)

completed in 1970, and a series of activities were recommended. In 1969, 42 sanitary inspectors completed their training, and annual in-service training courses for public health inspectors were started.

During 1971 a preliminary assessment of the administration and management of the Pure Water Supply Division was made and subsequently a proposal for the National Water Authority was prepared.

In 1972 sanitary engineering training was instituted at the University of Guyana. A proposal for training waterworks personnel was prepared for the National Water Authority; a short course on water pumps was given; a manual of operations for public health inspectors was prepared, and a seminar on food hygiene was organized for restaurant owners and supervisors. For the UNDP-assisted project on development of potable water supply, sanitary sewerage and storm drainage (Guyana 2201) assistance was given in preparing the project document, site briefing, and a work plan for the sector studies.

Further activities will be included in project Guyana 3100, and additional advisory services will be provided under projects AMRO 2100 and 2101.

2201 Development of potable water supply, sanitary sewerage and storm drainage (1972-75) UNDP—To carry out a sector study on water supply and sewerage, including technical and economic feasibility studies for water supply, sewerage and storm drainage, in Greater Georgetown, Linden and New Amsterdam; to improve the management and administration of the Guyana water authority; and to train personnel.

2300 Aedes aegypti eradication (1969-75) PR

3100 Health services (1963-75) R PR UNICEF—To formulate and implement a national health plan, improve the administrative structure of the Ministry of Health and train personnel.

3200 Nursing services (1966-73) UNDP—PR—To strengthen in-service education of graduate nurses in order to improve nursing care. Provided—25 consultants, advisory services by staff members, and 20 fellowships in nursing administration and nursing education (14 academic and 6 short-term).

The project was organized in two parts—an annual education programme of 6 to 8 weeks' duration, conducted by consultants and, during the rest of the year, 3 to 4 “teaching days”, held in each of the 3 counties. A total of 203 graduate nurses in middle-level positions took part in the 8 annual education courses held since 1966. The “teaching days”, partly conducted by graduate nurses who had participated in the annual education programme, were attended by a total of 2249 nurses.

4400 Dental health (1972-75) R—To establish a dental health unit, expand dental services through the provision of equipment and materials, train auxiliary dental staff and promote dental health by means of educational and preventive measures.

4900 Health and population dynamics (1971-73) PG: USAID—To develop a comprehensive maternal and child health and family health programme. Provided—advisory services by the PAHO/WHO country representative, 2 fellowships, and supplies and equipment.

A draft plan for the maternal and child health programme was prepared and specific aims were fixed for 1972-73, emphasis being placed on the importance of services for mothers in high-risk groups and of medical care for infants and children of preschool age. Preparation of a manual of norms and procedures for the maternal and child health service, and of a health education programme for the service, was begun. Norms and procedures were drawn up for the malnutrition clinic opened at Georgetown Hospital for the follow-up of protein-calorie deficiency cases. A pilot project for community-centred, integrated maternal and child health services was started in a health centre. An in-service education course in family planning and family life education was held for 50 graduate nurse/midwives. A calendar for immunization of infants and children of preschool age was prepared and approved and a draft manual on the feeding of young children was prepared. A procedure for the quarterly evaluation of growth charts was instituted. The supplementary feeding programme was reviewed and norms were established for it.

Haiti

0100 Communicable disease control (1973- ) R—To eradicate yaws by 1975, improve case-detection measures for leprosy in rural areas, and apply recently developed methods of control of other communicable diseases; also to reorganize the structure of epidemiological and communicable disease control services to make them more closely integrated.

0200 Malaria eradication programme (1961- ) PR UNICEF (USAID)

0600 Veterinary health services (1971- ) PR—To establish a veterinary service that, in conjunction with the Ministry of Public Health, will be able to determine the extent of the zoonoses and to draw up control procedures.

2100 Engineering and environmental sciences (1971-75) R—To carry out a programme of latrine construction in Mirebalais and neighbouring localities.

2200 Water supplies (1960- ) PR—To improve the water supply system of the metropolitan area of Port-au-Prince and the systems of other urban and of rural areas.

3100 Health services (1957-75) R PR PG: Organization of American States UNICEF—To develop integrated public health services at the national and local levels, establish a demonstration area in Les Cayes, and train health personnel.

3105 Public health services (1972- ) R UNDP—To develop the district of Les Cayes as an experimental area for the preparation of a system of public health services suitable for the whole country.

3300 Laboratory services (1959-72) PR—To strengthen health laboratories. Provided—services of consultants and staff of other projects, fellowships, supplies and equipment (including laboratory animals), and a grant.

The central laboratory was reorganized, its personnel were trained and technical and administrative guidelines for its various sectors were drawn up (1961-63). Applied research was carried out on brucellosis, tropical ulcer, syphilis, serology, tuberculosis and leptospirosis. The animal colony was established in 1962/63. During 1963 and 1964 the reorganization and expansion of the services of the central laboratory were continued and a research programme on enteric bacteriology completed and the School of Technology prepared a manual on laboratory methods. An advisory committee was set up in 1966 to review the guidelines for the central laboratory and determine needs for equipment and for new laboratories. In 1967 the building of the central laboratory was improved and the capacity of the General Hospital's laboratory was extended. Laboratory materials were provided to 22 health establishments. In subsequent years periodic revisions were made of the laboratories in operation and their capacity was progressively expanded.
4200 Nutrition (1961-76) PR PH UNICEF (FAO) (UNESCO)
—To improve the nutritional status of the population through nutrition education, supplementary feeding programmes for vulnerable groups, and other measures; and to develop an integrated food and nutrition programme in certain rural areas.

4900 Health and population dynamics (1970-74) UNFPA—To develop an integrated maternal and child health and family planning programme.

6200 Development of human resources (1968- ) PR—To improve the physical facilities, the educational programme, and the system of examinations, of the faculty of medicine.

6300 Nursing education (1968- ) PR—To improve the teaching given in the nursing schools and the training of nursing auxiliaries.

6400 Sanitary engineering education (1971-75) PR—To improve the teaching of sanitary engineering and the laboratory and library facilities at the School of Sciences of the University of Haiti.

Honduras

0200 Malaria eradication programme (1956- ) R UNICEF (Government of the Federal Republic of Germany)

0400 Tuberculosis control (1962-72) R—To plan and implement a tuberculosis control programme integrated into the health services. Provided—3 consultants, advisory services by staff of other projects, and 7 fellowships.

The integration of tuberculosis control work into the general health services was intensified in 1968 and was completed 6 months before the termination of the project. BCG vaccination, diagnosis of cases and partially supervised ambulatory treatment were incorporated into all urban and rural health services and in-service training courses in these activities for physicians, laboratory workers and nursing personnel were organized throughout the country. By 1972, 43 nurses, 61 laboratory workers and 304 nursing auxiliaries were specifically engaged in tuberculosis control work.

In 1973 the project was incorporated into project Honduras 3100.

2100 Engineering and environmental sciences (1971-75) PR—To implement programmes of basic sanitation, water supply and waste disposal in urban and rural areas.

2300 Aedes aegypti eradication (1968- ) R

3100 Health services (1955- ) R PR—To organize integrated public health services at the central and local levels, and train professional and auxiliary personnel.

3104 Border area rehabilitation programme (1970-74) PG: Organization of American States—To strengthen the health infrastructure in border areas.

3105 Community health services (1972-75) PR—To build up the health infrastructure and expand the integrated programme of community health in cooperation with the Social Welfare Board.

3300 Laboratory services (1967- ) PR—To develop the laboratory services of the Ministry of Public Health.

4800 Medical care services (1965-75) R—To improve the medical care services, including those of the social security institutions.

4900 Health and population dynamics (1972-74) PR PG: USAID—To develop maternity-centred family planning activities, increase the coverage of prenatal services and include in them the provision of information on family planning, and increase the use of family planning services by women of childbearing age.

6200 Medical education (1965-75) R—To train the physicians and other staff required for the health sector in accordance with the national health plans and socioeconomic development programmes.

6400 Sanitary engineering education (1965-75) PR—To improve the teaching of sanitary engineering at the University of Honduras, and the advanced professional training of personnel working in national sanitary engineering and environmental sanitation programmes.

Jamaica

0700 Veterinary public health (1972-75) R—To develop a programme for control of zoonoses, particularly brucellosis, bovine tuberculosis and leptospirosis.

0701 Animal health programme (1973-74) UNDP—To develop a national animal health and veterinary public health programme with a permanent infrastructure.

2100 Engineering and environmental sciences (1968- ) UNDP PR—To strengthen the Sanitary Engineering Department of the Ministry of Health, implement environmental sanitation programmes, including programmes for water supply and waste disposal systems, air and water pollution control and industrial hygiene; and to train professional and auxiliary personnel.

2202 Water resources survey (1972- ) UNDP/FAO—To establish a network for the monitoring of water quality.

3100 Health services (1963-75) R PR—To improve the health administration and services and increase the number of trained health personnel, including nurses.

4300 Mental health (1964- ) R UNDP PR—To decentralize and improve psychiatric care.

4500 Radiation protection (1966-72) PR—Three consultants, 2 fellowships, and supplies and equipment were provided for this project, the purpose of which was to organize a national radiation protection service.

4800 Medical care and hospital administration (1969-75) R—To reorganize the hospital system, train professional and auxiliary personnel in hospital administration, and establish a national maintenance service for hospital and other health facilities.

5000 Rehabilitation (1972- ) R—To establish, at the University of the West Indies, a centre for training physical therapists for the part of the Caribbean area where English is spoken.

6400 Sanitary engineering education (1971- ) R—To provide short intensive courses in sanitary engineering and environmental sanitation subjects for professional, technical and auxiliary personnel.

6600 Dental education (1966- ) PR—To train dental auxiliaries for providing routine dental care to schoolchildren.

Mexico

0200 Malaria eradication programme (1956- ) R UNDP PR
Mexico (continued)

0400 Tuberculosis control (1960–72) R — To improve and extend the national tuberculosis control programme. Provided—a tuberculosis adviser for 3 years, 7 consultants, services of the zone adviser (AMRO 0402), 24 fellowships, seminar costs, and supplies and equipment.

During the course of the project a number of changes were made in order to intensify control activities and incorporate them into the health services. In 1969 a verification area (with some 141 000 inhabitants over 15 years of age) was established in Puebla State; 12 services operating at 3 levels of medical care participated. BCG vaccination, bacilloscopic diagnosis and ambulatory treatment were integrated into all the services. The programme was expanded in 1971 and by the end of 1972 covered 23 of the country's 32 states. Between 1968 and 1972, 13 000 000 children were vaccinated with BCG and it was hoped to bring the coverage of children under 15 years to 80% in 1974. Production of freeze-dried BCG vaccine was begun with assistance from the Organization.

0700 Zoonoses control (1966; 1970– ) R PR — To plan and implement programmes for the control of zoonoses, especially brucellosis, rabies and bovine tuberculosis.

2100 Control of environmental pollution (1972– ) PR — To control air, water and soil pollution, and to train the necessary personnel.

2102 Improvement of the environment (1973– ) UNDP — To coordinate programmes for the improvement of the environment and for the prevention and control of contamination.

2200 Water supplies (1960–77) R PR — To develop national programmes for water supply and sewerage systems.

3100 Health services (1966– ) R PR — To improve the health services and extend them to the rural population and marginal groups in the cities, train technical and auxiliary health personnel, and develop health planning in the context of socioeconomic development planning.

3107 Health services, Chiapas (1971– ) PR — To improve the health and nutritional status of vulnerable groups of the population, as part of the overall social and economic development process.

3301 Immunology research and training centre (1968–75) PR — To develop the centre, which carries out research, trains personnel, publishes scientific documents, and coordinates the activities of the various laboratories participating in the country's immunology programme.

3302 Poliomyelitis vaccine production (1968–75) PR — To increase the production of live poliomyelitis vaccine at the National Institute of Virology to meet the needs of the Latin American countries.

3303 National health laboratories (1970–75) UNDP — To modernize the national health laboratories responsible for the production of vaccines and sera, control of food and drugs, diagnosis of infectious diseases, training of personnel and research into public health problems.

5000 Rehabilitation (1972–75) R — To plan and implement a programme for training medical and allied personnel to staff physical, vocational and social rehabilitation services.

6100 Development of human resources (1954–70; 1973– ) R PR — To increase the number of health staff and improve their quality.

6233 Latin American Centre of Education Technology for Health (1973– ) R PR PH — To improve the teaching-learning process in education in the health sciences through the provision of services in educational technology.

6300 Nursing education (1958–75) PR — To improve basic nursing education and provide advanced training in nursing education and administration and various nursing specialties.

6400 Sanitary engineering education (1961–75) R PR — To develop sanitary engineering education and research at various universities.

6500 Veterinary medical education (1969– ) R — To develop the teaching of preventive medicine and public health in the schools of veterinary medicine.

Netherlands Antilles

2300 Aedes aegypti eradication (1969– ) PR

Nicaragua

0200 Malaria eradication programme (1957– ) R PR (Government of the Federal Republic of Germany)

2200 Water supplies (1962–65; 1968–75) R — To improve and extend water supply and sewerage services.

2201 National water supply administration (1971–73) PW — To improve and strengthen the administration of the National Department of Waterworks and Sewerage Systems.

2202 Water supplies, Managua (1972–74) PW — To improve the Managua water supply system and strengthen its administrative structure.

3100 Health services (1963–75) R UNDP PR UNICEF (FAO) — To improve health legislation and the structure and administration of the Ministry of Public Health, improve and extend the health services, and train personnel.

3102 Emergency relief and rehabilitation services (1973– ) PR PG: Organization of American States — To provide emergency supplies and assistance for the rehabilitation of the public health system of Managua, following the earthquake of December 1972.

3300 Laboratory services (1967–69; 1971–75) R PR — To improve and develop the health laboratory services and to train personnel.

4800 Medical care services (1972–75) R — To plan and develop a health care system for the whole country, giving priority to meeting requirements in Managua following the 1972 earthquake.

4900 Intrahospital maternal and child health and family planning programme (1972–73) PG: USAID — To improve the services of the Managua General Hospital and of 5 peripheral centres in order to provide better maternity and infant care and to provide family planning services to mothers during the postpartum period. Provided—advisory services by staff of projects AMRO 4900 and 4903, supplies and equipment, and local costs. Family planning services were included in the maternity care provided at the Hospital and educational activities in family planning, consisting of group sessions and personal interviews, were carried out. Following the December 1972 earthquake, project activities had to be suspended owing to lack of facilities.

6200 Medical education (1965–75) R — To strengthen medical education by improving the training of teachers of basic medical sciences and of preventive and social medicine.
and expand the immunization programme.

Varicella, an attempt was made to demonstrate the economic impact which malaria has had on a group of some 300 families living in farms in eastern Paraguay. The project provided useful experience for surveys of a similar nature.

**Smallpox eradication (1967–) R**—To carry out maintenance and surveillance operations in order to keep the country free from smallpox.

**Veterinary public health (1971–) PR**—To carry out a coordinated programme of epidemiological investigations, pilot projects and control measures for reducing morbidity and mortality from the zoonoses, especially rabies, bovine tuberculosis and brucellosis.

**Engineering and environmental sciences (1969–) PR**—To develop environmental sanitation programmes, including programmes for water supply and sewerage, industrial hygiene, waste disposal, housing, and food hygiene.

**Health services (1955–) R UNDP PR UNICEF (ILO) (FAO) (UNESCO)**—To plan health services at the national level and develop the health service infrastructure to permit coverage of 80% of the population by 1980.

**Health services in developing areas (1972–) PR**—To organize a programme of minimum rural health services, provided under a regional medical care system, to permit coverage of 80% of the rural population within 10 years.

**Health statistics (1971–75) PR**—To improve the coverage and quality of vital and health statistics and train statistical personnel.

**Administrative methods and practices in public health (1971–72) R PR**—To improve the structure, organization and operation of the administrative services of the Ministry of Public Health and Social Welfare. Provided—2 consultants, advisory services by staff of other projects, 2 fellowships, and supplies.

A seminar on the structure and management of the Ministry, attended by 16 national and 5 international officials, was held in June 1971. It examined the problems involved in the Ministry's administrative operation, and formulated a number of recommendations. Later in the year a 2-week round table discussion between senior officials of the Ministry and Organization consultants took place. In 1972 a start was made on defining the structure of the Ministry at the central, regional, and local levels after its reorganization. Similar work was carried out in respect of the main institutions of the public subsector.

The activities of the project are to be continued as part of project Paraguay 4800.

**Nutrition (1960–66; 1971–) R**—To strengthen nutrition programmes, particularly for protection of the most vulnerable population groups, through expansion of supplementary feeding and nutrition education and training of personnel; and to coordinate the nutrition work of the health, education and extension services.

**Mental health (1972–) R**—To determine the prevalence and incidence of mental illness, formulate a mental health policy, and set up the organization for its implementation, coordinating the activities of the institutions working in this field.

**Medical care (1970–75) PR**—To develop the medical care services and improve their administration; and to train staff.
Paraguay (continued)

4900 Health and population dynamics (1971 - ) PG: USAID—To improve maternal and child care in rural clinics and in the Clinical Hospital, Asunción; and to organize a residency programme in obstetrics, gynaecology and paediatrics in the faculty of medicine of the National University.

6200 Medical education (1964 - ) PR—To strengthen medical education by promoting teaching programmes in preventive and social medicine at the undergraduate and postgraduate levels and improving teaching methods.

6400 Sanitary engineering education (1967 - ) R—To strengthen the teaching of sanitary engineering at the faculty of engineering of the National University and organize courses in environmental sanitation subjects for professional, technical and auxiliary personnel.

6500 Veterinary medical education (1971 - 75) PR—To strengthen veterinary medical education, particularly in relation to preventive medicine and public health.

6600 Dental education (1966 - ) PR—To strengthen the teaching at the dental school of the National University, Asunción, particularly as regards the integration of preventive and social dentistry into basic and clinical courses, and to develop field training programmes for dental students.

Peru

0200 Malaria eradication programme (1957 - ) PR UNICEF

0300 Smallpox eradication (1967 - ) R—To protect the country against smallpox by means of systematic vaccination and epidemiological surveillance carried out by the health services.

0700 Veterinary public health (1966 - 74) R—To control brucellosis in goats in the Departments of Lima and Ica and the Province of Callao; and to reduce the incidence of the disease in man.

0701 Rabies control (1970 - 75) R—To control human rabies, first in Lima and Callao, and later in the rest of the country.

0702 Hydatidosis control (1973 - ) PR—To institute legal, ecological and socioeconomic measures for the control of hydatidosis.

0900 Plague control (1963 - ) R—To carry out epidemiological studies of plague and implement a control programme.

1000 Chagas' disease (1970 - 74) R—To carry out surveys to determine the extent of infection with Chagas' disease, clinical and epidemiological studies, and vector control measures.

2100 Engineering and environmental sciences (1968 - ) PR—To plan and carry out environmental sanitation work including the establishment and improvement of water and sewerage systems, waste disposal, air and water pollution control, housing and urbanization, food sanitation, and training of engineers and auxiliary personnel.

2200 Water supplies (1960 - 70; 1972 - ) R—To extend water supply and sewerage facilities.

2202 Water supply and sewerage services administration, Lima (1970 - 72) PW (Lima Sanitation Corporation)—To improve the administration of the Lima Sanitation Corporation. Provided—10 consultants, advisory services by regional headquarters staff and staff of other projects, 2 fellowships, supplies and equipment, and printing costs.

In the first stage, instructions, regulations and manuals were prepared and new systems to be applied by the Corporation were designed. In 1971, the Corporation installed a computer and set up a data-processing centre. Changes in the rate schedule and improvement of collections made it possible to provide considerably better service. The use of meters was increased to cover 90% of all connections. A course on waste disposal was conducted. The second stage was implemented in 1972. Billing procedures were adjusted to computer programmes, reading methods were changed, and the reading data were critically analysed. With regard to meter maintenance, a unit was set up to deal with industrial users, a maintenance programme was prepared, and architectural plans were prepared for a meter repair and testing workshop that will be able to service 200 meters a day.

2203 Water supply and sewerage services administration (1972 - 74) PR PW—To constitute a team of national consultants of the Directorate-General of Sanitary Works in order to reorganize the administrative structure of the water supply systems in several major cities, beginning with Ica and Trujillo.

2500 Air pollution (1967 - ) R—To determine air pollution levels, plan control measures, and train professional and auxiliary personnel for their implementation.

3100 Health services (1956 - ) R PR—To strengthen and extend the health services in accordance with the national health plan.

3106 Health services, northern region (1970 - 75) R UNDP PR UNICEF—To develop and extend health services in the northern region.

3108 Development of health services, eastern region (1973 - ) R PR—To provide basic health services and carry out epidemiological surveillance of communicable diseases in the jungle area (Loreto, San Martin and part of Huánuco Departments.)

3300 Laboratory services (1973 - ) PR—To improve and extend laboratory services, developing diagnostic and research work and expanding the production and control of biological products; and to train the necessary personnel.

4100 Maternal and child health (1972 - 74) PR—To extend and improve the operating efficiency of maternal and child health services.

4200 Nutrition (1965 - ) UNICEF—To reduce the prevalence of deficiency diseases and improve the nutritional status of the population by means of supplementary feeding, nutrition education and salt iodization; to train personnel in nutrition; to organize institutional food services; and to formulate a national food and nutrition policy.

4202 Nutrition rehabilitation centres in the highlands (1967 - 74) PG: Research Corporation, USA—To set up simple and inexpensive pilot nutrition rehabilitation centres for preschool children, as part of the maternal and child health care carried out by local health services in the Peruvian highlands.

4500 Radiation protection (1968 - 75) R—To establish a national radiation protection programme.

4800 Medical care services (1970 - ) PR—To strengthen the administrative and technical systems of the central air force hospital, and improve the organization of the country's hospital system.

6100 School of public health (1963 - ) PR—To strengthen the School of Public Health, which trains professional and middle-grade technical personnel and health auxiliaries for the public health services.
6101 Interdisciplinary action in health (1972-1975) PR - To carry out, together with the national universities, a multidisciplinary teaching programme for specialists in the health sciences (consisting of workshops, conferences, seminars and round-table discussions) in Arequipa, Cajamarca, Lambayeque and Puno.

6200 Medical education (1964-1975) PR - To strengthen the training of physicians at the undergraduate and postgraduate levels, improve the training of teachers, and introduce curriculum changes to place more emphasis on the preventive and social aspects of medical practice.

6201 Training programme for instructors in biochemistry and physiology (1971-1975) PH - To implement a programme for the training of teachers of biochemistry and physiology at the University of San Marcos.

6300 Nursing education (1959-1966) PR - To adjust the nursing education programme to the country's new educational structure.

6400 Sanitary engineering education (1964-1976) PR - To strengthen the teaching of sanitary engineering at the National University of Engineering, improve laboratory and library facilities and develop applied research projects.

6500 Veterinary medical education (1965-1975) R - To strengthen veterinary education and adjust the university curricula to the country's requirements.

6600 Dental education (1969-1975) PH PR - To review the curricula of the schools of dentistry and strengthen the teaching programmes, especially as regards the social and preventive aspects of dentistry.

Surinam

0200 Malaria eradication programme (1957-1975) R UNICEF

0700 Veterinary public health (1971-1975) PR - To develop veterinary public health work as part of the programme of the Ministry of Health, and train the necessary professional and auxiliary staff.

0900 Poliomyelitis control (1972) PR - To control an outbreak of poliomyelitis that occurred early in 1972. Provided - supplies and equipment, and advisory services by staff from regional headquarters and other projects.

Vaccine was provided through the PAHO Emergency Revolving Fund for a nationwide oral poliomyelitis immunization programme, in which the main emphasis was on protecting children under 5 years of age. Assistance was also given for the epidemiological investigation of the outbreak.

2100 Engineering and environmental sciences (1969-1975) PR - To reorganize the environmental health services of the Ministry of Health and train professional and auxiliary personnel for environmental sanitation work.

3100 Health services (1968-1969) R PR - To improve the planning and organization of the health services.

3314 (formerly AMRO 3314) Trinidad Regional Virus Laboratory (1969-1975) PR - To develop a programme for surveillance of virus diseases in the Caribbean area.

3500 Health statistics (1969-1975) R - To establish, in the Ministry of Health, a health statistics system to provide data for use in planning, evaluating and operating the health services.

4800 Hospital administration and medical records (1965-1973) UNDP - To organize the Port of Spain General Hospital as the regional medical institution of the northern region of Trinidad and as the teaching hospital for the University of the West Indies; to organize medical records departments in hospitals, clinics and health centres; to develop facilities for training professional and auxiliary personnel; and to improve hospital and medical care administration. Provided—a medical records librarian (1967), a hospital administrator (1967, 1969-1970) and a medical officer (1968), a consultant in 1969, advisory services by regional headquarters, zone office and project staff, fellowships, and supplies.

In 1967 the Port of Spain Hospital began to operate as a teaching institution of the University of the West Indies. The administrative staff of the hospital received instruction in budget preparation and personnel management, and an in-service training course in medical records was given for 12 health service workers from the northern region. In 1969 a seminar on administration, for physicians, was held in Tobago. In 1970, 2 courses were given for 70 hospital students, and a programme for informing the community on the role of the hospital was implemented.

During the course of the project new medical record forms were introduced at the Port of Spain Hospital. A fire and disaster plan and technical guidelines for use by doctors in connection with accident and emergency services were drawn up. Emergency services were inaugurated at both the Port of Spain and the San Fernando Hospitals. The Ministry of Health's general services were reorganized to place emphasis on better engineering services in hospitals and improved maintenance of equipment and physical facilities.

4902 Trinidad centre for training in cervical cytology (1971-1973) PG: USAID - To establish a centre for training personnel in cervical cytology and for providing diagnosis of precancerous lesions and early malignant lesions of the cervix uteri in women participating in the family planning programmes of countries in the Caribbean area. Provided—consultants, advisory services by staff of other projects, 2 fellowships, and supplies and equipment.
Trinidad and Tobago (continued)

Two nine-month courses in cytotechnology were attended by a total of 12 students from various Caribbean countries. The courses were given by 2 tutors under the supervision of the senior pathologist in Trinidad. Three of the students from Trinidad were later appointed by the Government to start a cancer screening programme in 4 family planning clinics in Port of Spain.

United States of America

3100 Consultants in specialized fields (1958– ) R PR—To provide consultant services on specialized problems in public health.

4225 (formerly AMRO 4225) Graduate course in public health nutrition (1969–75) R (University of Puerto Rico)—To develop a master’s degree course in public health nutrition at the School of Public Health of the University of Puerto Rico.

Uruguay

0100 Communicable disease control (1972– ) PR—To improve programmes for the epidemiological surveillance and control of communicable diseases.

0300 Smallpox eradication (1967–73) R—To keep the country free from smallpox by a programme of vaccination and epidemiological surveillance measures.

0702 Hydatidosis control (1971–75) PR—To expand and intensify the hydatidosis control programme.

1000 Chagas’ disease (1966; 1568–75) R—To carry out a programme, based on the systematic spraying of houses with insecticides, for the control of Chagas’ disease.

2100 Engineering and environmental sciences (1968–75) PR—To plan and implement environmental sanitation programmes and train personnel.

2200 Water supplies (1960–75) PR PW—To plan and implement national water supply and sewerage programmes.

3100 Health services (1955– ) R PR—To develop the health services in accordance with a national health plan, reorganize their technical and administrative structure at the national, regional and local levels, and train the necessary health personnel.

3103 Rural development in the north (1971–75) PR UNICEF (UN) (ILO) (FAO)—To improve the health and living conditions of the rural population, especially mothers, children and adolescents.

3200 Development of nursing services (1972–75) UNDP PR—To identify nursing problems, improve nursing services, and train personnel.

3300 Laboratory services (1971– ) PR—To organize a national system of health laboratory services.

3500 Health statistics (1965–75) R—To improve the health statistics system and train the necessary staff.

4300 Mental health (1965– ) PR—To improve the statistical information on mental health problems, draw up a mental health programme and train personnel.

4400 Dental health (1973– ) PR—To determine the extent of oral disease in the country and the human and material resources available for dealing with the problem.

4600 Occupational health (1967–75) PR—To control occupational diseases in industry.

4800 Medical care and hospital administration (1966–73) UNDP—To reorganize and improve the medical care and hospital services and train personnel.

4900 Health and population dynamics (1971–73) PG: USAID—To improve maternal and child health and family planning activities and train the necessary personnel.

5100 Chronic diseases (1971–75) PR—To strengthen the work of the Institute of Rheumatology of the Ministry of Public Health; to organize a programme for the control of chronic diseases, including the detection and treatment of early cancer and community control of hypertension, stroke and rheumatic fever; and to provide comprehensive medical care to patients suffering from chronic diseases.

6100 Training of health personnel (1971–75) PR—To provide training (short courses, seminars and working groups) for staff with technical and administrative responsibilities in the health services.

6201 University of the Republic (1971– ) R—To strengthen the programme of the various schools of the University of the Republic, specifically with regard to the teaching of medicine, veterinary medicine, odontology, chemistry, pharmacy, and engineering.

6400 Sanitary engineering education (1965–75) R—To improve the teaching of sanitary engineering in the regular civil engineering courses and implement a programme of applied research and of short courses for the continuing education of professional sanitary engineering personnel.

Venezuela

0700 Veterinary public health (1972– ) R PG: Government of Venezuela—To plan and implement national programmes for the prevention and control of zoonoses and conduct programmes of continuing education for professional veterinary workers.

0701 Venezuelan equine encephalitis (1971–75) PR—To carry out epidemiological investigations of Venezuelan encephalitis and develop a stable and effective vaccine.

2200 Water supplies (1960– ) PR PW (National Institute of Sanitary Works, Venezuela)—To reorganize the National Institute of Sanitary Works.

2300 Aedes aegypti eradication (1958– ) PR

2500 Air pollution (1957–69; 1971– ) PR—To carry out investigations for the determination of air pollution levels.

3100 Health services (1964– ) R PR—To improve the administration and organization of the health services and extend their coverage; and to train health personnel.

3200 Nursing services (1972– ) PR—To prepare and implement a long-term plan for the delivery of nursing care, including the preparation of the necessary personnel, in accordance with the country’s health policy and its socioeconomic situation.

3300 Laboratory services (1966–72) PR—To organize and expand laboratory services at the national, regional and local levels and train personnel in modern laboratory practice. Provided—consultants, advisory services by regional headquarters staff, and a fellowship.
An evaluation of the status of the health laboratories was made and the work programme was brought up to date. In 1968 and 1969, regional laboratories were established in the states of Aragua, Táchira, Zulia, Lara and Sucre, and networks of district laboratories were organized in the first 3. In 1970 plans were made to use the Maracay regional laboratory as a pilot centre for the training of laboratory technicians. In 1972 the plans were prepared for the new building for the laboratory division, and a unit for Salmonella phage-typing was set up. Personnel of various categories were given training during the course of the project.

Further assistance is planned.

3301 National Institute of Hygiene (1964- ) UNDP—To improve the organization and programmes of the Institute.

3600 Administrative methods and practices in public health (1972- ) PR—To improve the administration of the health services and prepare relevant legislation.

4200 Nutrition (1965- ) R—To establish a national food and nutrition policy; to strengthen programmes (supplementary feeding, salt iodization, iron supplementation, and nutrition education) for improving the nutritional status of the population; and to train personnel.

4301 Occupational therapy and mental health (1973- ) PR—To modernize the mental health services, develop a national mental health programme and train the necessary personnel.

4401 Dental materials centre (1969–75) R—To develop training and research, and the quality control and standardization of dental materials, at the Centre for Dental Materials established in the School of Dentistry of the Central University, Caracas, in 1969.

4500 Radiation protection (1970–75) R—To plan and implement a national radiation protection programme.

4800 Medical care services (1966–75) R—To coordinate the medical care services provided by the hospitals and health centres, extend medical care facilities, and train the necessary personnel.

4804 National system of maintenance and engineering of health care facilities (1972–75) UNDP—To develop a national system of engineering and maintenance of hospitals and other health care facilities.

5000 Rehabilitation (1967–75) R—To strengthen and develop rehabilitation services and train personnel, including orthotics and prosthetics technicians.

6100 School of public health (1961– ) R—To develop the school and improve its programmes of study.

6200 Medical education (1958–75) R PR—To improve programmes for the teaching of medicine to bring them into line with the country’s health needs, improve the administration of the schools of medicine, and develop undergraduate, postgraduate and continuing education programmes.

6300 Nursing education (1973– ) R—To establish a system for training nurses in line with the general educational system and adapted to the socioeconomic and cultural situation in the country.1


6401 Sanitary engineering research centre (1971–75) UNDP—To establish a sanitary engineering research centre for quality control of air, water and soil.

6500 Veterinary medical education (1966– ) R—To improve the teaching of veterinary medicine, especially as regards preventive medicine and the basic veterinary sciences.

6600 Dental education (1966–75) R—To train auxiliary dental personnel and strengthen the programme for the teaching of dentistry, particularly as regards the preventive and social aspects.

West Indies

0700 Veterinary public health (1972–75) R—To plan and implement national programmes for the prevention and control of zoonoses and conduct programmes for the continuing education of professional veterinary workers.

2101 Engineering and environmental sciences, Montserrat (1972–73) UNDP—To train public health inspectors for the island at the School of Public Health, Jamaica.

2102 Engineering and environmental sciences, Grenada (1972– ) UNDP—To develop a sewage disposal scheme for the Grand Anse Morne Range Beach area.

2103 Engineering and environmental sciences, St Lucia (1973– ) UNDP—To plan and institute effective methods for the collection and disposal of solid wastes.

2200 Water supplies (1962– ) UNDP—To improve and extend water supplies in the islands of the eastern Caribbean and improve the administration and operation of the systems.

2202 Water utility management, Grenada (1973– ) UNDP—To improve the organization and management of the Central Water Commission.

2300 Aedes aegypti eradication (1969–75) R—To eradicate Aedes aegypti from Anguilla, Antigua, the British Virgin Islands, the Cayman Islands, Dominica, Grenada, Montserrat, St Kitts/ Nevis, St Lucia and St Vincent.

3100 Health services (1969–75) R PR—To formulate and implement health programmes as part of plans for socioeconomic development in the islands of the eastern Caribbean.

3101 Health services, Leeward Islands (1973– ) R—To improve administrative practices and, where necessary, modify the basic structure of the health services of Anguilla, Antigua, the British Virgin Islands, Montserrat, and St Kitts/Nevis; and to train health personnel.

3108 Health services, Grenada (1969–75) PR—To strengthen the health services and train staff.

3300 Laboratory services (1968– ) PR—To develop the laboratory services in Dominica to enable them to provide specialized pathology services for the island and for Antigua, Montserrat and St Kitts.

3302 Medical laboratory technology, Grenada (1972–73) UNDP—To train laboratory technicians of the General Hospital in the screening of Papanicolaou smears.

3500 Health statistics (1970– ) PR—To develop health statistics services in the eastern Caribbean islands and train the necessary staff.
West Indies (continued)

4200 Nutrition (1962-76) R UNICEF (FAO) (UNESCO) (University of the West Indies)—To improve the nutritional status of the population of the islands of the eastern Caribbean through applied nutrition programmes, nutrition education programmes and the development of nutrition services.

4300 Mental health (1969- ) PR —To plan and develop mental health services.

4800 Medical care and hospital administration (1969- ) UNDP —To improve the administration and operation of hospitals in the eastern Caribbean islands.

4808 Hospital administration, Montserrat (1970-73) UNDP —A long-term fellowship was awarded to a radiographer to prepare her for taking over the management of the X-ray department of the Glendon Hospital.

4809 Hospital administration, Cayman Islands (1971- ) UNDP —To establish a system for the requisitioning, storage and dispensing of drugs and other medical supplies at the Georgetown General Hospital and outlying clinics.

4811 Hospital administration, Grenada (1972-74) UNDP PR —To improve the administration of medical care facilities and train the necessary staff.

4812 Hospital administration, Antigua (1972-75) UNDP —To reorganize the administrative structure and management of the Holberton Hospital and train personnel in hospital administration.

4900 Health and population dynamics (1972-73) PG : USAID —A nurse/midwife was assigned for 6 months in 1973 to assist in improving nursing and midwifery services for the maternal and child health and family planning programmes in the islands of the eastern Caribbean where English is spoken. Supplies and equipment were provided in 1972.

4901 Family planning programme, St Kitts/Nevis (1971- ) UNFPA —To develop an integrated maternal and child health and family planning programme.

4903 Family planning programme, Dominica (1972- ) UNFPA —To provide family planning information and services in hospitals and health centres, as part of a comprehensive maternal and child health programme.

6302 Training of nursing assistants, Cayman Islands (1971- ) UNDP —To train 30 auxiliary nurses in three years, through an annual nine-month in-service programme, to work as members of the health team in both preventive and curative fields.

AMRO

0100 Epidemiology, interzone (1971- ) R PR; 0101 Zone I (1972- ) PR; 0102 Zone II (1965- ) PR; 0103 Zone III (1961- ) PR; 0104 Zone IV (1966- ) PR; 0106 Zone VI (1958- ) PR —To assist countries in developing programmes for the control of communicable diseases, in establishing and/or strengthening epidemiological and laboratory services, and in training personnel.

0200 Malaria technical advisory services, interzone (1955- ) R PR —To provide assistance and technical advisory services in aspects of malaria eradication for which permanent country advisers are not required.

0201 Malaria technical advisory services, Zone I (1969- ) PR; 0203 Zone III (1958- ) PR —To provide advisory services for malaria eradication programmes in countries of the zones, and to assist in coordinating activities.

0216 Research on the epidemiology of malaria in problem areas (1967- ) R PR —To investigate and develop alternative methods of interrupting malaria transmission in areas where technical problems have been encountered.

0218 Rural health services and malaria eradication campaigns (1967- ) PR —To assist governments in bringing about closer coordination between the general health services and malaria eradication programmes in order to extend health services to rural areas by using, wherever possible, the resources of the malaria programmes.

0300 Smallpox eradication, interzone (1951- ) R —To assist countries with their immunization activities and with the development of surveillance systems and maintenance programmes.

0400 Tuberculosis control, interzone (1957- ) R —To assist countries in the planning, conduct and evaluation of tuberculosis control programmes, operational research, and training of personnel in control methods and techniques.

0403 Tuberculosis control, Zone III (1963- ) PR; 0404 Zone IV (1962- ) R —To assist the countries of the zones in formulating, conducting and evaluating tuberculosis control programmes, in integrating them into the general health services, and in training personnel in control methods and techniques.

0409 Courses in tuberculosis epidemiology and control (1972- ) R —To train heads of tuberculosis programmes in the basic principles of tuberculosis control administration and in epidemiological methods for evaluation of the tuberculosis problem.

0410 Courses in tuberculosis bacteriology (1969- ) R —To train senior laboratory personnel in tuberculosis bacteriology methods and techniques.

0500 Leprosy control, interzone (1958- ) PR PH —To assist countries in developing leprosy control programmes, integrating them into the general health services, and training personnel.

0509 Courses on histopathology of leprosy (1971- ) R —To provide pathologists with training in the histopathological diagnosis of leprosy, to enable them to assist with the diagnosis of leprosy and to train other pathologists in this work.

0512 Training and research in leprosy and related diseases (1973- ) R —To plan and develop a regional centre, in Caracas, for training and research in leprosy and related diseases, beginning with pilot field studies, first nearby and later throughout the Americas.

0600 Venereal diseases and treponematoses, interzone (1961- ) R PR —To assist governments with the organization and administration of venereal disease and treponematoses control programmes.

0700 Pan American Zoonoses Centre, Argentina (1956- ) R UNDP PR PG: Various —To advise countries of the Region on the establishment and improvement of veterinary public health services and zoonoses control programmes; to carry out research on the most prevalent zoonoses; and to train technical personnel for zoonoses control work.

0701 Veterinary public health, Zone I (1972- ) R; 0702 Zone II (1968- ) PR; 0703 Zone III (1957- ) R; 0704 Zone IV (1968- ) R —To assist countries in developing veterinary public health services and zoonoses control programmes; to carry out research on the most prevalent zoonoses; and to train technical personnel for zoonoses control work.
health services and education with special reference to zoonoses control and food protection.

0710 Rabies control, Mexico/United States border (1966- ) PG: US Public Health Service Center for Disease Control—To assist the Governments of Mexico and the United States of America in eliminating rabies in dogs and other animals along the border between the two countries.

0719 Census of primates (1972- ) PG: National Academy of Science, USA—To determine, in Colombia and Peru (Iquitos), the areas where trapping and transport of primates takes place; to obtain information on the movements of the primate population and on reproduction, mortality and related biological factors; and to formulate recommendations for the management and conservation of primates in both countries.

0800 Pan American Foot-and-Mouth Disease Centre, Rio de Janeiro (1951- ) PR PG: Inter-American Development Bank—To assist the countries of the Americas in the control and prevention of foot-and-mouth disease and other vesicular diseases, the conduct of research related to the preparation and testing of vaccines, and the training of personnel.

0900 Plague control, interzone (1966- ) R—To assist governments in implementing and improving their plague surveillance and control programmes and in research on the ecology of the reservoirs and vectors and on plague epidemiology.

0924 International Symposium on the Control of Lice and Louseborne Diseases, Washington, D.C. (4-6 Dec. 1972) PG: US Army Medical Research and Development Command; Fogarty International Center, National Institutes of Health, USA—To reassess, on a broad basis, the problem of louseborne diseases and to develop new approaches to control that are likely to be more successful than the application of conventional insecticides under present conditions and in less advanced countries where conditions are permanently conducive to louse infestation. There were 66 participants from countries of 3 WHO regions. Provided—the cost of attendance of 35 participants, meeting costs, and the services of technical staff.

1000 Parasitic diseases, interzone (1966- ) PR—To assist countries with programmes for the control of parasitic diseases and in the development of research on control methods.

1007 Schistosomiasis (1960- ) PR—To foster the development of national programmes of schistosomiasis control and research.

1008 Chagas' disease (1960- ) R PR PG: Wellcome Trust—To determine the epidemiological characteristics of Chagas' disease, its prevalence and its severity, provide support for national control programmes and encourage related research and training activities.

2100 Engineering and environmental sciences, interzone (1958- ) R PR; 2101 Zone I (1960- ) PR; 2102 Zone II (1960- ) R; 2103 Zone III (1960- ) PR; 2104 Zone IV (1960- ) PR; 2106 Zone VI (1960- ) PR; 2107 Caribbean area (1956- ) UNDP—To assist countries with various engineering and environmental sanitation activities, including collection and disposal of solid wastes, food sanitation, school sanitation, sanitation of public establishments and transport, vector and rodent control, and training of auxiliary personnel.

2114 Pan American Centre for Sanitary Engineering and Environmental Sciences, Lima (1968- ) R PR PG: Government of Peru—To develop the Centre, which provides countries of the Region with specialized technical and scientific assistance in sanitary engineering and environmental sciences, collects and disseminates information on new developments and methods, and carries out training and research work.

2118 Regional pollution monitoring network (1970-72) UNDP—To develop practical approaches to water quality monitoring in Latin America and the Caribbean area. Provided—advisory services of staff of project AMRO 2114, of other intercountry and of country projects, and supplies and equipment.

A broad study on methods and techniques for water quality monitoring and control on a regional basis was carried out. The first part of the study was conducted with assistance from the Battelle Memorial Institute and a special report on planning, design and operation of comprehensive water quality monitoring systems was made available in 1971. A follow-up study was made in 1972 by staff of the Pan American Centre for Sanitary Engineering and Environmental Sciences (AMRO 2114) and a consultant. Efforts were made to assess the status of data collection on stream pollution and water quality control in Argentina, Brazil, Chile, Colombia and Venezuela. Advice on techniques and methodology was provided to a number of countries that expressed interest in establishing water quality monitoring programmes.

2200 Water supplies, interzone (1959- ) R PR; 2203 Zone III (1964- ) PR—To advise countries on the planning, financing and execution of water supply programmes and on the organization and administration of central and local water supply and sewerage authorities.

2213 Studies on water resources (1965- ) UNDP—To assist in the study of (i) water resources of the Region and their present and future use, and (ii) the problems of waste water disposal and the resultant pollution of surface water and groundwater.

2220 Institutional development of environmental services (1970- ) R PR PW—To assist the institutions in Latin America concerned with water supply and sewerage services, and with such activities as solid waste disposal and atmospheric pollution control, in improving their operation and administration, and in training personnel for that purpose.

2223 Seminars on public services administration (1972- ) PR—To discuss new developments in the administration and management of water supply and sewerage services, with a view to evolving a system suitable for use in the Region.

2300 Aedes aegypti eradication, interzone (1954- ) R PR; 2301 Caribbean area (1950- ) R UNDP PR; 2303 Zone III (1968- ) PR—To assist with A. aegypti eradication campaigns and with the organization of vigilance services.


After intensive data-gathering for the study, begun in July 1971, visits were made to several countries for the same purpose. The study was completed in April 1972 and in May 1972 the report was widely distributed throughout the Region. It was submitted to the 68th Meeting of the Executive Committee and the XXI Meeting of the Directing Council of PAHO/twenty-fourth session of the Regional Committee for the Americas later in that year.

2311 Dengue surveillance, Caribbean area (1972- ) PR—To establish international surveillance for dengue in the Caribbean and adjacent areas.
AMRO (continued)

3000 Coordination with foundations (1973–) PR PH—To cooperate with foundations and other charitable organizations in mobilizing resources for health and education, the nature of the projects supported depending upon the interests of the particular donor.

3107 Public health administration, Caribbean area (1963–72) R PR—To assist the Caribbean countries and territories in analysing health problems, assessing resources, and implementing and evaluating public health programmes within national development plans. Provided—a public health administrator, an administrative methods officer and a secretary, consultants, advisory services by zone office staff, supplies and equipment, and seminar costs.

Between 1963 and 1967 work centred on studies, analysis of health problems, and development of services. In 1963 and 1964 data-collection guides were prepared and used in a number of the Caribbean territories. A seminar on organization and administration of health services was held in Jamaica for 50 senior officials from 17 Caribbean countries and territories. As an outcome of this, Antigua, St Lucia, and Trinidad and Tobago proposed changes in the organization of their health ministries, established guidelines for their operation, and made plans for the progressive provision of trained staff for the services. Two seminars on malnutrition and gastroenteritis were held for 64 physicians, 250 nurses, 51 sanitarians, and 45 auxiliaries. Almost all the islands established child nutrition and health committees to deal with these problems. A further seminar on the organization and administration of health services had 26 participants from 14 countries and territories.

In 1965, integrated health programmes were undertaken in Antigua, Dominica, Montserrat, St Lucia and St Vincent, emphasis being placed on mother and child nutrition programmes. In 1967, a 4-year plan was prepared for Barbados, with emphasis on training of staff. Coordination of various health and related programmes was improved throughout the area, and a number of local staff were trained. Between 1968 and 1972, further advisory assistance was given to the integrated health programmes in Antigua, Dominica, Montserrat, St Lucia and St Vincent. An integrated programme was started in the British Virgin Islands. St Kitts decided to prepare a national health programme and St Vincent established a planning committee with a similar purpose.

3108 Public health services, United States/Mexico border (1952–) R PR PG: United States/Mexico Border Public Health Association—To cooperate in the joint study and planning of health activities along the United States/Mexico border; promote the exchange of epidemiological information between the two countries; and carry out the duties of Secretariat of the United States/Mexico Border Public Health Association.

3110 Research development and coordination (1962–) PR PG: Commonwealth Fund—To develop and implement a biomedical research programme in fields directly relevant to health problems of the Region; to promote cooperation among biomedical scientists of different countries in order to make the best possible use of existing resources for research and research training; to strengthen biomedical communications and resources; and to improve the returns from health expenditure through the application of operations research methods to the planning and administration of health programmes.

3125 Special seminars, Zone III (1970–) R—To cooperate with the countries of the zone in arranging seminars and meetings of working groups in various public health disciplines to analyse the relevant problems and activities and make recommendations to the Central American Public Health Council.

3126 Operations research (1970–) R—To promote the application of the concepts and methodology of operations research to the solution of health problems.

3129 Research training in biomedical sciences (1969–) PR PG: Wellcome Trust—To provide research training in the biomedical sciences, within the Region, for workers from countries of Latin America and the Caribbean area.

3131 Caribbean Health Ministers’ Conference (1970–) R PR—To assist the countries of the Caribbean area in the establishment of a secretariat for conferences of the Ministers of Health.

3135 Development of river basins (1972–) R—To collaborate with governments in the development of river basins by providing advisory services on the study of costs and benefits, on the potential dangers to health arising from the development of water resources, on the protection and promotion of health, especially of the labour force and of families in the basin areas, and on the determination of techno-economic models of development.

3137 Programme on traffic accidents (1972–) PR PG: National Institutes of Health, USA—To establish a clearing-house for information on traffic accidents; to advise countries on accident prevention; to convene international seminars that will discuss problems of common interest, outline policies and propose programmes; and to promote field research.

3138 Diagnostic efficacy of spherulin (1972) PS—Supplies and equipment and grants were provided to assist with studies for evaluating the diagnostic efficacy of spherulin in persons sensitized by infection in parts of Mexico where coccidioidomycosis is endemic.

3139 PAHO research grant programme (1973–) PR—To support individual investigations and research training schemes in fields directly relevant to health problems in the Americas; to develop multinational programmes aimed at the best possible use of existing resources in the Region; and to support cooperative efforts in research and training.

3145 Emergency preparedness (1973–) PG: UN Association of the USA—To collaborate with Member governments in the establishment, within their national health services, of emergency measures to cope with natural disasters.

3200 Nursing services, interzone (1968–) R PR; 3201 Zone I (1959–) PR; 3202 Zone II (1963–) PR; 3203 Zone III (1963–) PR; 3204 Zone IV (1952–) PR; 3206 Zone VI (1963–) PR—To assist countries in the planning, organization and administration of nursing services, in developing educational programmes for professional and auxiliary nursing and midwifery personnel, and in carrying out research on nursing.

3211 Seminars on planning for nursing (1969–72) R—To assist countries in preparing nurses to participate in the planning of nursing activities. Provided—advisory services of regional headquarters and zone office staff, cost of attendance of participants, and seminar costs.

Three seminar-workshops were held for a total of 73 nurses—one in 1969 in Mexico City, one in 1970 in Lima, and one in 1972 in Bogotá.

3214 Programming for nursing (1971–) PR—To assist countries in developing a planning process for nursing consistent with national health and education policies and plans.
3215 Study of factors affecting growth of the nursing profession (1972– ) R—To identify the factors affecting the growth of the nursing profession.

3216 Standards for nursing care (1972–73) R—To assist with the establishment, by Mexico and the Central American and Caribbean countries, of standards for nursing care. Provided—4 consultants, advisory services by staff members, cost of attendance of participants in working groups, and supplies and equipment.

A working group, attended by 18 nurses representing the ministries of health and social security institutions, met in Guatemala from 4 to 14 December 1972. It discussed the purposes and use of nursing care standards, defined areas to be standardized, studied a questionnaire to be used in obtaining information, and established criteria and procedures for the function and operation of national committees on nursing care standards.

A second working group, composed of 26 nurses from 6 countries, met in San José from 2 to 14 July 1973. This group, using the findings of a study, carried out in the interim, of 50 hospitals in Central America, established 19 standards in the following areas: fulfillment of medical and nursing instructions; control of hospital-acquired infections; patient safeguards; continuity of care; and humanization of patient care.

3223 Systems of nursing (1973– ) R—To assist countries of the Region in defining their systems of nursing.

3300 Laboratory services, interzone (1955– ) R; 3303 Zone III (1965– ) PR; 3304 Zone IV (1972– ) PR; 3306 Zone VI (1970– ) R—To assist countries in improving health laboratory services and in the production and control of biological products, the training of personnel, and the development of investigations for the identification of health problems and of epidemiological research.

3311 Training of laboratory personnel (1968– ) R—To improve the training of laboratory personnel by providing short intensive courses on specific subjects.

3316 Production and quality control of biologicals (1972– ) R—To assist countries of the Region to increase and diversify the production of biologicals in existing laboratories, and to improve their quality and distribution.

3318 Mycology research and training centres (1972–73) PG: US Army Medical Research and Development Command—To set up regional diagnostic and treatment centres and train personnel for dealing with mycotic problems in the Americas; and to establish programmes, including vaccine studies, for the prevention of mycotic diseases.

3400 Health education, interzone (1968– ) R UNFPA; 3401 Caribbean area (1963–1972) UNDP—To assist governments in developing health education services and in training health personnel in health education and related disciplines.

3410 Training of teachers in health education (1970– ) PR—To assist countries of the Region in improving the health education component of the general education programmes and in improving the training of teachers in health education.

3500 Health statistics, interzone (1960– ) R PR—To develop a regional programme for improving basic statistical data for use in health programmes, to extend training in this field and to develop statistical research.


3513 Inter-American investigation of mortality in childhood (1966– ) PR PG: USAID—To study child mortality in selected urban and rural areas of Latin America and of the United States of America, in order to obtain accurate and comparable data on death rates in relation to nutritional, sociological, and environmental factors which may be responsible for excessive mortality.

3515 Training in use of computers in health statistics (1972– ) R—To prepare guidelines for the installation and use of electronic equipment in the health services and for the training of personnel for operation of the equipment.

3600 Administrative methods and practices in public health, interzone (1959– ) PR; 3601 Zone I (1968– ) PR; 3602 Zone II (1968– ) PR; 3603 Zone III (1967– ) PR; 3604 Zone IV (1972– ) PR; 3606 Zone VI (1963– ) PR—To assist countries in improving the administrative practices of their national health services.

3607 Management of health services (1972– ) UNDP—To assist governments in improving the management and administration of health services; and to train health administration officials.

3700 Health planning, interzone (1961– ) R PR; 3701 Zone I (1965– ) PR; 3702 Zone II (1971– ) R; 3703 Zone III (1966– ) PR; 3704 Zone IV (1972– ) PR; 3706 Zone VI (1973– ) PR—To collaborate with governments in the establishment, development and strengthening of health planning processes as part of national development plans, in the development of joint Organization/country programming and health information systems, and in the training of personnel.

3715 Pan American programme for health planning (1968– ) UNDP PR—To contribute to the establishment and strengthening of health planning processes through training, research and provision of information.

4100 Maternal and child health, interzone (1971– ) R—To assist governments in the development of integrated maternal and child health programmes, including fertility regulation activities when requested, and in the progressive extension of such programmes to rural areas.

4108 Clinical and social paediatrics (1961– ) PG: UNICEF—To provide fellowships for training in clinical and social paediatrics at the regional training centres in Santiago, Chile, and Medellin, Colombia.

4109 Nursing-midwifery (1961– ) PR PG: USAID—To assist countries in the planning, strengthening and extension of the nursing-midwifery component of maternal and child health and family planning programmes, and in training nursing and midwifery personnel.

4117 Research on nursing aspects of maternal and child health services (1971–72) PK—A consultant assisted in carrying out a survey of maternal and child mortality and morbidity and of the use made of existing health services in selected towns in the upper Putumayo valley area of Colombia. The data were tabulated and classified for subsequent analysis.

4126 Latin American Centre for Perinatology and Human Development (1972– ) R PR PH PG: Ford Foundation—To provide support for the Centre, which carries out scientific
research on fetal and infant development, offers training for research and teaching in maternal and child health, and provides advisory services on perinatal problems to the countries of the Region.

4200 Nutrition advisory services, interzone (1958- ) R PR—To cooperate with the countries of the Region in preparing and implementing food and nutrition policies and in planning, executing, supervising and evaluating national nutrition programmes, particularly for vulnerable population groups; to train nutrition specialists; to promote food fortification and the production of low-cost foods of high nutritional value; and to promote nutrition research.

4201 Nutrition advisory services, Zone I (1961- ) R—To assist the countries of the zone in planning, organizing, implementing and evaluating the nutrition component of health programmes and in formulating food and nutrition policies.

4203 Institute of Nutrition of Central America and Panama (1949- ) R PR PH PN: INCAP Member governments—To develop the programme of the Institute, which includes advisory services on applied nutrition programmes, training at various levels, and research.

4204 Nutrition advisory services, Zone IV (1956- ) R—To assist the countries of the zone in planning, organizing, implementing and evaluating the nutrition component of health programmes and in formulating food and nutrition policies.

4207 Caribbean Food and Nutrition Institute (1963- ) R PR PG: Research Corporation, USA; Rockefeller Foundation; United Kingdom Committee of Freedom from Hunger Campaign; Governments of the Commonwealth (Caribbean) UNICEF—To assist the governments of the Caribbean area where English is spoken in improving nutrition and health through the formulation and implementation of food and nutrition policies, the training of personnel, the improvement of nutrition work at the local level, operational research, and the production of educational material on nutrition.

4211 Research on protein-calorie malnutrition (1971- ) R—To assess the socioeconomic factors and the relative importance of deficiencies of protein, calories and other nutrients in the etiology of malnutrition; and to plan practical approaches to the prevention and control of protein-calorie malnutrition in the Region.

4212 Research on nutritional anaemias (1973- ) PR—To assist regional centres carrying out collaborative research on nutritional anaemias.

4213 Iodine determination in endemic goitre (1973- ) R—To review the public health and administrative problems associated with the implementation of salt iodization programmes and assist the countries concerned in finding practical solutions.

4221 Food and nutrition policies (1973- ) PR—To assist governments, in collaboration with other international agencies, in formulating and implementing food and nutrition policies.

4230 Public health nutrition education and training (1969- ) PR—To assist university schools for nutritionists-dietitians, and to assist in the planning and conduct of short courses in nutrition for professional and ancillary workers and in training hospital dietary and food service personnel.

4233 Nutrition teaching in medical schools (1972- ) R—To assist in developing the teaching of nutrition in schools of medicine and public health.

4238 Nutrition research (1971- ) PR—To assist with studies of protein-calorie malnutrition, nutritional anaemia, endemic goitre and hypovitaminosis A, and in the development and testing of low-cost sources of protein.

4300 Mental health, interzone (1965- ) PR—To assist countries in strengthening their mental health programmes, including provision of services, training, and research.

4312 Courses in community psychiatry (1971-76) PR—To assist several countries of the Region in training general practitioners in basic psychiatry, emergency care, follow-up of discharged cases, and case-finding.

4313 Psychiatric nursing (1971- ) R—To assist countries in developing their psychiatric nursing education programmes, in the training of auxiliary personnel, and in the organization of psychiatric services.

4314 Epidemiological study on epilepsy (1972- ) R—To determine the prevalence and distribution of epilepsy in selected countries and assess the need for services.

4316 Epidemiology of suicide (1973- ) R—To study the incidence and distribution of suicide and attempted suicide in 4 countries.

4318 Epidemiology of alcoholism (1972-77) PG: National Institutes of Health, USA—To determine the prevalence of alcoholism and drinking patterns in 8 urban areas in Latin America, and to establish 2 centres for studies on alcoholism in Latin America.

4322 Development of psychiatry and mental health libraries (1973- ) PG: Government of Canada—To provide a limited number of basic psychiatric journals to certain psychiatric departments in Latin America.

4323 Conference on the Epidemiology of Drug Dependence, Mexico, D.F. (26 Feb.-2 March 1973) PG: Government of Canada—To establish the strategy for a multinational study on drug dependence. Eleven participants from 8 countries and 4 consultants discussed various aspects of epidemiological research on drug abuse and formulated recommendations. The Conference was also attended by 3 observers from the United States of America.

4400 Dental health, interzone (1954- ) PR—To promote the development of dental health, and particularly of dental public health, in the countries of the Region, and assist in training various types of dental personnel.

4407 Dental epidemiology (1964- ) PG: Royal College of Surgeons, United Kingdom—To train teaching staff and investigators in the field of dental epidemiology and carry out studies on the prevalence of dental disease in Latin America.

4409 Fluoridation (1967- ) PR—To promote the use of fluoridation for the prevention of dental caries in the Region by training engineers in fluoridation techniques, carrying out surveys and studies and assisting countries in planning and improving programmes for the fluoridation of water supplies, for salt fluoridation, or for topical application of fluorides, and in initiating fluoride production.

4410 Laboratories for control of dental products (1968- ) PR PG—To assist in establishing regional laboratories or centres to cooperate with countries in improving the quality of materials used in dental treatment, controlling the quality of dental products, providing training for teachers and research workers in dental materials, and conducting applied research on dental materials.
Human and material resources in dentistry (1967-)
PR—To study the current position as regards human and material resources in dentistry available in Latin America; and to assist in formulating and implementing plans for the development of dental resources.

Health aspects of radiation (1958-)
R—To cooperate with countries of the Region in the measurement of radioactivity in air, water, and food samples, in the formulation of radiation protection programmes and on the use of radioisotopes in medicine.

The following activities took place during the period under review:

A consultant visited El Salvador to assist with the organization of nuclear medicine services in the Ministry of Public Health.

In collaboration with the US Atomic Energy Commission, a workshop on recent advances in medical management of radiation accidents was held at the Regional Office from 17 to 19 September 1973; there were 39 participants from 5 countries.

Two consultants assisted the health ministry of Mexico with a course on dosimetry in radiotherapy given in Mexico City from 27 August to 1 September for 19 radiotherapists, physicists, and engineers.

Radiation protection (1964-)
PR—To assist in the development of radiation protection programmes.

Provision was made for attendance of officials responsible for radiation protection programmes of health ministries in 10 countries at the Regional Seminar on Radiological and Environmental Protection, organized in cooperation with IAEA and the Peruvian Atomic Energy Commission and held in Lima from 17 to 23 November 1973.

Radiation surveillance (1963-)
PR—To assist governments in the Region in organizing radiation surveillance programmes.

Manganese poisoning (1964-)
PG: National Institute for Occupational Safety, and Health, USA—To assist research on the mental and neurological syndrome produced by chronic inhalation of dust containing manganese.

Food and drug control, interzone (1959-)
PR—To provide technical advice to the national services responsible for the health aspects of production and control of foods, drugs, and biologicals, both locally manufactured and imported; and to assist countries in improving national control services.

Food reference laboratory, Zone III (1964-)
R PR—To develop the food analysis laboratory that has been set up at the Institute of Nutrition of Central America and Panama to act as a reference laboratory for the countries of the zone.

Food hygiene training centre (1971-73)
R—To assist the centre for training in food hygiene that has been set up in the School of Public Health, Caracas, in cooperation with the Government of Venezuela, to provide advanced instruction in the basic principles of food technology for professionals, and basic courses in food hygiene, inspection, and control techniques for inspectors.

Training in analysis of food and drugs (1972-)
R—To assist in the training of drug analysts.

Medical care services, interzone (1961-)
R PR; 4801 Zone I (1970-)
R; 4802 Zone II (1973-)
PR; 4803 Zone III (1962-)
PR; 4804 Zone IV (1963-)
PR; 4806 Zone VI (1970-71; 1973-)
PR—To assist countries in the improvement of medical care services, particularly as regards coordination of services and hospital administration, and in the solution of general medical care problems.

Hospital planning and administration (1968-)
PR—To assist countries in improving hospital and medical care facilities, in establishing maintenance programmes, and in planning new facilities to meet the increasing demand for services.

Training for medical care and hospital administration (1967-)
R PR—To develop the programmes of training in administration of medical care and hospital services at schools of public health, schools of medicine, and other institutions in Latin America.

Progressive patient care (1967-)
PH—To assist in setting up, in Latin American university hospitals, intensive care units that will also serve for demonstration and teaching purposes.

Improvement of hospital and medical care administration libraries (1971-73)
PH—To strengthen library support for medical care and hospital administration education at 9 schools of public health, the San Juan de Dios regional training centre, Bogotá, and the Latin American Centre for Medical Administration. Provided—consultants for 4 months, advisory services by regional headquarters staff, travel and per diem for course participants, translation and printing costs, and supplies and equipment.

A course on public health and medical care library sciences for 10 participants from 8 Latin American countries was given from 4 October to 3 December 1971; it consisted of academic training at the University of Puerto Rico, following a period of practical observation in São Paulo, Washington, D.C., Ann Arbor, Chicago, and New York. Subscriptions to 35 scientific journals were obtained for each participating institution and a total of 6100 books in English, Spanish, and Portuguese were acquired for requesting libraries. Three participating institutions received audiovisual equipment and aids. Five bibliographies were prepared and distributed. The Latin American Centre for Medical Administration translated into Spanish 15 documents, which were published and distributed free of charge to the medical care and hospital administration programmes and to professional public health workers in Latin America. Another 24 documents are being translated.

Health and population dynamics, interzone (1968-)
UNFPA PR PG: USAID—To assist governments in the development of activities relating to the health aspects of population dynamics.

Health and population dynamics, Zone I (1968-)
R UNFPA PG: USAID; 4902 Zone II (1972-)
PR; 4903 Zone III (1972-)
PR PG: USAID—To assist countries in developing family planning programmes and integrating them into the health services.

Health and population dynamics, Zone VI (1972-)
PR PK—To assist in the development of maternal and child health and population dynamics services, and of teaching and research in these fields, in the countries of the zone.

Education and training in health and population dynamics (1971-)
PG: USAID—To assist in the training of personnel in health and population dynamics to meet the needs of the programmes in this field.
AMRO (continued)

5000 Rehabilitation, interzone (1962–) R PR—To advise countries of the Region on problems of medical rehabilitation, and assist in the development of rehabilitation services and in the training of personnel.

5010 Study Group on Human Communications, Washington, D.C. (17-21 Sept. 1973) R—Seven participants from 5 countries and an observer from the Department of Health, Education and Welfare, USA, discussed ways of providing services in Latin American countries to assist patients with problems of communication, and suggested training programmes for the necessary personnel.

5100 Chronic diseases (1967–) PR—To assist the countries of the Region in organizing and operating programmes for primary prevention of chronic diseases and for the care of patients suffering from such diseases.

5108 Survey on smoking patterns in Latin America (1970–) PG: American Cancer Society—To study, in 8 Latin American cities, the patterns of cigarette smoking, the attitudes of the population towards the habit, and its relation to certain cardiovascular and respiratory conditions.

5109 Cancer control (1973–) R—To support activities for improving the planning and operation of cancer registries, programmes for the detection and treatment of early cancer, specialized treatment centres, epidemiological studies, and training of personnel.

6000 Medical education: Textbooks and teaching materials (1967–) PK—To provide textbooks at a lower cost to medical students; to develop a cooperative arrangement with medical schools in order to ensure the selection of textbooks of high scientific and pedagogical quality; and to establish a revolving fund to ensure continuity of the programme.

6100 Human resources development in public health, interzone (1963–) R PR—To strengthen the schools of public health in the countries of the Region.

6101 Human resources development in public health, Caribbean area (1969–) PR PH—To collaborate in programmes for the development of human resources for health work in countries of the Caribbean area.

6113 Training of paramedical personnel, Caribbean area (1972–) UNDP—To assist in establishing, in 4 educational institutions in the Caribbean area, regional centres for the training of professional and auxiliary health personnel.

6200 Education in health sciences, interzone (1953–) PR—To assist the medical schools in Latin America in the solution of problems, in developing their programmes and in improving teaching methods; and to collaborate in the organization of a regional system for the collection of information relative to the training of health personnel, and in the development of studies of human resources.

6203 Medical education, Zone III (1971–) PR; 6204 Zone IV (1966–) PR; 6206 Zone VI (1971–) PR PG: Milbank Memorial Fund—To assist medical schools in improving programmes and methods of medical education.

6208 Teaching of statistics in medical schools (1972–) PR—To assist in improving the statistics teaching programmes in medical schools of the countries of the Region.

6216 Behavioural sciences in the training of health personnel (1965–) PR PG: Milbank Memorial Fund—To develop norms, principles, models and materials for teaching the behavioural sciences and for training instructors; to assist schools of health sciences in organizing and implementing teaching programmes in this field; and to collaborate in investigations on the teaching of behavioural sciences as applied to health problems.

6221 Regional Library of Medicine (1970–) R PR PH PG: Government of Brazil; Commonwealth Fund; National Library of Medicine, USA—To assist the Library of Medicine which was set up at the Paulista School of Medicine, São Paulo, Brazil, with the help of the Organization in 1967 (under project Brazil 6221) and which provides library support for biomedical education, research and practice in Latin America, and trains biomedical librarians at advanced level.

6223 Teaching of behavioural sciences (1972–) UNDP—To assist in improving teaching and research in the behavioural sciences as applied to the solution of medical problems.

6228 Medical education, Caribbean area (1971–75) PR—To assist the School of Medicine of the University of the West Indies in strengthening its administration, improving teaching methods and developing postgraduate training programmes.

6233 Latin American Centre of Educational Technology for Health (1972–73) PR—To improve the teaching-learning process in health sciences education through the provision of services in educational technology. Provided—a medical officer, 4 consultants, and supplies and equipment.

In 1972 the administrative and technical procedures for the establishment of the first Latin American Centre of Educational Technology for Health were completed. The Centre, which is located at the Biophysics Institute of the Federal University of Rio de Janeiro, was set up to carry out research on the teaching-learning process, using programmed instruction, audiovisual materials, computer-assisted instruction methods, and simulated models of biological events. Since early 1973, these activities have been continued under projects Brazil 6233 and Mexico 6233.

6300 Nursing education, interzone (1958–) R; 6301 Zone I (1963–) PR; 6306 Zone VI (1973–) PR—To assist countries in strengthening nursing education programmes.

6310 Nursing education: Textbooks, interzone (1971–) PT—To improve basic and postbasic nursing and midwifery education through revision of curricula and provision of textbooks at a cost within the reach of students.

6317 Seminars on nursing education (1971–) R—To establish minimum standards for the development of nursing education programmes at various levels in the countries of Middle and South America.

6319 Training of nursing auxiliaries (1970–) R—To make a study of the courses for training nursing auxiliaries in the countries of Middle and South America and of the work carried out by the auxiliaries; to stimulate trials of new techniques for training, and assist with programmes for training instructors.

6320 Postbasic courses in nursing (1973–) R—To adapt postbasic nursing courses in Latin America to regional and local requirements for staff for nursing education and nursing services.

6400 Sanitary engineering education, interzone (1964–) PR—To assist countries of the Region in developing their institutions for the training of sanitary engineers and in revising curricula.
6500 Veterinary medical education (1966- ) R—To strengthen the teaching of veterinary medicine, particularly as regards the preventive medicine and public health aspects.

6507 Seminars on veterinary medical education (1972- ) R—To develop a scheme for improving teaching methods with a view to speeding up the training of veterinarians and animal health assistants.

6600 Dental education, interzone (1963- ) PR—To cooperate with university authorities of countries of the Region in improving teaching in schools of dentistry.

6608 Training of auxiliary dental personnel (1965- ) PR—To promote the training of various kinds of dental auxiliary personnel and their use for work for which a fully qualified dentist is not necessary, so as to permit the extension of dental services to the population and reduce their cost.

6611 Communications and information in dental sciences (1973- ) PH—To provide governments, teaching institutions, and professional dental staff in Member countries with ready access to information on modern concepts and techniques in dentistry.

6700 Biostatistical education (1952- ) UNDP—To improve vital and health statistics in the countries of the Region by training technical and professional personnel in specialized centres.

6707 Latin American Centre for Classification of Diseases (1955- ) R—To study problems of medical certification of causes of death; to give training on classification of causes of death in accordance with the International Classification of Diseases; and to assist in revising the Classification.

6708 Training programme in hospital statistics (1961- ) PR—To promote the development of courses in medical records and hospital statistics.
SOUTH-EAST ASIA REGION

Bangladesh

0001 Malaria eradication programme (1972–73) R—Following a visit by 2 consultants members of the regional assessment team on malaria eradication at the end of 1972, a consultant malariologist took up a three-month assignment in October 1973 to assist in the preparation of a course in malaria epidemiology and to review the eradication strategy. Supplies and equipment were also provided.

0002 Tuberculosis control (1972–73) R—To develop a national tuberculosis control programme as an integral part of the basic health services, formulate and implement a plan of operation, train key personnel, and prepare suitable methods for assessment of the programme.

0003 Smallpox eradication (1972–76) R VS

0004 Leprosy control (1973–75) R—To formulate and implement a national leprosy control programme as an integral part of the general health services.

0005 Strengthening of epidemiological services (1972–73) R—To implement measures for the epidemiological surveillance and control of infectious diseases of public health importance.

0006 Community water supply and sanitation (1972–74) R—To plan and organize a national environmental health programme and expand existing environmental health measures, particularly those for community water supply.

0007 Occupational health (Oct.–Nov. 1973) R—A consultant assessed the occupational health situation and made recommendations on the improvement of services.

0008 Organization of health services and planning (1972–73) R—To set up an organization for health planning in the Ministry of Health, train personnel in health planning and develop a health information system; to plan integrated rural health services including a referral system; and to plan health and manpower studies with the aim of improving the delivery of medical care, especially in rural areas.

0009 Pharmaceutical quality control (1972–73) R—A consultant assisted in coordinating requests for supplies and advised on priorities; studied purchase, storage and distribution methods for drugs and other medical supplies and equipment; distributed project supplies received from WHO and other organizations; and advised on pharmaceutical and medical stores management, including relevant legislation. Further assistance is planned.

0010 Family health (1973) R UNFPA—Two consultants (April–July 1973; Oct.–Dec. 1973) reviewed the maternal and child health programme and assisted in the preparation of a plan for its development. Three fellowships were awarded for study in India. Further assistance is planned.

0011 Nursing advisory services and training (1972–74) R—To assess the nursing-midwifery component of the health services, particularly in the rural areas, and to develop nursing education and services.

0012 Venereal disease and treponematosis control (1972–73) R—A consultant (Oct.–Nov. 1972) reviewed the situation and made recommendations regarding diagnosis of venereal diseases and the development of laboratory facilities. Supplies and equipment were also provided. Further assistance is planned.

0013 Blindness survey (Nov.–Dec. 1972; Feb.–March 1973; Aug.–Sept. 1973) R—A consultant paid 3 visits to assist in designing and planning a blindness survey with special reference to the incidence of xerophthalmia. He also assisted with the in-service training of national personnel and the implementation of preventive measures, which included the six-monthly distribution, through the malaria eradication services, of high-potency vitamin A capsules for all preschool children in the country.

0014 Production of rehydration fluids (1972–73) R—To produce rehydration fluid at the Cholera Research Laboratory, Dacca, and to train staff.

0015 Strengthening of rural health services (1972–73) R—To establish and strengthen health programmes for rural areas, including programmes for training professional and auxiliary health workers.

0016 Education in public health (1972–73) R VK—A consultant carried out a survey of departments of preventive and social medicine in the 8 medical colleges in the country and of the teaching of public health at the Postgraduate Institute, Dacca. Supplies and equipment and literature services were provided with financial assistance from DANIDA. Further WHO assistance to the project is planned.

Burma

0006.2 Maternal and child health (1969–75) R UNICEF—To strengthen the departments of paediatrics and obstetrics of major hospitals and improve the teaching in these subjects, especially as regards the preventive aspects; and to improve and expand maternal and child health activities as part of the general health services.

0017 Leprosy control (1960–75) R VL UNICEF—To intensify the leprosy control programme, extend it to cover all endemic areas, and train personnel for the purpose.

In the second phase of this project—which had been started in 1955 to strengthen the then Faculty of Medicine—activities were extended to the development of the School of Preventive and Tropical Medicine, and emphasis was laid on field training of undergraduate and postgraduate students and research training.

At the end of the academic year 1970/71, 11 out of 12 candidates of the School obtained the diploma of preventive and tropical medicine; one became assistant lecturer and subsequently professor of epidemiology. All graduates have obtained jobs in the subject of their training.

A short course on research in epidemiology was introduced in 1971.

Further activities in the development of health manpower will be carried out under project Burma 0100—Education and training of health manpower.

**0031 Antimalaria operations** (1957-66; 1968- ) R—To undertake antimalaria operations throughout the country in progressive stages, with the ultimate goal of eradicating the disease.

**0044.2 Strengthening of health services (epidemiology)** (1968-77) UNDP—To strengthen the Epidemiological Unit in the Directorate of Health Services; obtain, through epidemiological surveillance, information on trends in important communicable diseases in order to plan control measures; and develop public health laboratory services to support this work.

**0056.2 Nursing advisory services** (1959-66; 1969- ) R—To develop nursing and midwifery education and services.

**0065 Tuberculosis control** (1964-75) UNDP-UNICEF—To develop community-oriented integrated tuberculosis control services in all divisions of the country.

**0066 Health education** (1966; 1968; 1971-76) R—To develop health education services and to give training in health education to teachers and those holding key posts in the school organization and in the general health services.


**0074 Strengthening of laboratory services** (1967-77) R UNICEF—To strengthen laboratory services and promote their development at central and peripheral levels. The project is coordinated with project Burma 0044.2 (see above).


**0078 Plague control** (1966; 1970-75) R—To identify the factors responsible for the persistence of foci of plague and train personnel in the epidemiological investigation and control of the disease.

**0079 Medical education** (1964-73) R—To improve undergraduate and postgraduate medical education, train teaching staff, develop curricula in keeping with modern concepts, and initiate and promote research at the Institutes of Medicine.

Between 1958 and 1964 WHO had provided consultants for the departments of anatomy and pathology of the Institute of Medicine, Mandalay, and supplies for medical education under project Burma 0059.

From December 1964 short-term consultants in medical and paediatric education, tropical medicine and public health, general surgery, obstetrics and gynaecology, clinical pathology and statistics, and visiting professors of pathology, anatomy, pharmacology, and paediatrics reviewed the existing facilities for medical education in the institutes in Rangoon and Mandalay and the Institute of Medicine II, established in 1963 in Mingaladon, near Rangoon; advised on the development of health manpower, the organization of the various departments of the new Institute and its teaching hospital—the Defense Services General Hospital—and on the development of the curricula, the training of national staff and the promotion of postgraduate studies and research at the 3 institutes. Specific recommendations related to the provision of more teaching staff and the greater use of staff of the Burma School of Preventive and Tropical Medicine (in project Burma 0028 above) the strengthening of general and specialized departments (e.g. for eye, ear, nose and throat patients, burn injury and septic cases), their accommodation and apparatus and laboratory facilities, as well as to long-term plans for a new teaching hospital complex for Rangoon and a medical institute at Myitkyina or Taunggyi. The consultant who acted as visiting professor of pathology at the Institute of Medicine II (March 1966-Jan. 1967) also collaborated in the initiation of a research project on cytological examination as a basis for an early diagnosis service for cancer of the uterus. The medical officer who acted as visiting professor of pharmacology at the same Institute (18 Dec. 1967-31 Dec. 1970), as well as bringing up to date the programme of undergraduate studies (a new curriculum was introduced in 1969) and preparing criteria for postgraduate training, started research activities that included studies of snake venom and local plants, and breeding of laboratory animals.

**0087 Filariasis control** (1969-77) R

**0088 Rehabilitation of the handicapped** (1969- ) R—To expand medical rehabilitation services at the central and peripheral levels and to improve workshop facilities for the manufacture of orthopaedic and prosthetic appliances.

**0089 Institute of Technology, Rangoon** (1969-75) UNDP—To teach sanitary engineering to undergraduate and graduate civil engineering students.

**0091 Radiation safety** (1970-78) R—To strengthen the radiation protection services in the health institutions.

**0093 Nutrition services** (1972- ) R—To strengthen the nutrition work of the health services by organizing in-service orientation courses for medical staff and providing key personnel with specialized training.

**0094 Strengthening of health services** (1969- ) R UNICEF—To strengthen the health services, placing emphasis on development of comprehensive services for health care, to implement a national health plan, and to train health personnel, especially auxiliaries, for basic health services.

**0095 Burma Medical Research Institute** (1972-73) R—A consultant (Nov. 1972-Feb. 1973) drew up plans for studies of various population groups and of food intakes. Another consultant (Dec. 1972-Feb. 1973) collaborated with staff of the Institute on plans for a study of physical fitness and working capacity to be coordinated with the other studies. Supplies and equipment for the studies were provided by WHO. Further assistance is planned.

**0096 Quality control of biological and pharmaceutical products** (Sept.-Oct. 1973) R—A consultant gave technical guidance to analysts at the quality control unit of the Burma Pharmaceutical Industry, Rangoon. Further assistance is planned.
Burma (continued)

0097 Maintenance and repair workshops for health equipment (1971– ) R UNICEF—To establish workshops and train staff in the maintenance and repair of equipment used in health institutions.

0098 Virus diseases (1972– ) R—To make epidemiological studies of virus diseases, carry out control measures, and train the necessary staff.

0099 Mental health training and services (1973– ) R—To organize mental health services and train staff.

0100 Education and training of health manpower (1972–77) UNDP—To strengthen undergraduate and postgraduate education in the 3 medical institutes, as well as the training of nurses, midwives and health visitors and of various categories of auxiliary health personnel; and to expand and strengthen the rural health demonstration area, Hlegu, which will be used for the training of all members of the health team.

India

0053 Tuberculosis Chemotherapy Centre, Madras (1955– ) R UNDP—To undertake controlled clinical trials to find simple, effective and inexpensive methods of tuberculosis control through domiciliary chemotherapy of ambulant patients, and to carry out related research.

0081 Leprosy control (national programme) (1961– ) R UNICEF—To develop a leprosy control programme and train the necessary staff.

0103 National tuberculosis programme (1956– ) UNDP UNICEF—To develop a national tuberculosis programme through implementing control programmes in each district in accordance with the results obtained in model control programmes, epidemiological findings and operational research; train health workers for the district tuberculosis programmes; and develop methods and procedures for assessment of the programme.

0108 Health education: Assistance to states (1971– ) UNDP—To set up and develop state health education bureaux, and to coordinate the health education activities of the general health services with those of the family planning programme or integrate them into the programme.


0114 Paediatric education (1958–77) R UNICEF—To expand and improve undergraduate and postgraduate teaching of paediatrics in certain medical colleges and develop courses for various categories of personnel in paediatric departments.

0121 Indian Council of Medical Research (statistics) (1962– ) R—To strengthen the Council's statistical unit and train staff for medical research.

A course on statistical methods in medicine and public health held at the Indian Council of Medical Research, New Delhi (4–23 Dec. 1972) was attended by 20 biostatisticians attached to medical colleges and research institutions in the country. A WHO consultant (Nov. 1972-Jan. 1973) collaborated in the preparation of the course and subsequent assessment of the results. Two faculty members also participated as temporary advisers.

0136.1 Postbasic nursing education, Uttar Pradesh (1962; 1972–77) R; 0136.2 Gujarat (1963–77) R—To expand postbasic nursing education, with initial emphasis on postbasic degree programmes offering professional specialization in teaching, administration, public health or one of the clinical specialties.

0136.3 Postbasic nursing education, Punjab (1964–72) R—To expand postbasic nursing education, with initial emphasis on postbasic degree programmes offering professional specialization in teaching, administration, public health or one of the clinical specialties. Provided—5 nurse educators, 3 short-term consultants, fellowships, and supplies and equipment.

A Board of Nursing Studies was established in the Faculty of Medicine of the University of Punjab in 1964, when syllabus and regulations governing the two-year postbasic degree programme in nursing education and administration were prepared. Emphasis was placed on basic nursing practice and physical sciences, disease prevention and health protection. In 1966 the College of Nursing, Chandigarh became a recognized institution for such postbasic studies. In 1967 a degree programme in maternal and child health nursing was started. Short-term refresher courses in paediatric nursing were also given at the College with the assistance of a WHO nurse educator. In 1968 the state Government recognized the postbasic (BSc) degree retroactively to December 1964 as an essential preliminary to recognition by the Indian Nursing Council. The College now provides advice in nursing education to institutions throughout the state and serves as a centre for studies and field practice for other colleges in India and abroad.

Curriculum evaluation and review were a major aspect of the project, and objectives for basic, postbasic and master's degree programmes were developed. Fellowships were awarded for advanced studies in nursing administration as well as education; the supplies and equipment provided by WHO included textbooks.

0136.5 Postbasic nursing education, Tamil Nadu (1964–77) R; 0136.8 Maharashtra (1960–77) R—To expand postbasic nursing education, with initial emphasis on postbasic degree programmes offering professional specialization in teaching, administration, public health or one of the clinical specialties.

0153 Malaria eradication programme (1958– ) R


0176 Central Public Health Engineering Research Institute, Nagpur (1961– ) R—To develop the Institute as a major research centre for environmental sanitation problems, coordinate research programmes and train research workers.

0181 Applied nutrition programme (1964–75) R UNICEF (FAO)—To expand and improve the health component of the applied nutrition programme assisted by FAO, UNICEF and WHO.

0182 Strengthening of health services (epidemiology) (1963–74) UNDP—To establish or improve health intelligence units in state health directorates; to train staff in epidemiology, health statistics, microbiology and communicable disease control; and to develop the National Institute of Communicable Diseases, Delhi.

0185.2 and 3 Strengthening of health services, Punjab and Haryana (1967–74) R UNICEF—To strengthen the health services at state, district and local levels, giving particular attention to the provision of training programmes for health staff and supervision of auxiliary staff by professional staff, and to operational studies.
0187 Training of radiological technicians (1967-74) R—To raise the standard of training of radiological technicians at the Postgraduate Institute of Medical Education and Research, Chandigarh.

0188 Strengthening of laboratory services (1965- ) R—To strengthen health laboratory services and improve the training of laboratory technicians.

0190 Training in health education (1968- ) R—To establish and develop 3 postgraduate health education training centres with rural and urban field practice areas.

0192 Radiation Medicine Centre, Bombay (1963; 1967-77) R—To strengthen the Centre.

0194 Medical rehabilitation (1963-64; 1967; 1969- ) R UNICEF—To expand medical rehabilitation services and establish training schools in the various disciplines.

0197 Occupational health (1964; 1970- ) R—To conduct courses in occupational health and to initiate research projects in specific industries.

0199 School for training of technicians (1967- ) UNDP—To train technicians in the installation, maintenance and repair of electrical and mechanical equipment used in health institutions.

0208 Improvement of dental education (1966- ) UNDP

0210 Public health engineering education (1967-70; 1972- ) UNDP—To train sanitary engineers and develop advanced courses in the design of community water supply programmes.

0212.1 Nursing administration, Chandigarh (1968-73) R; 0212.2 Gujarat (1968-73) R; 0212.3 Bangalore (Mysore) (1973- ) R—To develop nursing administration in teaching hospitals and promote in-service training and coordination of nursing services and nursing education.

0214 Virological techniques (1968-69; 1971- ) R—To develop laboratory capacity for the diagnosis and surveillance of virus diseases and establish competence in the production and testing of live poliomyelitis vaccine.

0218 National Institute of Health Administration and Education (1965-75) R UNICEF—To conduct studies in district health administration at Rohitak (Haryana) as a prelude to the promotion and planning of comprehensive health care services at the district level; to formulate research and teaching programmes pertaining to health administration, and to undertake teaching programmes, studies and research in the field of hospital administration.

0221 Seminars and workshops on medical education (1965- ) R—To strengthen medical teaching.

A seminar on medical pedagogy was held in Calcutta in April 1973 with 28 participants from 10 medical colleges in India. They discussed curriculum design, educational technology and evaluation procedures and completed practical exercises. Provided—2 consultants (April 1973), 3 temporary advisers, and the cost of attendance of participants.

0222 Drug laboratory techniques and biological standardization (1967-75) R—To develop the services for the quality control of pharmaceutical and biological preparations and train staff.


0226 Water pollution (1969; 1971- ) R—To provide technical advice on organizational and other matters related to the abatement and control of water pollution.

0232 Course in hospital physics (1967- ) R—To train hospital physicists.

0233 Smallpox eradication (1967-76) R—To develop the eradication programme, carry out periodic assessments, and train staff.

0234 Training of medical teachers (1968; 1971- ) UNDP—To provide further training to medical teachers.

0238 Cancer control pilot project, Tamil Nadu (1968- ) R VG

A seminar on medical pedagogy was held in Calcutta in April 1974 with 28 participants from 10 medical colleges in India. They discussed curriculum design, educational technology and evaluation procedures and completed practical exercises. Provided—2 consultants (April 1973), 3 temporary advisers, and the cost of attendance of participants.

0255 Strengthening of health statistical services (1970; 1972- ) R—To strengthen health intelligence units in state health departments and to train statistical staff.

0257 Physical therapy school, Baroda (1968- ) R—To train physical therapists to degree standard at the school in the S.S.G. Hospital, Baroda.

0259 National Institute of Communicable Diseases, Delhi (1967- ) R—To strengthen the faculty of the National Institute of Communicable Diseases in order to improve the field training of epidemiologists.


0268 Village water supply (1971-75) R UNICEF—To plan and coordinate the development of community water supplies in rural areas, including the well-drilling programme in areas where hard rocks present special problems and in those where water is scarce; and to train professional and drilling staff.

0269.1 and 3 Nursing in clinical specialties, New Delhi (1972- ) R; 0269.2 Rajasthan (1972- ) R; 0269.4 Mysore (1973- ) R; 0269.5 Maharashtra (1973- ) R—To improve clinical practice in certain nursing specialties.

0270 Control of air pollution (1971- ) R—To study the air pollution problems connected with industrial development and promote a control programme.

0272 Solid wastes disposal (1973-75) R—To study the problem of solid wastes in urban communities and plan solid wastes management.

0274 Health education in schools, including family life education (1971- ) UNFPA—To integrate family life education in school, college and teacher-training curricula, establish and develop a health education programme in the educational system, prepare teachers in health education, and develop teaching aids required for primary, secondary, collegiate and teacher-training institutions.

0275 Strengthening of the teaching of human reproduction, family planning and population dynamics in medical colleges (1971- ) UNFPA—To strengthen teaching and research in the relevant departments of medical colleges.
India (continued)

0276 Strengthening of family planning aspects of nursing administration (1972— ) UNFPA—To strengthen the nursing and midwifery components of health care during the maternity cycle.

0277 Strengthening of the teaching of human reproduction, family planning and population dynamics in nursing and midwifery education (1972— ) UNFPA—To improve the maternal and child health and family planning components of the training of auxiliary nurse/midwives; to strengthen the domiciliary midwifery and public health nursing experience of nursing students in hospital schools of nursing; and to improve the teaching of human reproduction, family planning and population dynamics in teaching institutions for nursing personnel.

0278 Integration of maternal and child health services, including family planning services, into the general health services (1971—75) UNFPA—To plan, organize, operate and evaluate the family health programme as an integral part of the general health services.

A workshop on methodology of in-service training in the integration of child health services, including family planning services, into general health services, was held in New Delhi from 26 to 30 December 1972. The 23 participants were health personnel from various parts of India concerned with the administrative, training and service aspects of the programme for maternal and child health and family planning. Provided—a consultant, a temporary adviser, the services of a nurse educator from a project in another country, and the cost of attendance of participants.

0279 Medical toxicology unit (Oct.—Dec. 1972) R—A consultant assisted in the installation of a gas chromatograph at the Industrial Toxicology Research Centre, Lucknow, and in training staff in the analysis of pesticide residues. Further assistance is planned.

Indonesia

0032 Malaria eradication programme (1955— ) R—To reduce malaria endemicity to the lowest possible level, with the ultimate goal of malaria eradication.

0050 Tuberculosis control (1961—75) R UNICEF—To integrate BCG vaccination without prior tuberculosis testing into the work of the maternal and child health clinics and regency polyclinics; to train staff engaged in case-finding in microscopic sputum examination; and to provide ambulatory treatment.

0060 Laboratory services (1966—77) R UNICEF—To strengthen health laboratory services.

0061 Training in sanitary engineering (1968— ) R—To train sanitary engineers at the Institute of Technology, Bandung.

0062 Medical education (1964— ) R—To develop the teaching programmes of the medical faculties in keeping with national needs and the progress of medical science.

0069 Training of X-ray and electromedical technicians (1966— ) R UNDP—To train technicians and radiographers in the use, maintenance and repair of electromedical equipment.

0071 National community water supply and sanitation (1969— ) R—To plan community water supply, sewerage and storm-water drainage systems, water pollution control and general sanitation work; and to train staff.

0072 Establishment of health centres, Irian Jaya (1970; 1972— ) WI—To develop integrated health services in accordance with the available facilities and resources. Coordination of other health projects in Irian Jaya is effected under the project.

0074 Nursing and midwifery education (1967; 1969—80) R—To strengthen and develop nursing and midwifery education.

0076 Malaria control, Irian Jaya (1970— ) WI

0078 Health education (1968—70; 1973— ) UNDP—To strengthen health education services.

0079 Dental health (1968— ) UNDP—To develop further teaching and training programmes for professional and auxiliary dental personnel, expand dental health services within the framework of comprehensive health services, and explore the feasibility of establishing water fluoridation schemes.

0081 Smallpox eradication (1967—75) R

0083 Vaccine and sera production (1968—74) UNDP UNICEF—To improve methods of producing bacterial and viral vaccines, antitoxins and toxoids; and to develop facilities for the quality control of vaccines and sera.

0084 Nursing education and training, Irian Jaya (1970—73) WI—To strengthen and develop nursing and midwifery education and services. Provided—a nurse educator/administrator (1971—73), a nursing consultant (Jan.—March 1970), fellowships, and supplies and equipment.

The nursing consultant collected information on nursing practice and education programmes and made recommendations on the development of services and education and training in Irian Jaya. The nurse educator/administrator elaborated long-term plans for assistance to teaching centres and institutions providing services. A number of in-service courses and short training programmes, including public health orientation for newly graduated midwives, were organized. Syllabuses were translated and revised.

A manpower survey was completed which showed that there had been an increase in all categories of nursing and midwifery personnel in the period, but that the ratio of professional to auxiliary staff was still too low and that the distribution was uneven.

One nurse returned to service on completion of a 12-month fellowship at the WHO-sponsored Training Centre for Nurses in Wellington, New Zealand, and another nurse started training at the Centre in 1973.

0086 Strengthening of national health services (1969— ) R UNICEF—To plan, coordinate and integrate health services and programmes, standardize and intensify the training programmes for health personnel, and promote studies of public health practice intended to lead to the optimum delivery of health care.

0087 Rehabilitation of hospitals and polyclinics, Irian Jaya (1970—71; 1973— ) WI—To improve facilities in hospitals and polyclinics and to train staff in hospital administration and in selected fields of community health services.

0090 Hazards to man from pesticides (Aug. 1973) R—A consultant assisted in the formulation of legislation on pesticides and the establishment of provincial pesticide protection teams.

Further assistance is planned.

0091 Strengthening of epidemiological services (1969— ) R—To develop epidemiological units at the central and intermediate levels and train the necessary staff.
005 Public health administration (1969-73) R — To develop comprehensive health services, strengthen the medical care services and train health personnel.

007 Water supply and sanitation (1971-76) R — To develop water supply and sewage disposal systems for Male, and an environmental sanitation programme; and to train staff.

009 Training of auxiliary health personnel (1971-73) UNDP — To establish a school for the training of auxiliary health personnel.

010 Malaria control (1972-) R — To control malaria progressively throughout the archipelago with the aim of eventually eradicating the disease and preventing its re-establishment; and to integrate antimalaria activities into the work of the general health services.

Mongolia

001 Strengthening of health services (epidemiology) (1963-73) R — To carry out epidemiological surveys of the prevailing communicable diseases in order to plan practical control measures; to advise on the use of epidemiological methods; and to train personnel. Activities under this project from 1963 to 1965 were described in Official Records No. 147, page 117. Provided since 1965—2 epidemiologists (1965-69 and 1971), a microbiologist/bacteriologist (1965-68), a veterinary public health officer (1965-69), a technical officer (1970-72), 4 consultants on brucellosis (Nov.-Dec. 1967), and 3 consultants in epidemiology (May-July 1971, July-Dec. 1972 and Nov.-Dec. 1972), fellowships and supplies and equipment.

Surveys on communicable diseases, and in particular the zoonoses brucellosis and echinococcosis, were continued, and field trials of Brucella and measles vaccines were conducted. Campaigns were launched against outbreaks of diphtheria and influenza-like disease, and mass vaccination campaigns carried out against diphtheria, pertussis and tetanus, some of the vaccines being supplied by the WHO Regional Office. The WHO epidemiological team also organized surveillance measures and monthly report procedures for dissemination of relevant data and information.
Mongolia

results of investigations; and helped to introduce adequate biochemical methods for diagnostic procedures in selected health centres, and to establish a national hydatid registry and a bacterial strain collection in the State Institute of Hygiene, Epidemiology and Microbiology, Ulan Bator. National production of Brucella vaccine was prepared.

The technical officer, a laboratory technician, assisted in training laboratory personnel, in establishing a laboratory for bacterial respiratory diseases and in organizing preventive measures against these diseases in children.

In cooperation with the State Institute and with the Ministry of Public Health, courses were held on microbiology and basic laboratory diagnosis procedures (Dec. 1966), on clinical features of human brucellosis and its therapy (Dec. 1967), and on epidemiological methods (June 1969). A national seminar on brucellosis was organized for 23 physicians, 22 veterinary workers and 12 other participants (Nov.-Dec. 1967), a refresher course on epidemiology for 14 epidemiologists (Dec. 1967), as well as in-service training for national counterparts and others, including special training on diphtheria control. Further courses and seminars were held in 1970 and 1971.

The consultant in 1971 assisted in a serological monitoring survey in which the Serum Reference Bank in Prague cooperated; following the assessment of effectiveness of the mass vaccination programmes carried out since 1967, and determination of the level of immunity in certain communities, susceptible groups of children were identified and vaccinated. The consultant visited tuberculosis and venereal disease dispensaries and veterinary and public health centres to review surveillance measures. The consultant in 1972 reviewed the child vaccination programmes, and assisted in the organization of trial vaccination against measles in Darchan, as well as in the training of national staff in vaccination techniques.

Assistant is continuing under project Mongolia 0018—Epidemiological services and surveillance (see below).

0002 Public health laboratory services (1964– ) R UNDP UNICEF—To develop the health laboratory services and train personnel in health laboratory work.

0003 Tuberculosis control (1963– ) UNDP—To organize a comprehensive tuberculosis control programme throughout the country.

0004 Maternal and child health services (1965–80) R UNDP UNICEF—To develop the maternal and child health services and establish referral facilities.

0005 Environmental health (community water supply) (1966– ) UNDP—To develop water supplies and sanitation, particularly in the rural areas.

0006 Medical education (1970– ) R—To develop and improve medical education.

0007 Health statistics (1967–75) R—To develop health statistical services and to train personnel.

0008 Nursing services and education (1966; 1968–77) R—To develop schools of nursing, strengthen the training programmes for nursing personnel, and improve nursing services.

0010 Cardiovascular diseases (1967– ) R—To study the epidemiology of certain cardiovascular conditions, particularly rheumatic, hypertensive and ischaemic heart disease, in order to determine further action.

0011 Cancer (1968– ) R—To study the epidemiology, early detection and treatment of cancer.

0012 Strengthening of radiological services (1968–69; 1971–76) R—To train engineering technicians to undertake the repair and maintenance of electromedical equipment; and to promote radiation protection practices in health institutions.

0013 Brucella vaccine production (1970; 1972– ) UNDP—To produce freeze-dried Brucella vaccine and establish laboratory facilities for its testing.


0015 Dental health services (1970; 1972– ) R—To strengthen dental health services, particularly the paediatric stomatology services, train dental health personnel, and study the feasibility of a fluoridation programme.

0016 Quality control of drugs (1971; 1973– ) R—To develop pharmaceutical production and improve the services associated in quality control; and to train staff.

0017 Integrated maternal and child health services (1971–73) R—Six fellowships were awarded for studies in Bulgaria, Poland, Sweden and USSR in the development of integrated services and the establishment of referral systems.

0018 Epidemiological services and surveillance (1972–73) R—A consultant (Aug.-Nov. 1973) assisted in a mass measles vaccination programme following a trial carried out in 1972. Supplies and equipment were also provided, and further assistance is planned.

0019 Education and training (1973) R—Two fellowships were awarded for the training of medical professionals in Bulgaria, Poland and USSR in fields not covered by other projects.

0022 Community health services (1973–80) R—To train physicians in all aspects of community health service and provide for national staff to attend educational meetings.

0027 Rehydration therapy (production of rehydration fluid) (1973–77) R—To produce rehydration fluid and train paediatricians in the practice of oral and parenteral rehydration therapy.

0028 Medical rehabilitation (June-Aug. 1973) R—A consultant assisted in the planning of medical rehabilitation services.

Nepal

0001 Malaria eradication programme (1954– ) R (USAID)

0002 Nursing education and services (1954–74) UNDP UNICEF—To coordinate nursing activities; set up a basic nursing school; organize courses for assistant nurse/midwives; upgrade nursing services in Bir Hospital; improve clinical facilities, and develop public health nursing services that will provide teaching practice for nursing and assistant nurse/midwife students.


0010 Health laboratory services (1967–79) R UNICEF—To develop health laboratory services in order to improve diagnostic services and provide support for an epidemiological unit; and to train personnel.
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Duration</th>
<th>Goal</th>
<th>Relevant Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leprosy control</td>
<td>(1967- )</td>
<td>R-To develop the leprosy control programme and train the necessary personnel.</td>
<td>UNICEF</td>
</tr>
<tr>
<td>Tuberculosis control</td>
<td>(1965- )</td>
<td>R UNICEF-To develop a tuberculosis control programme within the basic health services and train personnel in control methods and techniques.</td>
<td></td>
</tr>
<tr>
<td>Health education</td>
<td>(1967-77)</td>
<td>R-To plan health education in the basic health services and specialized projects, and to strengthen health education in schools and teacher-training institutions.</td>
<td></td>
</tr>
<tr>
<td>Development of health services</td>
<td>(1968; 1970- )</td>
<td>R-To strengthen the development of the basic health services in conformity with the Government's development plans, placing emphasis on the training of all categories of health workers, with the object of eventually integrating a comprehensive health care service; to conduct health surveys, health manpower surveys and relevant studies; and to coordinate associated projects operating in the country.</td>
<td></td>
</tr>
<tr>
<td>Water supply and sewerage in Greater Kathmandu and Bhaktapur</td>
<td>(1969- )</td>
<td>UNDP-To improve water supply and sewerage in Greater Kathmandu and Bhaktapur.</td>
<td></td>
</tr>
<tr>
<td>Community water supply and sanitation</td>
<td>(1971- )</td>
<td>R UNICEF-To plan, organize and implement a national environmental health programme, including community water supply and waste disposal, and to strengthen the Sanitary Engineering Bureau of the Department of Irrigation and Water Supply of the Ministry of Irrigation and Power.</td>
<td></td>
</tr>
<tr>
<td>Medical stores management</td>
<td>(Nov. 1972-Sept. 1973)</td>
<td>R-A consultant assisted in the organization of a medical stores system and the training of staff; made recommendations on proposed storage by zones and on integration of malaria, smallpox and family planning programme stores systems into that for public health stores; and supervised the production and quality control of infusion fluid. Further assistance is planned.</td>
<td></td>
</tr>
<tr>
<td>Prevention of rabies</td>
<td>(Nov. 1972-Feb. 1973)</td>
<td>R-Two consultants—one an expert on rabies vaccine and the other a specialist in small laboratory animals—assisted in determining the design and other requirements of a project for the prevention of rabies. Further assistance is planned.</td>
<td></td>
</tr>
<tr>
<td>Leprosy control</td>
<td>(1967- )</td>
<td>R-To assess the leprosy problem, develop an integrated control programme and train staff.</td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>(1955-56; 1960-61; 1963; 1966-67; 1969- )</td>
<td>R-To develop mental health care within the framework of comprehensive health services; to strengthen the teaching of mental health in the undergraduate medical curriculum; to prepare postgraduate teaching programmes; and to train various categories of health personnel.</td>
<td></td>
</tr>
<tr>
<td>Health statistics</td>
<td>(1957-61; 1964-73)</td>
<td>UNDP-To establish an information system geared to the requirements of national health planning and to monitoring the performance of the health services, improve the processing of data on health manpower, and train staff.</td>
<td></td>
</tr>
<tr>
<td>Medical education</td>
<td>(1959; 1963- )</td>
<td>R-To develop undergraduate and postgraduate teaching programmes and provide training for teachers at the 2 faculties of medicine.</td>
<td></td>
</tr>
<tr>
<td>Nursing advisory services</td>
<td>(1960-67; 1969-75)</td>
<td>R-To develop nursing and midwifery education and services.</td>
<td></td>
</tr>
<tr>
<td>Filarasis control</td>
<td>(1959; 1961; 1963; 1965-71; 1973)</td>
<td>UNDP-This project was combined with the vector control project Sri Lanka 0103 (see below) in 1972 so that the activities could be extended to a broader vector control programme. Fellowships were provided in 1973.</td>
<td></td>
</tr>
<tr>
<td>Malaria eradication programme</td>
<td>(1960- )</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Medical rehabilitation</td>
<td>(1968-70; 1972- )</td>
<td>R-To improve the rehabilitation services and train the necessary staff.</td>
<td></td>
</tr>
<tr>
<td>Community water supply and sanitation</td>
<td>(1963-77)</td>
<td>R UNICEF-To develop programmes of water supply, sewage disposal, storm-water drainage and general sanitation, and to train personnel.</td>
<td></td>
</tr>
<tr>
<td>Strengthening of laboratory services</td>
<td>(1966-77)</td>
<td>R-To develop specialized diagnostic and reference services in support of communicable disease prevention and control, and to train staff.</td>
<td></td>
</tr>
<tr>
<td>Radiation health</td>
<td>(1969-75)</td>
<td>R-To strengthen radiation protection services and train staff.</td>
<td></td>
</tr>
<tr>
<td>Development of health education</td>
<td>(1966-67; 1969-75)</td>
<td>R-To strengthen health education services, including health education in schools, and evaluate activities; and to strengthen health education teaching in medical colleges, teacher-training institutions and other training centres.</td>
<td></td>
</tr>
<tr>
<td>Tuberculosis control</td>
<td>(1966-74)</td>
<td>R UNICEF-To carry out a community-oriented tuberculosis control programme in all provinces.</td>
<td></td>
</tr>
<tr>
<td>Quality control of biological and pharmaceutical products</td>
<td>(1966-67; 1971- )</td>
<td>R-To strengthen the quality control of pharmaceutical and biological preparations and to train staff.</td>
<td></td>
</tr>
<tr>
<td>Strengthening of epidemiological services</td>
<td>(1967; 1970-76)</td>
<td>R-To strengthen the epidemiological services, including surveillance services, and train personnel.</td>
<td></td>
</tr>
<tr>
<td>Occupational health and industrial hygiene</td>
<td>(1968- )</td>
<td>R-To control health hazards in industry.</td>
<td></td>
</tr>
<tr>
<td>Port health services</td>
<td>(1969-70; 1972-75)</td>
<td>R-To strengthen port health services.</td>
<td></td>
</tr>
<tr>
<td>Public health nutrition</td>
<td>(1969- )</td>
<td>R-To carry out a pilot project for the control of nutritional anaemia.</td>
<td></td>
</tr>
<tr>
<td>Dental health</td>
<td>(1970-75)</td>
<td>R-To develop training programmes for dental health personnel and expand dental health services as part of the general health services.</td>
<td></td>
</tr>
<tr>
<td>National health planning</td>
<td>(1970-75)</td>
<td>R-To establish and strengthen a national health planning unit in the Ministry of Health and train health personnel in health planning.</td>
<td></td>
</tr>
<tr>
<td>Veterinary public health (zoonesis control)</td>
<td>(1972-73)</td>
<td>R-Following the provision of supplies and equipment in 1972, a consultant (Oct.-Dec. 1973) assessed the capacity of the laboratory at Peradeniya to produce chick-embryo rabies vaccine, drew up a plan for the development of zoonoses control services and assisted in the training of staff in vaccine production and potency testing. Further assistance is planned.</td>
<td></td>
</tr>
<tr>
<td>Health manpower study</td>
<td>(1971- )</td>
<td>UNFPA-To make a study of the work of Ministry of Health staff providing health care to rural communities as part of family health services; and to carry out a national study of health manpower.</td>
<td></td>
</tr>
<tr>
<td>Vector control</td>
<td>(1972- )</td>
<td>UNDP-To carry out studies of arthropod vectors of diseases, and control measures including larviciding, environmental sanitation and health education; and to control insect nuisances in areas important for tourism.</td>
<td></td>
</tr>
</tbody>
</table>
Sri Lanka (continued)

0104 Health education in family health (1971– ) UNFPA (UNESCO)—To promote family health through health education.

0105 Family health (1971–76) UNFPA—To promote family health, in particular maternal and child health and family planning, as an integral part of the general health services.

0106 Strengthening of nursing and midwifery education (1972– ) UNFPA—To strengthen the nursing and midwifery education provided in the 8 basic schools of nursing, the Mulleriyawa affiliation school, and the postbasic school of nursing in Colombo, with emphasis on public health and midwifery and using reference material in the local languages.

Thailand

0037 Vital and health statistics (1957–60; 1968–69; 1971– ) R—To develop a coordinated health statistics system and to train the staff required for this purpose and for the development of medical records offices.

0057 Faculty of Tropical Medicine (1959; 1961–64; 1967–73) R—To strengthen the Faculty of Tropical Medicine of Mahidol University, Bangkok. Provided—10 consultants in epidemiology, parasitology, entomology, clinical tropical medicine and other subjects, 18 fellowships for training within and outside the Region, and supplies and equipment.

Following the establishment of the Faculty and the organization of the curriculum, a six-month diploma course in tropical medicine and hygiene was started in 1960. The development of the Faculty was planned in 3 stages: first, building and starting teaching and research (1960–63); then development of the full range of teaching and clinical, laboratory and field research (1963–68); and finally, full operation. It is providing postgraduate training and is considered fully capable of doing so independently. Attention is now being given to the establishment of new faculties at the Prince of Songkhla and Khon Kaen Universities, and assistance is planned under a separate project.

0059 Epidemiology (1966– ) R—To organize and strengthen a national epidemiological service (including surveillance activities), undertake studies of specific health problems and train personnel.

0065 Malaria eradication programme (1962– ) R

0066 Food control administration (1964; 1971–76) R—To establish a national food control administration in the Department of Medical Sciences, Ministry of Public Health; and to train staff in food control.

0070 Vectorborne disease control (1963–68; 1970– ) R—To train staff in medical entomology and vectorborne disease control; and to continue the work of the Aedes Research Unit, Bangkok (see project Interregional 0306).

0071 School for Medical Radiography, Bangkok (1965–72) R UNDP—To train radiographers. Provided—2 radiography tutors, fellowships, and supplies and equipment.

The first radiography tutor (1965–68) organized refresher courses at the School for Radiological Technology, Siriraj for staff already serving as X-ray operators at Siriraj Hospital and 9 other hospitals in Bangkok in 1965 and 1966, and specialized and diploma courses in X-ray technology started in 1966. His detailed assessment of radiography services in Thailand, submitted in 1968, led to the establishment of a school within the Ramathibodi Hospital, Bangkok—then almost completed—to train 30 students annually from 1969 in a two-year course following upon basic education. Training was also given in radiation protection. The second tutor (1968–72) assisted in the elaboration of the curriculum and all other preparations for the two-year course, drafting of rules and allocation of responsibilities for the new school, and training and technological guidance to personnel operating equipment in the Department of Radiodiagnosis when Ramathibodi Hospital opened. Thirty candidates were selected for training, which began in July 1969. Arrangements were made for practical training in several other Bangkok hospitals in 1970. In 1971, graduates of the first course all found suitable posts. For the third course, the ratio of candidates from provincial hospitals rose to 1:2. For the fourth it became 2:3. The return of two national tutors from Colombo Plan fellowships in New Zealand, and of other staff of the Division of Radiology, permitted further improvements in training.

The school has produced double the planned number of graduates. From 11 radiographers in Thailand in 1968, numbers had risen to 109 by the end of 1972, with 162 in training. At the current rate it is expected that by 1981 all X-ray units will be operated by national radiographers.

0075 Strengthening of laboratory services (1968–77) R—To organize national health laboratory services and strengthen the teaching of laboratory sciences and training in medical laboratory technology.

0079 Quality control of drugs (1970–76) R—To strengthen legislation and laboratory competence in the quality control of pharmaceutical preparations and train drug analysts and drug inspectors.

0082 Venerable disease control (1967–74) R—To control venereal diseases and train staff in clinical and laboratory procedures.

0086 Dental health (1967–75) R—To improve the education of professional and auxiliary dental staff, and to strengthen dental services.

0089 Nursing education and services (1968– ) R—To study nursing needs and resources, strengthen nursing services and education, develop university-level courses for nurses and organize and conduct studies related to nursing services and education.

0090 Community water supply, drainage, sewerage and pollution control (1969–76) UNDP UNICEF—To plan, organize and administer a national environmental health programme, including the extension of community water supplies, and to train personnel.

0093 Medical rehabilitation (1968– ) R—To develop rehabilitation services in certain hospitals in the provinces and in Bangkok and to train the necessary staff.

0095 Education in public health (1968– ) R—To develop the teaching programmes of the Faculty of Public Health, Mahidol University, Bangkok.

0097 Medical education and training (1971– ) R—To develop the teaching and training programmes of the medical faculties at Chiangmai, Chulalongkorn and Mahidol Universities and the Faculty of Postgraduate Studies at Mahidol University, and to plan the medical faculty for the Prince of Songkhla University.

0098 Health planning and administration (1970– ) R—To strengthen and improve national health planning and health administration, with primary emphasis on the phased integration of disease-control and special health programmes, eventually leading to the development of a comprehensive health care service.
0105 Production of biologicals (1971-73) R—To develop the production of sera and vaccines and their testing, and to prepare national standards and reference reagents for vaccines and sera. Provided—a consultant, and fellowships.

Following a visit by a consultant from the Lister Institute, under project SEARO 0117, who reviewed progress in diphtheria/pertussis/tetanus vaccine production, another consultant (Oct. 1972-Jan. 1973) assisted, in collaboration with the Department of Medical Sciences and the Government Pharmaceutical Organization, in preparing plans for the organization of biological standardization and quality control. She also assessed the needs for production of snake antivenins and their standardization and control.

0106 Improvement in anaesthestiology (1971-73) R—Four consultants (Oct. 1971-Jan. 1972; Feb.-May 1972; Jan.-March 1973; Oct.-Dec. 1973) assisted the Faculty of Medicine and Siriraj Hospital, Mahidol University, Bangkok, in planning the development of a national training centre for anaesthesiology, improving curricula for anaesthetists and nurse-anaesthetists, and determining staffing and equipment requirements, as part of a long-term plan drawn up in collaboration with the WHO-supported Anaesthesiology Centre in Copenhagen, where some Thai staff had been trained since 1950. A fellowship and supplies and equipment were also provided.

The possibility of further assistance in collaboration with DANIDA is under discussion.

0107 National Institute of Dermatology, Bangkok (1972-73) R—To develop the Institute in order to provide facilities for diagnosis, treatment, research and training.

0108 Faculty of Dentistry, Chiangmai (1971-73) R—To establish a new school of dentistry as part of Mahidol University and to train staff of the Chiangmai Medical College.

0109 School for Medical Physicists, Bangkok (1971-73) UNDP—To train medical physicists. Provided—a medical physicist, fellowships, and supplies and equipment.

The medical physicist (Jan. 1971-Jan. 1973) assisted in the establishment of the School and its curricula, and made recommendations on facilities for teaching and practical work and participated in teaching programmes. When the project started there were 7 medical physicists in 3 hospitals in Thailand: at the end of 1972 there were 22 in 7 hospitals. New premises with air-conditioned classrooms and modern teaching aids, a laboratory and staff facilities were made available. In collaboration with the Thai Atomic Energy for Peace Establishment, the Thai Radiation Protection Services, the Faculty of Science of Mahidol University and the Faculty of Engineering of Chulalongkorn University, a BSc course was introduced, and an annual MSC course for 6 candidates was expected to be enlarged to accommodate candidates from neighbouring countries. All the objectives of the plan of operations were thus achieved, and well-qualified national staff are available to conduct the courses.

0114 Role and functions of nursing and midwifery personnel in family planning services (1973) UNFPA—To develop methods of evaluating nursing and midwifery functions, including family planning aspects. Provided—the services of a nurse consultant assigned to the Regional Office, and supplies and equipment.

Activities under this project have been suspended following a request for transfer of assistance to project Thailand 0130 for accelerated development of maternal and child health and family planning services (see below).

0115 Teaching of human reproduction, family planning and population dynamics in medical schools (1970- ) UNFPA—To strengthen teaching and research in the medical school departments involved in the teaching of human reproduction.

0117 Faculty of Veterinary Sciences (Nov. 1972-Feb. 1973) R—A consultant assisted in the development of food microbiology studies at the Faculty, and made recommendations on microbiology courses coordinated with the Department of Bacteriology and the Faculty of Science, and on food hygiene studies for third-year students. Further assistance is planned.

0123 National laboratory animal centre (Feb.-April 1973) UNDP—A consultant assisted in drawing up plans for the laboratory premises and technical specifications and reviewed the financial estimates and plan of action. Further assistance is planned.

0125 National Institute of Food and Nutrition, Bangkok (1973- ) UNDP—To strengthen the Institute, and to improve medical training and research in nutritional development.

0126 Strengthening of the Department of Sanitary Engineering, Chulalongkorn University (Nov. 1973- ) UNDP—A consultant was assigned to assist the Department in the preparation of a course in environmental planning for the sanitary engineering students.

0127 Bangkok municipality family planning field worker project (1973-75) UNFPA—To strengthen and expand family planning services as an integral part of general maternal and child health services; to increase motivation for smaller families, in particular using field workers; and to train the necessary personnel.

0128 Training and increased mobility for health personnel in the national family planning project (1973-75) UNFPA—UNICEF—To strengthen maternal and child health and family planning services by training staff and increasing their mobility, particularly in rural areas.

0129 Expanded sterilization project (1973-75) UNFPA—To strengthen maternal and child health and family planning services by provision of adequate services to meet the demand for voluntary sterilization.

0130 Accelerated development of maternal and child health and family planning services (1973-75) UNFPA UNICEF—To strengthen maternal and child health and family planning services, to improve family health as a whole, and to demonstrate the feasibility of delivering family planning services effectively.

SEARO

0007 Assessment team on malaria eradication (1959-61; 1963- ) R—To make an independent appraisal of the status of malaria eradication and of any special aspects of the eradication programme in countries of the Region.

0030 Smallpox eradication and epidemiological advisory team (1962-77) R VS—To assist the countries of the Region in the eradication of smallpox, in the development of epidemiological services and in training.

0038.2 Production of freeze-dried smallpox vaccine (1967-74) R—To assist countries of the Region with the production of freeze-dried smallpox vaccine.

0042.2 Radiation protection (1968-77) R—To train personnel concerned with the use of ionizing radiation and promote the improvement of measures in health institutions to guard against the harmful effects of radiation.

0064 Community water supply and sanitation (1965- ) R VW—To assist countries of the Region in developing urban and rural community water supply and sanitation programmes.
0094.2 External cross-checking of blood films (1968–77) R — To develop and strengthen facilities in the countries of the Region for independent cross-checking of blood films from malaria eradication and control programmes.

0096.2 Regional health manpower development (1969– ) UNDP — To assist in developing medical education at all levels and adjusting teaching and training programmes to the needs of the countries of the Region and to the progress of medical science, train medical educators and promote intercountry exchange of experience in educational matters.

0097 Nutrition training and advisory services (1963–75) R UNICEF — To assist with the training of medical personnel in nutrition, and to advise on public health measures in nutrition.

0102 Asian Institute for Economic Development and Planning (1964– ) R (ECAFE) — To assist the faculty of the Institute with the health component of training and research.

0104 Organization and administration of hospital and medical care services (1968– ) R — To assist in the development of regionalized health services, in the organization of systems of medical care, in hospital administration, and in elaborating uniform records systems for health centres and hospitals.

A discussion group meeting on medical care was held at the Regional Office (18–20 April 1973). The 15 participants—health administrators and planners from 8 countries in the Region— formulated guidelines for the strengthening of comprehensive health services, and especially medical care. Provided—2 consultants, a temporary adviser, a staff member from headquarters who assisted in the planning, conduct and evaluation of the meeting, and the cost of attendance of the participants.

A seminar on functional programming of hospital facilities in relation to basic health services was held in Bandung, Indonesia (26–30 Nov. 1973), with 23 participants from 7 countries of the Region. Provided—3 consultants, 3 temporary advisers, the services of staff from the Regional Office, and the cost of attendance of participants.

0113 Tuberculosis training and evaluation team (1967–77) R — To provide training in the operations and techniques of national tuberculosis control; assist in the operational assessment and evaluation of integrated national tuberculosis control programmes in the Region; and provide practical assistance to national tuberculosis programmes as required.

0114.4 Seminar on Malaria Epidemiology, Prabudhabat, Thailand (21 Feb.–2 March 1973) R — To exchange information on the changing epidemiological patterns of malaria in the Region. The Seminar was held at the Malaria Eradication Training Centre in Prabudhabat and had 19 participants from 7 countries in the Region. Provided—a temporary adviser, the services of staff of the Regional Office and the malaria eradication project Thailand 0065, and the cost of attendance of participants.

0116 Intercountry nursing meetings (1967; 1969; 1972) R — To hold biennial meetings for the purpose of studying problems of nursing that are of interest to all countries of the Region.

Following the nursing conferences in Bangkok (1967) and New Delhi (project SEARO 0116.2, 1969), a meeting on the role of operational studies in health services and education for these services, postponed in 1971, was held in Bangkok from 12 to 21 December 1972. There were 22 participants from 6 countries of the Region—14 doctors and 8 nurses, with senior administrative, educational or research posts; 3 observers—2 from the Rockefeller Foundation and 1 from UNICEF—also attended.

Provided—2 consultants, 3 temporary advisers, the services of regional office and project staff, and the cost of attendance of participants.

Further assistance is planned.


0128 Training courses in the management of infectious-disease hospitals (1967– ) R — To assist in improving infectious-disease hospitals so that they may provide adequate facilities for diagnosis and treatment, and for training.


The first 2 workshops held under this project in 1967 and 1968 were reported in Official Records No. 180, page 124.

A third workshop, on health education in schools, was held in Bangkok (16–27 Nov. 1970) with 28 participants from ministries of health and of education in 6 countries of the Region and representatives from UNICEF, UNESCO, FAO and ECAFE. Provided—3 consultants, the services of regional office and project staff, and the cost of attendance of participants.

The fourth workshop, on field training in health education, was held at the Regional Office (23 Oct.–4 Nov. 1972) with 20 participants from the countries of the Region, 5 temporary advisers, and representatives of UNICEF, UNESCO and USAID.

The fifth and last workshop, on the role of social and cultural factors in planning and programming for infant health care, was held in Kathmandu (25 Sept.–2 Oct. 1973), with participants from countries of the Region.

0138 Seminars and training courses in leprosy control methodology (1966; 1969–70; 1973–74) R — To review, and acquaint leprosy control workers with, developments in methods of control and assessment of programmes and in procedures for integration of leprosy control into the general health services.

An intercountry leprosy training course was held in Mandalay, Burma (22 Oct.–17 Nov. 1973), with 28 participants from 7 countries of the Region. Provided—2 consultants, the services of a staff member from headquarters, and the cost of attendance of 27 participants.

0139 Short courses for nurses and other health personnel (1967– ) R UNICEF — To assist in conducting short courses for nurses and other health personnel in order to acquaint them with new concepts and skills, particularly as regards patient care and family health, and in preparing reference and teaching materials; and to assist countries in areas of nursing services and education that require study.

0143 Pharmaceutical and medical stores management (1969–73) R — Consultants studied methods employed by the Governments of Nepal (March–June 1969) and Indonesia (Aug.–Nov. 1973) in the purchase, storage and distribution of drugs and medical supplies and equipment, and advised on medical stores service development, including training aspects. The later consultant also visited Sri Lanka for 1 month to follow up a similar assignment carried out in that country in 1965. Further assistance is planned.

0144 Rehydration therapy (1967; 1970–77) R — To assist in producing rehydration fluid and in establishing rehydration centres in children’s hospitals and at peripheral centres, and to train staff.
An intercountry course on rehydration therapy centres was held at the Directorate of Postgraduate Medical Studies, Rangoon (19-24 March 1973) for senior paediatricians and medical officers engaged in rehydration therapy and management of dehydration caused by diarrhoeal diseases. Emphasis was given to the development of centres and training of auxiliary staff. There were 16 participants from Burma and 4 from Nepal. Provided—a consultant, a temporary adviser, and the cost of attendance of participants.

0148 Strengthening and development of health services (1970- ) R—To assist in the analysis of WHO-assisted health projects and programmes; to help to identify areas in which operational and cost-benefit studies are needed and participate in the design, conduct and evaluation of such studies; and to assist in coordinating all operational studies undertaken by the Regional Office.

0150 Education and training of environmental health personnel (1970- ) R—To assist in the training and utilization of engineers and other personnel in various aspects of environmental health requiring urgent attention.

A Regional Seminar on Air Pollution Control—the first of its kind organized by WHO in the Region—was held at the Central Public Health Engineering Research Institute, Nagpur, India (4-15 Dec. 1972) to provide for an exchange of views among engineers and officials engaged in air pollution control activities. There were 12 participants from countries of the Region, and WHO sanitary engineers from the field also took part before their own meeting at the Regional Office (18-20 Dec. 1972). Provided—2 consultants, one of whom studied air pollution problems in some countries before the seminar, 2 temporary advisers, and the cost of attendance of participants in the seminar.

A Regional Seminar on Education and Training in Sanitary Engineering was held in Bangkok (22-29 Nov. 1973) with 20 participants from 7 countries of the Region. A consultant assisted in the preparation and conduct of the Seminar.

0153 Training in immunology (1969-70; 1972- ) R—To review progress in immunology, particularly in relation to communicable diseases, and to strengthen training in the specialty.

0154 Quality control of biological and pharmaceutical products (1968-69; 1971- ) R—To assist countries of the Region in establishing or strengthening their quality control services and in improving laboratory competence; and to organize seminars and workshops on the quality control of biological and pharmaceutical products.

A workshop on quality control of drugs was held in Jakarta (4-8 June 1973) with 13 participants from 6 countries of the Region to discuss aspects of control and legislation and to develop common procedures for the surveillance of marketed drugs. Provided—a consultant and the cost of attendance of the participants.

0159 Health laboratory services (1970- ) R—To review the progress achieved in the reorganization of national health laboratory services and their administrative and technical operation and management; to determine ways of standardizing methods, equipment, teaching, recording and reporting in order to formulate guidelines for coordination with recipient services such as epidemiological and health services; and to assist in the training of laboratory personnel.

0165 Seminar on Training and Utilization of Sanitary Personnel, Jakarta (9-18 May 1973) R—To review the training of auxiliary personnel and their utilization in environmental health services, and to consider improvements in training programmes.

The Seminar was organized as a follow-up to the Conference on the Training and Utilization of Auxiliary Sanitation Personnel held in New Delhi in June 1968. The 14 participants from countries of the Region reviewed developments in the training and utilization of such personnel and exchanged views on methods of utilization in environmental health services. Provided—a consultant, the assistance of field staff, and the cost of attendance of participants.

0168 Training in veterinary public health and promotion of veterinary public health services (1968-70; 1972- ) R—To assist in training veterinary public health officers.

Assistance in planning and organizing the Seminar on Methods of Epidemiological Surveillance of Zoonoses, Foodborne Infections and other Communicable Diseases, held in Bangkok in October 1973 (project Interregional 0537), was provided under this project.

0169 Port health (1969-70; 1972- ) R—To assist in strengthening port health services.

0171 Community health aspects of medical education (1970; 1972-74) R—To assist medical schools in developing interdepartmental teaching and training programmes in health care for the community.

Following a seminar on community medicine for medical teachers held in Rangoon (16-21 Oct. 1972) with 27 participants from 4 countries of the Region, a workshop on community health aspects of medical education was held in Bangkok in May 1973 with 26 participants. Provided—2 consultants and the cost of attendance of participants.

0172 Mental health (1970; 1972- ) R—To organize seminars on various aspects of mental health and to train personnel.

0174 Rehabilitation of handicapped children (1971; 1973) R—Following the consultant provided under this project in 1968 and 1970 a further consultant visited Burma, Ceylon, Indonesia, and Thailand (March-April 1971) to evaluate the development of services, determine basic requirements for rehabilitation schemes in the Region, and indicate possible areas for cooperation. A team of 3 more consultants—a medical officer (rehabilitation), a physiotherapy tutor and a prosthetist—paying a preliminary visit to Indonesia (Feb.-March 1973) in connexion with the establishment of an intercountry medical rehabilitation project gave lectures and demonstrations on the integration of elements of medical rehabilitation at the Professor Suharso Rehabilitation Centre, Solo.

0176 Courses on health laboratory techniques (1969- ) R—To assist with courses on health laboratory techniques.

Following the Seminar on the Fluorescent Antibody Test in the Diagnosis of Rabies, held in Coonoor, India in 1969, a consultant paid follow-up visits to Ceylon, India, and Thailand in 1970 (he also visited Burma in 1971 under project Burma 0077). Two consultants also visited India, Indonesia, Nepal and Sri Lanka in 1972 to follow up the course on immunohaematological procedures in blood banking held in Bombay from 1 to 10 November 1971. There were 14 participants in the course from 5 countries of the Region. Provided—2 consultants, 10 temporary advisers, the cost of attendance of participants and supplies for the course.

Another course, in public health virology, was held in Poona, India, from 1 to 14 November 1973, for senior virologists from the countries of the Region. It emphasized practical applications in epidemiological surveys and the establishment of uniformity in laboratory procedures for the surveillance of arbovirus diseases, poliomyelitis, influenza, hepatitis and smallpox. Provided—2 consultants and the cost of attendance of participants.
A seminar on application of surgical procedures in human reproduction and family planning was held at the Regional Office (12-16 Feb. 1973) with 14 participants from 4 countries of the Region. Provided—2 consultants, 5 lecturers, and the services of staff members.

0206 Medical education in human reproduction, family planning and population dynamics (1972-1973) UNFPA—To assist in planning, conducting and evaluating short courses for senior medical teachers in order to improve the teaching of human reproduction, family planning and population dynamics in medical schools of the Region.

Two WHO consultants assisted in the preparation and conduct of a second course on the teaching of human reproduction, family planning and population dynamics held in Dacca (16-28 July 1973) with 41 participants from 5 countries of the Region. This followed a first course on the same subject held at the National Institute of Family Planning, New Delhi (3 April-2 May 1972) with 18 participants—senior teachers of preventive and social medicine, obstetrics and gynaecology and paediatrics—from 3 countries, and 34 guest lecturers assisted by 2 consultants and a temporary adviser. Also, a course on family planning was organized at the Regional Office (30 and 31 March 1973) for 26 UNICEF staff members.

0209 Training in health planning for maternal and child health and family planning administrators (1972-1973) UNFPA—To give guidance in the principles of health planning and management of integrated and child health and family planning services within the general health services.

A course on health planning for maternal and child health and family planning administrators was held at the Indian National Institute of Health Administration and Education, New Delhi (15 Nov.-15 Dec. 1972) with 17 participants from 5 countries of the Region. WHO provided a temporary adviser and the cost of attendance of participants for the course.

0210 Environmental pollution control (Sept.-Nov. 1973) R—A consultant visited Bangladesh, India, Indonesia and Thailand to study environmental pollution problems and made recommendations on control measures as a basis for a programme of assistance.

0211 Public health advisory services, Mekong Committee (1968-1973) FT—To provide technical advice to the Committee for the Coordination of Investigations of the Lower Mekong Basin, including advice on environmental conditions and problems directly or closely related to the many water resources development projects.

0213 Health education materials and media with particular reference to family planning (1971-1973) UNFPA—Following the visit of a consultant (Aug.-Nov. 1971) to assist in planning the workshop on development of health education media with particular reference to family health (12-20 Oct. 1971)—which was attended by 25 participants from 6 countries of the Region and representatives of UNDP, UNESCO, FAO, ECAFE, USAID, the Population Council, the International Planned Parenthood Federation and the Ford Foundation—another consultant visited Indonesia and Thailand (Oct. 1972-Jan. 1973) to review the follow-up activities in those countries and to assist in developing a rural communications research scheme in Thailand.

A course on social science research methodology as applied to family health education was held in Bangkok (19 Nov.-19 Dec. 1973) with 29 participants from 6 countries of the Region. Provided—a consultant, the services of a health education specialist attached to another intercountry project, and the cost of attendance of participants.
0215  Public health advisory services (1973- ) R—To provide consultant services in various subjects upon specific request by governments.

Two consultants (a pathologist and an epidemiologist) assessed the pattern of cancer morbidity and mortality and reviewed the facilities for cancer control and prevention in 6 countries of the Region (March-April 1973), and made recommendations on cancer registration, training for early detection and treatment, integration of control measures in existing health services, and organization of regional collaborative studies on common neoplasms. A third consultant visited 3 countries (Oct.-Nov. 1973) to assist in preparing plans for services and training in exfoliative cytology and obstetrical and gynaecological pathology.

0219  Development of maternity-centred aspects of family health services (1972- ) UNFPA—To support country and inter-country activities in family health, particularly the maternity-centred approach, and to assist the rapid development of postpartum family planning services.

0220  Collection and utilization of health statistics, records and reports (1972- ) R—To assist in developing consistent systems of record keeping and reporting for health centres and hospitals, in the collection and presentation of the relevant statistical data, and in training the necessary staff.

0227  Epidemiology and control of drug abuse and rehabilitation of drug dependent persons (Nov.-Dec. 1973)—A consultant assessed the problem of drug abuse and facilities for control in Indonesia and Sri Lanka. His recommendations were to cover regional measures for control. Further assistance is planned.

0228  Epidemiology, control and management of cardiovascular diseases (Nov.-Dec. 1973) R—A consultant assessed the state of training, services and research on cardiovascular diseases in Burma, Indonesia and Thailand as a basis for recommendations on the strengthening of services to cardiology patients and on epidemiological studies for control and prevention of these diseases.

0233  Indian Council of Medical Research/IARC/WHO Seminar on the Epidemiology of Cancer with Special Reference to South-East Asia, New Delhi (26 Nov.-4 Dec. 1973) R—To promote the development of cancer control programmes based on national epidemiological studies. The Seminar, which was organized in collaboration with the Indian Council of Medical Research and the International Agency for Research on Cancer, was attended by 54 participants from countries of the Region. Provided—a consultant.
EUROPEAN REGION

Albania

1001 Vaccine production (1966-72) R—To develop adequate facilities for the production of vaccines and sera at the Central Institute of Epidemiology, Microbiology and Immunology, Tirana. Provided—2 consultants, fellowships, and supplies and equipment.

The consultants made recommendations, in 1968 and 1970 respectively, on the purchasing of laboratory equipment and supplies of chemicals and reagents. Three fellowships were awarded in 1966, 1969 and 1971.

Assistance continued in 1973 under project Albania 1002—Central Institute of Epidemiology, Microbiology and Immunology, Tirana (see below).

1002 Central Institute of Epidemiology, Microbiology and Immunology, Tirana (1965-73) UNDP—To promote the further development and expansion of epidemiological studies on communicable diseases and of specialized training for various categories of personnel. Provided—2 consultants, 11 fellowships and supplies and equipment.

The consultants, who visited the Institute in the early stages of the project, advised on the development of the programme. The fellowships for study abroad totalled 62 months and 2 weeks. The main component of assistance was laboratory equipment for the production and storage of vaccines and other medical supplies (and included a refrigerator). The rehousing and development of the Institute's laboratories was completed satisfactorily.

4301 Resuscitation centre (1967-72) UNDP—To strengthen the organization of resuscitation and casualty services and train the necessary staff. Provided—5 fellowships, totalling 30.5 months, in nephrology and resuscitation, and supplies and equipment, including artificial kidney equipment. The resuscitation centre is being incorporated into emergency services under project Albania 4302 (see below).

4302 Organization of emergency services (1972- ) UNDP—To establish emergency medical care services for the whole country, in particular an emergency hospital in Tirana, to train personnel, and to select appropriate equipment.

8101 Cancer control (1962-73) UNDP—To develop a specialized cancer programme by building up a central institute with up-to-date equipment, and by training physicians, physicists and engineers for the medical and technical aspects of the programme.

1701 Communicable eye disease control (1972-73) R—To assess the national programme for communicable eye disease control and to provide consultant services to the Trachoma Institute.

2001 Malaria eradication programme (1968- ) R—To eradicate malaria progressively from the country and to provide training facilities for staff engaged in malaria eradication work in Algeria and neighbouring countries.

3001 Environmental sanitation (1963- ) R UNICEF—To develop and strengthen environmental sanitation services, promote environmental sanitation work and train sanitation personnel.

3003 Training of sanitary engineers (1971- ) R—To train sanitary engineers at undergraduate and postgraduate levels at the sanitary engineering centre, Rabat.

3201 National water authority (1963-78) UNDP—To set up a national water authority responsible for planning and implementing a water development investment programme, carry out pre-investment studies and train personnel.

4001 Development of public health services (1963- ) R UNICEF—To plan and organize public health services, with emphasis on extending and improving the basic health services, on training public health personnel at the National Institute of Health and the schools for health personnel, and on some specialized activities such as nursing education and mental health services.

4101 Public health administration (1970-73) R—To improve the planning and organization of public health services, coordinate specialized campaigns in order to integrate them into the public health services, and train public health personnel. Provided—a public health adviser (1970-73).

The project continued activities begun in 1963 as part of the general programme for development of public health services (project Algeria 11).

The public health adviser assisted in the preparation of courses on hospital administration, as well as in matters related to the Staff Training School (Ecole des Cadres), Algiers, and to project 6102—Institute of Medical Technology, Constantine. He was also concerned with the integration of malaria eradication activities (under project Algeria 2001) and environmental sanitation (under project Algeria 3001) into the general public health services. His coordinating functions will be carried on by the WHO representative.

4201 Public health laboratories (1967-73) UNDP UNICEF—To organize laboratory services, train personnel, and coordinate activities with those of other services and institutions. Provided—a microbiologist (1968-72), and fellowships. UNICEF provided laboratory equipment.

In the period up to 1970 covered by the first plan of operation, laboratories were completed in the departments of Algiers and Grand Kabylia (Tizi-Ouzou): relevant health legislation was prepared, registration forms and reports standardized and laboratory supply systems improved. The training of laboratory technicians was revised, new programmes being introduced in the schools in Algiers, Oran, Constantine and Mostaganem.
In the period covered by the addendum, during which the microbiologist continued his coordinating and educational activities, laboratories were established in Batna, Saïda and Medea; in 1971, 78 students graduated from the 4 schools already mentioned—compared with an annual output of about 20 from the 2 schools (Algiers and Oran) operating when the project started—and 6 more tutors were appointed; 2 monitors were awarded fellowships for 1 year for studies in Lyons, France. Assistance was given in the organization of laboratory support for cholera surveillance (project Algeria 1001).

The Institut Pasteur, Algiers, was made the national reference laboratory and assistance was given in the creation of a Central Bureau of Public Health Laboratories, in the training of auxiliary staff, including sanitarians and nutritionists, and in postgraduate courses on hygiene and bacteriology. Two more fellowships were awarded in 1972.

In this second stage the central approach to the organization of laboratory services was replaced by a regional approach with emphasis on the 3 regional laboratories and the creation of a laboratory in every department (wilaya). Teaching of laboratory technicians was standardized, and a diploma in microbiology was instituted at the Faculty of Medicine, Algiers. The present annual output of 10 laboratory scientists and 100 technicians appears adequate for the country’s needs.

A manual describing laboratory methods was elaborated and is in current use.

4901 Epidemiology and health statistics (1963–73) UNDP—To strengthen epidemiological and health statistical services and train personnel in this field. Provided—an epidemiologist (1964–67; 1969–72), a statistician (1969; 1971–73), and supplies and equipment. Two fellowships were provided under other projects.

Project activities, carried out in close collaboration with the Ministry of Public Health and other national bodies, included the organization of health statistics services, the establishment of a system of collection, processing, analysis and dissemination of health information, special studies and surveys on basic health problems, the training of medical and non-medical statisticians, the training in statistics and epidemiology of medical and allied health personnel, and the organization of conferences and seminars.

At the termination of the project, the basic network of health statistics services was operational at the central and departmental levels; the health information being produced included demographic and mortality statistics, hospital statistics, and communicable disease statistics.

Work begun under this project is being continued as part of project Interregional 1022 (Combined ad hoc survey on fetal, infant and early childhood mortality and fertility patterns).

5102 Maternity-centred family planning (1972– ) UNFPA—To strengthen and develop integrated maternal and child health/family planning activities and various aspects of family protection, including maternal health, prenatal, postnatal and child care, spacing of childbirths and medical and social family care. At present the project is carried out mainly in the existing maternity centres and special attention is being given to the training of health personnel at all levels and to health education aspects.


The consultant assisted for 3 months in 1965 in the organization of training, which was at first limited to medical assistants (techniciens sanitaires) at the school in Medea. The first medical teacher was attached to the school for 17 months to prepare curricula for theoretical and practical training and to assist in teaching. The second elaborated teaching methods and programming, and assisted in coordinating lectures at the National Institute of Public Health in Algiers. With the start of the UNDP-assisted project Algeria 6102 (see below), his duties were geared to the four-year national plan for the training of health personnel.

Four Algerian medical teachers visited schools in the Region of the Americas in 1971, and the project was terminated in 1973 in order to free funds for further fellowships in medical education, which were awarded under project Algeria 6202.

6102 Institute of Medical Technology, Constantine (1970–74) UNDP—To establish an institute for the training of medical assistants and public health midwives to meet the country’s urgent requirements.

6202 Medical education (1971– ) R—To develop new teaching methods in medical faculties and train teachers and technicians.
Greece

3101 Environmental pollution control, metropolitan area, Athens (1971- ) UNDP—To develop a comprehensive environmental pollution control programme for the Athens metropolitan area.

3401 Environmental sanitation (1967-73) UNDP—To assess solid waste disposal problems in urban areas through a general review, followed by a specific study of one or two cities where the situation is more acute.

4001 Development of public health services and training of personnel (1958-72) UNDP UNICEF—To organize comprehensive and coordinated health services in a rural area where new methods of public health administration can be tested, practical training can be given to all categories of public health personnel, and demonstration and research can be carried out. Provided—consultants for a total of 5 months, 14 fellowships, and supplies and equipment.

The consultants, specialists in health laboratory services and statistics, hospital and public health administration, maternal and child health and tuberculosis carried out studies in their respective fields, and assisted with training activities and evaluation of results.

The fellowships, totalling 42 months, were awarded to national public health workers for study abroad. Laboratory and teaching equipment was provided by UNDP and UNICEF, which also awarded fellowships for attendance at courses in Pharsala organized under this project.

Hungary

3001 Training of sanitary engineers (1965; 1967-69; 1971-73) UNDP—To organize the training of sanitary engineers and train teachers of sanitary engineering.

In 1968, during a 3-week mission, a consultant advised on the setting-up, at the Technical University, Budapest, of a 2-year postgraduate course for the training of sanitary engineers, and outlined the programme to be followed. The course started in 1969 and is being held when required. During the course of the project 13 fellowships were awarded for studies abroad and a small amount of equipment was provided.

3101 Pilot zones for water quality management (1969-76) UNDP—To establish pilot zones for water quality management, with a view to collecting data and establishing a rational basis for investment in water quality improvement.

4201 Public health laboratories (1971- ) R—To improve health laboratory facilities by introducing or extending the application of new diagnostic procedures and investigating the possibility of producing new biological substances.

Italy

4101 Reorganization of regional public health services (1972- ) FT—To reorganize the health and medical services in the Friuli-Venezia-Giulia region.

4401 Nursing education and administration (1960-65; 1967; 1969- ) R—To prepare nurses for teaching and administrative posts and develop basic and postbasic nursing education programmes.

Malta

3201 Wastes disposal and water supply (1966-73) UNDP—To locate new resources to meet the increased demand for water, and to control wastes disposal. Provided—a project manager (1967-72), consultants, fellowships (total of 102 months), laboratory and other equipment, and contractual services. The plan of operation was signed on 26 September 1967, and in January 1968 the subcontractor was selected to carry out the studies for a master plan to cover the period of 1971-2000, with special attention to the needs of the 1970s. Design figures for water consumption, sewage and refuse were established on the basis of long-term estimates of population; plans for extending sewerage to the whole of Malta and Gozo were drawn up; and improvements in the refuse collection system suggested. Consideration of possible re-use of reclaimed waste-water led to agricultural studies, including the preparation of a map of arable land in Malta. The plans for the water supply network were based on a capacity study taking into account future domestic, tourist and industrial demand, and a detailed investment programme was prepared. New legislation was prepared, aimed at the consolidation of existing laws governing the relevant services and environmental questions, and at clear identification of responsibilities for enforcement. Assistance was also given for the establishment of a chemical and bacteriological laboratory for related analysis and control operations. Field operations were completed in 1971.

4801 Orthopaedic services (Feb.-March 1973) UNDP—A consultant advised the Government on the organization of orthopaedic services and assisted in drawing up a training programme for staff.

5401 Mental health services (1964-72) UNDP—To develop psychiatric nursing services as part of the long-term objective of organizing and developing the mental health services. Provided—a psychiatric nursing adviser (1967-72), and a consultant.

Following visits by the regional officer for mental health and by a consultant in 1964, a staff member was assigned in August 1965 to assist in the introduction of occupational therapy in the Mount Carmel Hospital. The Hospital superintendent returned from study abroad on a WHO fellowship, and after a further visit by the regional officer in 1966, a psychiatric nursing adviser assisted in organizing training programmes for a total of over 1000 health personnel, including state-registered nurses, state-enrolled nurses, student and pupil nurses and domestic staff of hospitals and homes at the Mount Carmel Hospital (the only psychiatric hospital in Malta), St Lukes Hospital, the schools for nurses and pupil nurses, and the Memorial District Nurses Association. Senior nurses were trained to teach mental health and care of psychiatric patients to students and staff providing care at the Mount Carmel Hospital, where an in-service education programme for nurses and related personnel was established. Teaching guides were prepared.

Recommendations made by a national committee in 1972 for continuation of the work initiated under the project were accepted by the Government.

Morocco

1001 Surveillance and control of communicable diseases (1970- ) R—To assess the extent of the communicable diseases that are major public health problems in the country, especially salmonellosis, venereal diseases, cerebrospinal meningitis and leprosy, with a view to implementing effective and economical control measures.

1201 Tuberculosis control (1971- ) R—To develop a national tuberculosis control programme integrated into the general health services.

2001 Malaria eradication programme (1962- ) R—To prepare for a malaria eradication programme by the organization of technical, administrative and operational services; and to train medical and allied personnel of public health services
(especially rural health services) in malaria eradication concepts and techniques.

3002 Training of sanitary engineers (1968– ) R—To train sanitary engineering teaching personnel and specialists at university level.

3003 Environmental hygiene (1971–73) R UNDP—To draw up a comprehensive environmental sanitation programme for the whole country, applying methods in a number of pilot areas and developing approaches to specific problems, such as waste disposal, in preparation for a later project.

3201 Water supply and related studies, phase II (1969–73) UNDP—To prepare a master plan for national and regional water supplies, and pre-investment studies on water supply and waste disposal in the coastal region between Kénitra and Casablanca and on water supply for one or two towns in the remainder of the country. The project includes economic and organizational studies as well as the training of personnel.

4001 Development of public health services and training of personnel (1971– ) R—To plan and organize public health services and especially to extend and improve the basic health services within the framework of the economic and social development plan. The work includes the establishment of a network of hospital and preventive services, the education and training of staff, especially teaching staff, for the health professions, and the reinforcement of essential allied activities such as nursing, nursing education and mental health services.

The project is being implemented in association with project Morocco 2001 (Malaria pre-eradication programme).

5101 Maternal and child health services (1972–76) R VG—To carry out studies and operational research on different aspects of maternal and child health, with special attention to the role of health services in rural areas. Related aspects of medical education and training, and general environmental aspects, will be included in the studies.

6201 Medical education (1960–64; 1966–75) R—To strengthen teaching and research in preventive and social medicine and in the basic medical sciences at the Faculty of Medicine, Rabat, and to train national staff.

Poland

1201 Tuberculosis control (1960– ) UNDP UNICEF—To carry out tuberculosis control work and to follow up the results of the studies carried out since 1964 on the detection and treatment of new cases in pilot tuberculosis control areas. Studies on the epidemiology of tuberculosis in Poland and tests on the immunogenic value of BCG vaccine are also envisaged.

3102 Environmental pollution abatement centre, Katowice (1971–75) UNDP—To promote the control of air and water pollution, liquid and solid wastes treatment and disposal, and water and air quality management.

5201 Industrial toxicology (1973–76) UNDP—To consolidate and develop the work of the Institute of Occupational Health at Lodz by expanding its facilities for the monitoring and study of the adverse effects of exposure to noxious substances in industry; by building it up to act as a national centre for research, development, training and services in health surveillance of workers exposed to industrial toxic chemicals; and by establishing a comprehensive toxicology information system.

5401 Mental health (1967– ) UNDP—To provide training in child mental health and the rehabilitation of psychiatric patients in order to strengthen the mental health services.

6202 Training in social medicine (1971– ) R—To develop curricula in social medicine and public health in medical faculties and to train teachers in methods of teaching these subjects.

Romania

3102 Water and air pollution control, phase II (1971–74) UNDP—To establish a programme for air and water pollution control, carry out studies on various aspects of pollution, methods of treatment and control, and train personnel.

The activities completed under phase I were reported in Official Records No. 205 (page 256).

3201 Planning water control and related development of the Upper Mures basin (July 1973) UNDP/FAO—As part of the FAO-assisted project for development of the Upper Mureş basin, devastated by floods in May 1970, a consultant made an analysis of the studies carried out by Romanian experts to evaluate requirements for drinking-water and water for industrial purposes in the project area, and advised on evaluation methods.

5401 Child psychiatry (1970–73) R—In May 1973 a consultant advised on the development of psychiatric services for children and on the utilization of training facilities within the country. Between 1970 and 1972, 3 fellowships were awarded.

6301 Training of health personnel (1970– ) R—To develop postbasic teaching institutions and prepare teachers for various groups of health personnel.

Spain

1901 Epidemiological studies of virus diseases of public health importance (1959; 1964–69; 1971–73) UNDP—To study methods for the prevention and control of enteric, respiratory and other virus diseases of public health importance and to provide training facilities.

3101 Pollution in the Bilbao district (1971–72) UNDP—A total of 7 short visits were made by consultants in 1971 and 1972 to investigate the problem of air pollution in the metropolitan area of Bilbao and help to plan measures for its control, as well as to advise on and assist in preparing for a national programme for air pollution control and a programme for the control of coastal and river pollution that would be implemented under separate projects.

4401 Nursing education and nursing service administration (1957; 1960–64; 1971– ) R—To develop and strengthen post-basic and basic nursing education programmes by preparing nurses for administrative and teaching posts in basic and post-basic schools of nursing and in nursing services.

5401 Mental health services (1966–69; 1971–73) UNDP—To strengthen the mental health services, especially those for the rehabilitation of psychiatric patients, and to train the necessary staff. Between 1966 and 1972, 18 consultants were provided to advise on various problems, including industrial and occupational rehabilitation of the mentally ill, care of the mentally retarded, and the organization and development of community care of the mentally ill, or to help with national seminars and training courses. Technical advice was also provided by WHO staff members. In 1973 a regional office staff member reviewed the mental health services in La Coruña Province and took part in a seminar on the evaluation of mental health services, held in Madrid. Seven fellowships were awarded.

6101 Training of health personnel (1971– ) R—To prepare teachers and develop teaching institutions for various categories of health workers, particularly sanitarians and laboratory technicians.
Spain (continued)

6201 Medical education (1971– ) R—To improve medical education by developing curricula and methods of teaching and evaluation, with emphasis on new faculties, carrying out relevant studies, and providing training facilities abroad for the study of medical education.

Switzerland

4401 Study of the functions of nursing personnel (June 1973) FT—To follow up the assistance provided between 1965 and 1971, a consultant helped to establish priorities for the nursing studies of the Bureau de l’Etude des Soins Infirmiers en Suisse and to analyse the budget and budgeting procedures of the Bureau.

Turkey

1001 Surveillance and control of communicable diseases (Oct.-Nov. 1973) R—A consultant assisted in assessing the extent of the communicable diseases that are serious public health problems in Turkey and submitted recommendations regarding control measures.

2001 Malaria eradication programme (1957– ) R

3001 Environmental sanitation (1964– ) R—To develop the environmental sanitation services and train sanitation personnel.

3002 Promotion of training and programmes in sanitary engineering, Middle East Technical University (1968; 1970– ) UNDP—To train environmental health personnel at professional and subprofessional levels at the Middle East Technical University, Ankara, and to promote specific environmental health programmes in various government agencies.

3003 Promotion of training and programmes in sanitary engineering, Istanbul Technical University (1970–74) UNDP—To train environmental health personnel at professional and subprofessional levels at the Istanbul Technical University and to promote specific environmental health programmes in various government agencies.

4001 Development of public health services and training of personnel (1970– ) UNICEF—To strengthen national health services at the central, regional, and peripheral levels.

4201 Training of public health laboratory technicians (1969– ) R—To train laboratory technicians required for the development of countrywide public health laboratory services and prepare an expanded teaching programme.

6201 Training in preventive and social medicine (1969– ) R—To develop undergraduate and postgraduate medical education. The project provides for continuation of assistance to the School of Public Health, Ankara, and for assistance, chiefly in preventive and social medicine, to new medical schools.

Yugoslavia

3201 Community water supply, wastes disposal and pollution control, Kosovo (1972–75) UNDP—To develop a programme for water pollution control, community water supply and wastes disposal in Kosovo Province.

4102 Regionalization of health services and health insurance in Serbia (1972–73) R—To establish a functional organization of health services, backed by a suitable health insurance organization.

EURO

1001 Development of national programmes for the surveillance of communicable diseases (1970– ) R—To assist countries in initiating or developing national programmes for the surveillance of communicable diseases and public health importance and to stimulate, assist and coordinate intercountry cooperation and exchange of information in this field.

2001 Malaria eradication evaluation and epidemiological assessment (1962– ) R—To assist malaria epidemiological assessment; to coordinate studies and activities relating to the importation of malaria (including the delimitation of receptive and vulnerable areas) and to the epidemiological, parasitological and clinical aspects of imported malaria; and to disseminate relevant information to the countries concerned.

2002 Entomological services to North African countries (1965–72) R—To give entomological advice for the malaria projects in Algeria and Morocco and, if necessary, in Turkey and other countries. Provided—an entomologist (1965–71), a consultant (May-June 1972), and supplies and equipment.

The project was centered on Morocco until October 1968, where courses in entomology for malaria control, including practical work in the field, were organized for microscopists in training in the Central Malaria Eradication Service and for students at the Sanitary Engineering School.

The entomologist visited Turkey in 1965 and 1966 to review work done in the field and to assist in research in problem areas.

After 1968, when the project became centered on Algeria, he was more closely involved in instruction in entomology for staff of the Central Office for Malaria Eradication and for those at department (wilaya) and subdepartment (diara) levels, as well as for practical laboratory and field work. Courses were also organized at the School for Sanitary Engineering Technicians and the Faculty of Medicine and Pharmacy, Algiers, and as part of the syllabus of advanced studies for the certificates of parasitology and of hygiene and epidemiology.

The services organized in connexion with the malaria eradication programme in Algeria were reviewed by a consultant entomology technician in 1972.

Further assistance is provided under project EURO 2006—Entomological services to countries of the Region.

2004 Meeting for Coordinating Malaria Eradication, Rabat (29 Jan.-2 Feb. 1973) R—To allow countries of the Region that are concerned with malaria eradication, control and prevention to exchange views and coordinate programmes or activities for prevention of re-introduction of the disease. There were 12 participants and 15 observers from Algeria and Morocco and from Tunisia in the Eastern Mediterranean Region. Provided—the cost of attendance of 4 participants (including 1 from Tunisia), and the services of 6 staff members.

2006 Entomological services to countries of the Region (1973– ) R—To continue the entomological assistance provided since 1965 to North African and other countries of the Region under project EURO 2002 in connexion with malaria eradication campaigns, and to extend it to arthropod-borne diseases in general.


3002 Training for environmental health engineers (French language) (1967– ) R—To assist in the development of an academic course for sanitary engineers and provide training for teaching staff.
A course was held at the Polytechnic School at Lausanne from 8 January to 21 December 1973. Provided—fellowships to 2 trainees from 2 countries; 3 further fellowships were awarded under other projects.

3006 Manpower requirements in environmental health (1972- ) R—To make a survey of manpower requirements in environmental health, covering the various categories of executive and operative personnel, as a basis for evaluating current training programmes and preparing new ones.

A steering committee held its first meeting in Copenhagen from 25 to 29 June 1973. WHO provided 5 temporary advisers from 5 countries of the Region and the services of 5 staff members. An additional participant attended at his Government's expense.

3007 Postgraduate training in environmental sciences (1973- ) R—To assist postgraduate training courses in environmental sciences for engineers, chemists, biologists, public health medical staff and others.

3104 Planning and evaluation of the long-term programme in environmental pollution control (1970- ) VD—To plan, coordinate and evaluate the long-term programme in environmental pollution control.

A consultation meeting was held in Copenhagen on 13 and 14 November 1973. Provided—the cost of attendance of 6 participants (temporary advisers) and the services of staff members.

3106 Health aspects of air quality management (1971- ) VD—To review scientific and technological information on air quality control with specific reference to public health; and to prepare manuals and codes of good practice in air pollution control and study their application in pilot areas.

3107 Training in new methods of environmental pollution control (1972- ) R—To promote the training of European specialists in new methods of analysing and controlling environmental pollution.

3108 Recreational hazards of polluted inland waters (1972-73) R—To assess the health hazards arising from the use for recreational purposes of inland waters, especially waters carrying sewage and other effluents after various stages of treatment, including chlorination.

3109 Health hazards and ecological effects of persistent substances in the environment (1971- ) VD—To study the route by which persistent substances discharged into the environment can find their way back to man and investigate and evaluate their ecological effects and the health hazard they represent; to recommend guidelines for the establishment of acceptable concentrations of various persistent substances in the ecosystem; and to study the use of experimental ecosystems and mathematical models in predicting the behaviour of persistent substances in different ecosystems.

A working group met in Stockholm from 29 October to 2 November 1973 to review the ecological effects of metals and metalloids in the environment. There were 17 participants (temporary advisers) from 11 countries. Provided—2 consultants and the cost of attendance of 15 participants.

3110 Analytical methods in water pollution control (1971- ) R—To study the analytical methods and sampling procedures employed in water pollution control throughout the Region, with a view to obtaining agreement on uniform methods, procedures and ways of expressing results; and to study the need for and promote the development of new methods.


3112 Development of bioassay methods for water pollution control (1972-73) R—To develop and refine bioassay methods of assessing the effect of biocides, of new and unknown substances, and of complex mixtures of pollutants, in water.

3114 Long-term effects on health of air pollution (1971- ) R—To promote clinical, physiological and epidemiological investigations on the long-term effects of air pollution on health, especially on the health of population groups at high risk.

A working group met in Rotterdam from 26 to 28 February 1973 to discuss the problem of chronic respiratory diseases in children in relation to air pollution, and to review the working protocol and questionnaire to be used in the study to be carried out in 5 countries of the Region. There were 24 participants from 9 countries of the Region and an observer from the United States of America. A representative of the Commission of the European Communities attended. Provided—16 temporary advisers and the services of 2 staff members.

Two temporary advisers visited 3 of the countries carrying out the study, and a staff member the other 2, in order to ensure uniformity of the methods employed.

3115 Study on methods of measuring air pollution (1973- ) R—To achieve greater uniformity in the methods of measuring air pollution used in the Region and to promote the development of new methods.

3118 Health education in environmental pollution (1972- ) R—To study and propose information programmes that may be used in the Region to promote the participation of community leaders in environmental pollution control activities.

3121 Environmental pollution information systems (1972- ) R—To obtain information on administration and existing rules for pollution control and on control projects in the Region, and to design regional information systems.

During the period under review a consultant assisted with a seminar in the design of environmental information systems held from 11 to 20 January 1973 in Katowice, Poland (under project Poland 3102). He and another consultant also visited several countries in the Region to collect information for a study on environmental pollution information systems.

3122 Environmental pollution glossary (1973- ) R—To prepare, in English, French and Russian, a glossary on environmental pollution, making use of dictionaries and glossaries already issued or in preparation.

3125 Recreational water quality on beaches (1971- ) VD—To compile available knowledge on water quality requirements for bathing beaches, undertake further studies with a view to preparing manuals and codes of good practice for bathing water and beach sanitation, establish collaborative programmes on sampling and analysis of beach pollution, and promote epidemiological studies on the role of polluted beaches and water used for recreation in causing infection among tourists.

3128 Ecological aspects in relation to human health of water pollution in specific geographical areas in Europe (1972- ) VD—To review present and planned programmes relating to the control of water pollution in different parts of the Region. The following activities took place during the period under review:

A working group met at Bilthoven, Netherlands, from 6 to 8 December 1972 to discuss the hazards to health and the ecological effects of pollution of the North Sea. There were 11 participants (temporary advisers) from 7 countries of the Region, and representatives of FAO and the International Council for the Exploration of the Sea. The services of a consultant and of 3 staff members were provided.
Pollution of the Oslo Fjord was discussed at a meeting held in Oslo on 23 February 1973 and attended by 8 temporary advisers from 4 countries of the Region and a staff member.

A consultant and 2 temporary advisers were provided for a meeting at East Kilbride, Scotland, to consider the pollution of the Firth of Clyde, and a consultant was assigned to an international meeting, held at Bilkoven on 17 October, at which a joint study of coastal pollution in the Wadden Sea area was planned.

A consultant visited institutions in 4 European countries to review the situation regarding pollution of the Rhine.

**3129 Protection of man and ecosystems from adverse effects of pesticides (1973- ) VD—**To study the systems of analysing and the methods of controlling residues of persistent pesticides in food products; and to promote and participate in the establishment of a global early-warning system for detecting ecological changes before they irreversibly affect any ecosystem of major importance.

A planning meeting on toxicity information systems was held in Stockholm on 2 and 3 November 1973. There were 5 participants (temporary advisers) from 5 countries. Provided—2 consultants and the cost of attendance of 4 participants.

**3130 Health aspects of eutrophication (1973- ) VD—**To study the health effects of eutrophication, especially in so far as it affects the preparation of drinking water and the recreational use of water; and to review methods for restoring the purity of lake water following pollutant discharges.

**3132 Water quality management of the Danube (Dec. 1972- March 1973) R—**A consultant assisted in preparing background material for a comprehensive plan to serve as the basis for joint action by governments of Danube riparian countries for pollution abatement and water quality control.

**3170 Protection of the public from non-ionizing radiation (1972-74) R—**To sponsor an epidemiological study for ascertaining the effects of exposure to radiation from specific sources on the health of population groups at risk.

**3402 European model code of practice for the land disposal of solid wastes (1970-73) R VD—**To review current trends with regard to the public health aspects of waste reclamation, disposal practices in congested areas, and disposal of refuse into sewage; and to make proposals for further activities in conjunction with the headquarters programme in this field.

The model code of practice for the land disposal of solid wastes, a draft of which was reviewed by a working group in October 1972, was finalized and presented to the Regional Committee for Europe at its twenty-third session held in September 1973. The model code will form a chapter of a manual on solid waste management being prepared as part of the regional long-term programme on environmental pollution control.

**3404 Solid waste management in Europe (1973- ) R VD—**To make an assessment of the present situation and a forecast of trends in the management of solid wastes in Europe, including quantities and types of wastes, and the methods of their handling, treatment and disposal.

A preparatory meeting, attended by 4 temporary advisers from 3 countries of the Region and 2 staff members, was held in Copenhagen on 13 July 1973 to plan for a working group on toxic wastes. The working group, which met in West Berlin from 20 to 23 November 1973, had 13 participants and was attended also by representatives of the WHO International Reference Centre for Wastes Disposal, the Organization for Economic Cooperation and Development, the Commission of the European Communities, the Research Centre for Nuclear Energy (Hahn-Meitner Institute, Berlin), and the International Solid Wastes and Public Cleansing Association. Provided—the cost of attendance of 12 participants (temporary advisers) from 8 countries and the services of staff members.

**3602 Postgraduate course in food microbiology and hygiene, Zeist, Netherlands (24 April-11 May 1973) R—**Fellowships were awarded to 18 trainees from 8 countries of the Region for the course, which provided theoretical and practical training.

**3604 Study on the control of harmful residues in food for human and animal consumption (1972- ) R VD—**To study the methods used in the Region for the control of harmful residues (including antibiotics, hormones, pesticides and conserving chemicals) in food; and to prepare proposals for drawing up and periodically reviewing public health guides and criteria for the control of such residues.

A working group met in Bremen, Federal Republic of Germany, from 1 to 5 October 1973. Provided—a consultant and the cost of attendance of 16 participants (temporary advisers).

**3902 Effects of noise on health (1972- ) R—**To make a survey of institutions in Europe that are concerned with noise and its effects on health; and to prepare a manual on noise limits embodying codes of good practice for the protection of the public and a training manual.

**3903 Legislative and administrative measures for noise control (1972- ) R—**To make a study of legislative and administrative measures for the control of noise in the environment.

**4003 Study on the health aspects of labour migration (1973- ) R—**To study methods of screening migrant workers and their families before departure and on arrival with a view to standardizing simplified health examinations; to consider patterns of morbidity among migrants of different origin, age, occupation and place of work in order to establish priorities for preventive and curative measures; and to explore ways of improving the health education of migrants and providing them with practical information on the available social and medical services.

A working group met in Algiers from 6 to 9 November 1973 to review the results of the studies carried out by the Regional Office during the preceding 3 years and to suggest measures for the protection and promotion of the health of labour migrants. There were 13 participants and representatives of ILO and the Intergovernmental Committee for European Migration. Provided—a consultant, the cost of attendance of 11 participants (temporary advisers) from 11 countries, and the services of staff members.

**4005 Working Group on the Public Health Aspects of Tourism, Torremolinos, Spain (23-27 July 1973) R—**To study the various health problems arising as a result of major developments in tourism and suggest measures to ensure adequate protection of health in tourist development areas. The Working Group consisted of 10 temporary advisers (public health administrators, sanitary engineers, veterinarians, food hygienists, epidemiologists and persons responsible for administrative, managerial or economic aspects of tourism). Its meeting was attended by representatives of the International Air Transport Association, the International Hotel Association and the International Union of Official Travel Organizations. On the basis of information collected from Member States of the Region, the Group assessed the present situation and reviewed the draft of a guide on health aspects of tourism to be issued by WHO. The services of a consultant and of 3 staff members were provided.

**4101 Advanced training course on health planning (in Russian), Bulgaria and Union of Soviet Socialist Republics (19 Sept—**
27 Oct. 1973) R—To introduce methods of health planning within the framework of national economic development. Provided—2 lecturers (temporary advisers), fellowships for 11 trainees from 7 countries of the Region, and the services of 2 staff members.

4102 Information on health planning, economics and manpower (1970–1974) R—To follow up the work of the Regional Office by reviewing in documented form, for the guidance of national and regional health administrators, experience acquired on short- and long-term health planning in the Region.

4105 Studies on health planning models in European countries with different health patterns (1971–1973) R—To prepare and disseminate information on different systems of health planning and health economics. The studies will be based on areas selected by the Working Group on Problems of Health Planning in National Development, which met in 1972 (project EURO 4104), and will cover health economics, national economic development, health planning and public health administration at national levels, with special attention to health manpower.

4201 Public health laboratory services (1972–1974) R—To assist in developing public health laboratory services and in organizing the training of laboratory staff; and to bring up to date the Directory of Public Health Laboratories in Europe and supplement it with information on training facilities in various laboratories in the Region.

4305 Role of social insurance institutions in preventive medicine (1971–1973) R—To study the role of social insurance institutions in a number of European countries in the light of the need for integrated preventive and curative health services and to define the extent to which preventive services should be included in the work of such institutions.

A consultant visited Austria, Belgium, Finland, France, the Federal Republic of Germany, Italy, the Netherlands, Spain, and Switzerland to collect information later compiled in a background document for a symposium which was held from 23 to 26 October in Nancy, France, to consider the ways in which social insurance services and agencies can contribute to preventive work. The symposium had 16 participants from 13 countries and representatives of ILO and the International Social Security Association attended, the latter acting also as a temporary adviser. Provided—a consultant, 6 temporary advisers, the cost of attendance of 2 participants and partial costs for 11 others, and the services of 3 staff members.

4306 Consultant services on the organization of community health care (1972–1973) R—To meet requests, sometimes of an urgent nature, for expert advice on specialized aspects of medical services, and to assist in national and international conferences and seminars in this field.

4309 Working Group on Trends in the Development of Primary Care, Moscow (10–14 July 1973) R—To review trends in the provision of primary care and changes in what patients expect from such services, to relate primary care to other major elements of health services, and to identify organizational and staffing requirements. There were 8 participants (temporary advisers) from 8 countries of the Region, and a representative of the International Social Security Association. Provided—a consultant, the temporary advisers, and the services of 7 staff members.

4402 International School of Advanced Nursing Education (Russian language), Poland (1969–1974) R—To give assistance to advanced nursing education in Russian so as to prepare nurses for leading positions in specialized branches of nursing, for nursing education and administration, for midwifery and medicsosial work, and for research.

An ad hoc working group of senior nursing personnel from the Department of Nursing Studies, University of Edinburgh (Scotland), the International School of Advanced Nursing Studies, Lyons (France), and the Department of Nursing, Academy of Medicine, Lublin (Poland), met at the Regional Office (5–6 April 1973) to review the work of the 3 international schools; to discuss future assistance and the capacity of the schools to serve as international centres for training and as regional educational guidance centres; and generally to examine trends in advanced education for nurses and midwives in Europe.

4403 Course on teaching methods for nurse educators (in English), Manchester, England (28 Aug.–14 Sept. 1973) R—To provide intensive training in the latest advances in nursing education, with special attention to the learning process, teaching methods, and evaluation of students' school performance. Provided—lecturers, fellowships for 10 senior nurse educators from 10 countries of the Region, and the services of a staff member. One nurse educator attended at the expense of her Government.

4407 European studies in nursing, midwifery and medicsosial work (1972–1973) R—To carry out studies of specialized fields of nursing, midwifery and medicsosial work in which changes are taking place rapidly, and of patterns of nursing administration, medicsosial work and midwifery services in European countries; also to assist countries wishing to hold meetings and to undertake surveys and studies in nursing education, nursing personnel systems and patient care. The project follows up the studies on advanced nursing education and on nursing resources and staffing patterns (projects EURO 4401 and 4404).

4502 National courses, conferences and seminars in health education for senior health personnel (1968–1973) R—To assist national courses, conferences and seminars for physicians and leading health personnel responsible for promoting health education and to facilitate the attendance of similar staff from neighbouring countries by the award of fellowships.

4901 Health statistical services (1962–1973) R—To support and conduct studies on various subjects, including the accuracy and comparability of statistics on causes of death, the epidemiology of home accidents, methods of surveillance of congenital pathological conditions, the use of continuous population samples in health surveys, the use of social security records as sources of health statistical information, the measurement of the consumption of psychotropic drugs, the linkage of child health records, and national health information systems. This project is linked with project EURO 4905.

4905 Epidemiological studies (1966–1973) R—To study and report on specific aspects of mortality and morbidity of particular interest to the Region, starting with a study among cases of stomach cancer. If appropriate, the findings will be presented to the annual sessions of the Regional Committee for Europe. Also, to coordinate and assist limited intercountry studies on relevant epidemiological subjects, including the epidemiology of stomach cancer, the occurrence of abortions, the occurrence of suicide, and chronic respiratory diseases.

A working group met in Copenhagen from 19 to 23 November 1973 to discuss the application of epidemiology to the planning and evaluation of health services. Provided—the cost of attendance of 5 participants (temporary advisers) from 5 countries, and the services of staff members.

This project is linked with project EURO 4901 (see above).

4906 Study on medical certification of causes of death (1968–1972). R—To study and test methods of assessing the accuracy and comparability of diagnoses of causes of death, particularly in
EURO (continued)

connexion with cardiovascular diseases as part of the regional long-term programme. Following preparatory meetings at the Regional Office in 1968 and 1969 (provided for each—7 temporary advisers and the services of 4 staff members), 6 countries participated in the study, part I of which was concerned with the diagnostic evidence available from a sample of completed death certificates, and part II with variations in its interpretation by a sample of physicians. In 1970, 2 staff members visited 4 countries to discuss the progress of the study. In 1971 a working group met at the Regional Office (9-12 Nov.) to discuss the information received from the participating countries. Provided—8 temporary advisers and the services of 5 staff members. The final report on the study was prepared in 1973 following the submission of guidelines for national reports to the participating countries.

Although in certain countries the arrangements for death certification are such that retrospective postal questioning of certifiers is extremely difficult, in the majority of countries such questioning was found to be practicable and well supported, as was the collection and use of standard case histories. Difficulties of interpretation arise when the remitted numbers of case histories which any one certifier can be asked to study and report on are spread over too many cause categories; it would be advisable to restrict such an approach to the investigation of 1 or 2 specific cause categories. Strict adherence to the format of the death certificate recommended by WHO existed in only 2 of the participating countries, while several variations in death certificate design and phrasing were considered worthy of further study.

4913 Study on the integration of health statistics and social and economic statistics (1970-72) R (ECE)—To examine the types of statistical information available in certain European countries and assess means of integrating statistics on health and social and economic statistics.

Following a joint ECE/WHO meeting in 1971, a joint consultation took place in Geneva (11-15 Dec. 1972) with 20 participants representing national health and general statistical institutions. Provided—the cost of attendance of 4 participants from 4 countries of the Region, 2 temporary advisers and the services of 3 staff members. The statistical classification and the model tables for health service accounts elaborated at the meetings were recommended for trial in selected countries prior to a proposed joint conference in 1974.

4914 Conference on Health Information Systems, Copenhagen (18-22 June 1973) R—To discuss the planning and management of health information systems, with emphasis on critical assessment of users' needs and on improvement of data input. The Conference followed up the discussions at the Third European Conference on Health Statistics held in Turin, Italy, in 1971 (project EURO 4910), on the use of information systems for health planning and evaluation. There were 35 participants from 25 countries; representatives of the International Federation for Information Processing and the International Epidemiological Association, and an observer from the National Centre for Health Service Research and Development (USA), also attended. Provided—a consultant, 8 temporary advisers, the services of 8 staff members, and the cost of attendance of 24 participants from the countries of the Region.

4915 Postgraduate training in epidemiology and medical statistics (1973—) R—To provide training in epidemiology and medical and health statistics, continuing the assistance provided to the English, French and Russian-language courses formerly held under projects EURO 4902, 4903 and 4904 respectively.


The French-language course on methods of medical statistics and epidemiology was again held in Brussels (30 Jan.-30 May 1973). Provided 9 fellowships under other projects.

The Russian-language course on the application of statistical and epidemiological methods to medicine and public health was again held in Bratislava, Czechoslovakia (6 Sept.-14 Dec. 1973). Provided—3 fellowships.

5101 Collaboration with international institutions concerned with family health (1965-71; 1973—) R UNICEF—To continue collaboration in courses organized by the International Children's Centre and to extend this collaboration to other international organizations in order to enable staff of family health services from various countries to attend their meetings and courses; and to arrange for studies, surveys and bibliographical services on a contractual basis.

5102 Postgraduate training in social gynaecology and obstetrics (1971—) UNFPA—To continue assistance to international activities and courses on the preventive and social aspects of gynaecology and obstetrics, and to enable medical educators in this field to obtain further training in population dynamics and family planning.

5103 Evaluation of maternal and child health services in certain countries of the Region (1972-73) R—To undertake, in certain countries of the Region, an evaluation of the maternal and child health work carried out during the past 20 years.

A working group met in Copenhagen from 25 to 28 September 1973 to report on the situation and current trends in certain countries of the Region regarding the delivery of maternal and child health services, and to work out guidelines for the improvement of evaluation of such services at local, regional and national levels. After discussing the information obtained from 18 countries by means of a questionnaire, the group worked out a number of indices for the measurement of achievement of goals and agreed on the methods to be used for studies of the relationship between service inputs and their outcome and for improving efficiency in relation to cost. There were 6 participants (temporary advisers) from 5 countries. A consultant and the services of 6 staff members were provided.

5104 Training in family health and family planning (1972—) UNFPA—To assist in the postgraduate training of doctors and nurses in various aspects of family health, including maternal and child health, and family planning.

5105 Family health and family planning (1972—) UNFPA—To assist countries of the Region in family health, including maternal and child health, family planning activities, and relevant studies; and to provide guidance for intercountry activities concerned with the training, research and services (especially basic health services) required for the delivery of maternal and child health and family health care.

5204 Advisory services in occupational health (1973—) R—To provide assistance and to cooperate with ILO in the field of occupational health.

A consultant (Feb.-March 1973) visited Morocco and Algeria to investigate the possibilities for the strengthening of occupational health services in view of growing industrialization.

5420 Training course in mental health epidemiology and statistics, Prague (4-28 June 1973) R—To bring together psychiatrists and statisticians for discussing problems, with a view to developing a better understanding of how they can work together in the planning and organization of national mental health services. Provided—fellowships for 9 trainees from 7 countries.
5423 Working Group on Comparison and Evaluation of Methods of Treatment and Rehabilitation for Drug Dependence and Abuse, Frankfurt-am-Main, Federal Republic of Germany (12–16 March 1973) VD—To examine principles, patterns, and staffing and organizational requirements for drug dependence treatment and rehabilitation services on the basis of national experience, and to discuss approaches to comparative studies and collaborative research. There were 15 participants (temporary advisers) from 13 countries of the Region, representatives of the International Narcotics Control Board, the Council of Europe, the International Council on Alcohol and Addictions, the World Federation for Mental Health and the World Psychiatric Association, and 3 national observers. Four staff members attended the meeting.

5427 Working Group on Psychiatry in General Practice, Lysekul, Norway (10–13 April 1973) R—To discuss the training of the physician for general practice; to review his role in the prevention and treatment of mental disorder and rehabilitation of patients in the community, and the coordination of primary care services with other agencies for physical and mental health; and to consider his contribution to epidemiological and other research and his future in community health service. There were 12 participants (temporary advisers) from 11 countries of the Region, and representatives from the World Medical Association and the World Psychiatric Association. Provided—the services of 4 staff members.

5428 Working Group on the Role of the Psychologist in Mental Health Services, Cracow, Poland (8–11 May 1973) R—To consider the role of the psychologist and his functions as a member of the psychiatric team. There were 13 participants (temporary advisers), including psychologists, psychiatrists and experts in nursing, education and social work, from 12 countries of the Region. A staff member attended the meeting.

5429 Study on health insurance and mental illness (Oct.–Dec. 1973) R—A consultant studied legal, social and economic aspects of the provision, by private and state health insurance systems, of benefits for mentally ill and handicapped persons in countries of the Region.

5430 Symposium on Problems of Deviant Social Behaviour and Delinquency, Bratislava, Czechoslovakia (27–31 Aug. 1973) R—To make a thorough review of the measures for legislation on prevention and treatment of deviant social behaviour and delinquency in adolescents and young persons and the rehabilitation of delinquents; and to define areas offering the best opportunities for collaborative research and action in European countries. There were 19 participants from 18 countries of the Region; a representative of the Council of Europe also attended. Provided—a consultant, 8 temporary advisers, the cost of attendance of 18 participants, and the services of 2 staff members.

5431 Working Group on Suicide and Attempted Suicide in Adolescents and Young Persons, Zagreb, Yugoslavia (1–4 Oct. 1973) R—To review the literature and coordinate national experience concerning suicide and attempted suicide in adolescents and young people, examine the social and psychological structure of these vulnerable groups, and discuss measures for the detection of suicidal tendencies, prevention of suicide, and treatment and support of those concerned. The conclusions of the group are intended to provide background material for a conference in 1974. The working group had 13 participants (temporary advisers) from 11 countries, and was attended also by a representative of the World Psychiatric Association and staff members.

5432 Working Group on the Evaluation of Mental Health Education Programmes, Nancy, France (21–24 May 1973) R—To discuss the principles governing mental health education programmes for young people in Europe and the problems associated with their implementation. There were 10 participants (temporary advisers) from 9 countries of the Region; representatives of the United Nations (Division of Social Affairs), UNESCO and the International Union for Health Education attended. The services of a consultant and of 3 staff members were provided.

5437 Study on existing patterns of services for alcoholism and drug dependence (Jan.–Feb. 1973) R—A consultant visited 9 countries of the Region to study variations in patterns of service for persons, especially young individuals, experiencing problems associated with the nonmedical use of alcohol and other dependence-producing drugs, the extent of social provisions and the administrative problems which arise in the coordination of the many disciplines involved. A comprehensive report will be distributed to all Member States in the Region.

5453 Working Group on Mental Health Services in Pilot Study Areas, Copenhagen (13–15 Feb. 1973) R—To discuss the feasibility of research to evaluate the effectiveness of mental health services and to establish norms and indicators. It was decided to institute studies using data collected in pilot areas and analysed according to ecological, socioeconomic and administrative variables, and to conduct a census to determine the distribution of patients, with a second phase to observe the use of available services by a cohort of patients. The 11 participants, including 9 temporary advisers, were directors of community mental health services from the pilot areas in 7 countries of the Region. Also provided—the services of 9 staff members.

5507 Course on methods for epidemiological surveys of oral conditions (in English), London (4–22 Dec. 1972) R—To provide training in the methods to be used in surveys of dental conditions and analyses of the output of dental services. The course was held at the Epidemiological Unit of the London Hospital Medical College Dental School. Most of the teachers were staff of the Epidemiological Unit or the Dental School, but there were also lecturers from Norway and the United Kingdom, as well as WHO headquarters. Provided—2 lecturers and fellowships for 9 trainees from 9 countries.

5508 Study on the training and use of auxiliary dental personnel in Europe (May 1973; Oct.–Nov. 1973) R—A consultant assisted in the preparation of a questionnaire on the numbers and classification of dental auxiliaries in European countries, their training programmes, and the scope and forms of their employment in dental health services.

5702 Study to define high-risk groups in road accidents (June 1973) R—A consultant analysed the replies from Member States in the Region to a questionnaire on the availability and uses of statistical information on road accidents, and visited the headquarters of the United Nations Economic Commission for Europe, the Council of Europe and the Organization for Economic Cooperation and Development to discuss current activities of these organizations that would have a direct bearing on the study, which is to serve as the basis for regional activities in this field.

6001 Exchange of information on placement, supervision and follow-up of WHO fellows (1968– ) R—To continue the exchange of experience between members of national health administrations and regional office staff and enable them to visit countries that have extensive experience in receiving WHO fellows and arranging their placement; and to supervise the placement of trainees from other WHO regions for studies in countries of the European Region.
EURO (continued)

6007 Conference of Deans of Medical Schools, Copenhagen (30 April–2 May 1973) R—To demonstrate to deans of medical schools and senior public health administrators the urgent need for and advantages of cooperation between medical schools and ministries. There were 52 participants from 23 countries of the Region; a representative of the World Federation for Medical Education also attended. Provided—a consultant, 3 temporary advisers, the services of 6 staff members and the cost of attendance of the 52 participants.

6201 Undergraduate education for the health professions (1961– ) R—To assist schools for health personnel in introducing new methods in undergraduate education, in exchanging experience and in obtaining information on various aspects of education in the health sciences.

6301 Postgraduate training for the health professions (1965– ) R—To assist in organizing and improving postgraduate training for the health professions.


6402 Postgraduate training in public health (1970–72) R—To assist schools of public health and other institutions responsible for postgraduate education in organizing basic, advanced and continuing education in public health and in promoting the use of effective educational methods.

Lecturers were provided for courses in medical services administration and to assist with technical discussions at meetings of the Association of Schools of Public Health of the European Region in 1970, and with 3 workshops on education methodology sponsored by the Association in 1971 and 1972.

A consultation on postgraduate education in public health was held at the Regional Office on 10 March 1972. The participants, 3 senior health administrators (temporary advisers), discussed with 5 staff members strategies for a reform of public health training in western European countries.

Assistance to courses in medical services administration will continue under project EURO 6301—Postgraduate training for the health professions.

7401 Training in the quality control of drugs (1971–72) R—To provide for the individual training of analytical technicians selected from graduates with long practical experience in the quality control of pharmaceutical preparations. Provided—fellowships to 8 trainees from 7 countries of the Region.

7404 Course on the quality control of drugs (French language), Rennes, France (1–20 Oct. 1973) R—To provide training in the general principles of the quality control of pharmaceutical preparations. There were 18 trainees, including 5 from the African Region and 4 from the Eastern Mediterranean Region. Provided—fellowships for 9 trainees from 8 countries and 7 lecturers (temporary advisers).

8102 Study on cancer control (1972–75) R—To devise methods for comprehensive control of cancer and test their feasibility in pilot areas where there is an interest in developing control programmes.

8103 Study on child cancer control (1973– ) R—To study methods of child cancer control and examine the possibility of establishing registers for statistical purposes in order to identify environmental factors and compare the results of different methods of treatment and management.

8201 Establishment of ischaemic heart disease registers (1968– ) R—To prepare a simplified registration system for the notification and continued surveillance of ischaemic heart disease in the population of a selected area, with a view to procuring accurate and comparable data on different aspects of the disease and on medical care of patients.

8202 Studies on prevention of ischaemic heart disease (1968– ) R—To follow up previous prevalence surveys, stimulate activities and achieve a better knowledge of the etiology and prevention of ischaemic heart disease.

8203 Training in epidemiological methods in cardiovascular diseases (1968–72) R—To provide facilities for training doctors in epidemiological methods applicable to cardiovascular diseases in view of a shortage, in some countries of the Region, of medical personnel trained in this field.

Fellowships were awarded under this project for training in the English, French and Russian-language courses on epidemiology and medical statistics held annually in London, Brussels and Bratislava under projects EURO 4902, 4903 and 4904 (grouped in 1973 under project EURO 4915), and experts on cardiovascular epidemiology were appointed as lecturers at these courses.

At a meeting of the directors of courses with 2 staff members in London on 7 and 8 May 1968 it had been decided to prepare a manual on training in cardiovascular epidemiology based on the exercises used for practical training at the London course, to be used at the Brussels and Bratislava courses. Two consultants prepared the manual, which was distributed to schools of public health and other postgraduate training institutes in Europe. A full week was subsequently devoted to cardiovascular diseases at the 1971 and 1972 French and Russian-language courses.

A meeting on training of cardiologists was held at the Regional Office on 10 and 11 February 1970 with representatives of the European Society of Cardiology, with which there were close contacts throughout the project, and suggestions were made on the improvement of postgraduate specialization in cardiology. A questionnaire on postgraduate training in cardiology was prepared and distributed to all Member States in the Region and to national cardiology societies; the replies were analysed by 2 temporary advisers in March 1972.

Temporary advisers on an exchange basis to various cardiology centres to compare methods and approaches in cardiovascular epidemiology; 2 temporary advisers were among the 4 participants from the European Region in the consultation on the prevention of rheumatic fever and rheumatic heart disease in Cairo (12-22 Feb. 1972); and Algeria, Morocco and Turkey sent 1 participant each to the Seminar on the Prevention of Major Cardiovascular Diseases held in Teheran under project EMRO 8202 (10-16 Dec. 1972).

In all under this project WHO provided fellowships totalling 355 months for 72 trainees from 19 countries in the Region, 2 consultants, 15 temporary advisers and the services of 4 staff members as lecturers, and the cost of attendance of the 3 participants in the seminar.

8204 Study on the evaluation of coronary care (1968– ) R—To assess the value and cost to the community of coronary care services by estimating the frequency of cardiac emergencies requiring such services in defined areas, assessing the cost and staffing needs, and evaluating reports on the reduction of mortality.
8205 Training in coronary care (1968– ) R—To provide for the individual training of doctors and other health personnel in intensive coronary care and its organization in selected units; and for the participation of lecturers in national courses on coronary care.

8206 Study of the effects of rehabilitation in patients with cardiovascular diseases (1968– ) R—To carry out controlled co-ordinated studies on the effects of rehabilitation in patients with cardiovascular diseases, its possible influence in preventing later incapacity, and factors that may result in a relapse or affect length of life.

8207 Development of national centres for training in rehabilitation of patients with cardiovascular diseases (1968– ) R—To assist in the development of centres for training in the rehabilitation of patients with cardiovascular diseases, including teacher training for such centres.

8208 Training in rehabilitation of patients with cardiovascular diseases (1968– ) R—To provide for training in the rehabilitation of patients with cardiovascular diseases.


8210 Evaluation of the progress of the regional cardiovascular diseases programme (1969– ) R—To evaluate the progress of work on cardiovascular diseases and suggest changes in the programme in the light of new advances in the field of cardiology.

8211 Study on cerebrovascular diseases (1971– ) R—To develop methods to enable public health authorities to assess the extent of the cerebrovascular disease problem in the community and provide reliable data for planning services for its control.

8212 Conference on the Prevention and Control of Major Cardiovascular Diseases, Brussels (18–23 June 1973) R—To consider ways in which the health services of different countries can introduce effective measures for preventing and controlling major cardiovascular diseases, taking into account available scientific knowledge and the results of the regional cardiovascular diseases programme. There were 29 participants from 26 countries of the Region and a representative from the European Society of Cardiology. Provided—a consultant, 7 temporary advisers, the cost of attendance of 26 participants, and the services of 5 staff members.

8217 Training in the rehabilitation of stroke patients and in speech therapy (1973– ) R—To provide training in the most advanced rehabilitation techniques, including speech therapy, for stroke patients, and in the organization of rehabilitation services for community control programmes.

8218 Study on community control of moderate and severe hypertension (1973– ) R—To develop a model community programme for the control of moderate and severe hypertension associated with coronary and cerebrovascular diseases in the light of recent prospective trials, which have shown that it is feasible and reduces the incidence of stroke and renal complications. Pilot studies will be started on the basis of the proposals elaborated at a meeting on the control of stroke and hypertension in the community, held in Geneva in February 1971.

8219 Training in the organization of cardiovascular control programmes (1973– ) R—To provide facilities for training administrative, medical and other health personnel in the methods and techniques essential for establishing and running cardiovascular disease control programmes on a community basis.

8401 Trachoma control and prevention of loss of vision (1958–74) UNDP—To provide specialized technical advice on the further development of communicable eye disease control projects in several countries of the Region, and to study the need for general sight-saving programmes in these and other countries.

8402 Study of methods for the early detection of potentially blinding eye conditions (1968–70; 1972) R—To study possible methods of screening for potentially blinding eye conditions, and to obtain information as a basis for comparison of procedures and for discussion on the most suitable methods for European countries to adopt.

Nine consultants gathered information in 13 European countries about activities carried out, experience gained, and difficulties encountered in early detection, and prepared reports which were considered by a working group held in Copenhagen from 7 to 11 December 1970. The report of the working group, the French and Russian editions of which appeared in 1972, gave guidelines for further interdisciplinary activities and a systems approach to the problem of unnecessary loss of vision and blindness.

9602 Conference on the Role of Maternal and Child Health Services in Family Planning, Ljubljana, Yugoslavia (4–8 Dec. 1972) UNFPA—To facilitate a broad exchange of information and discussion on the current situation and trends in maternal and child health and family planning, and to examine how these subjects could be covered efficiently by the basic health services. Education and training of various health workers, family health education in schools and of the general public, and the need for studies and research were also discussed. There were 29 participants from 25 countries of the Region. Representatives of the International Paediatric Association, the International Council of Nurses, and the International Planned Parenthood Federation attended. Provided—2 consultants, 9 temporary advisers, the cost of attendance of 25 participants, and the services of 5 staff members.

IC 01 Follow-up of intercountry activities on a national basis (1958–73) R—To assist governments in developing national activities arising out of the intercountry programmes of the European Region.

SC 01 Participation in seminars and conferences (1959–73) R—To assist with seminars and conferences conducted by the United Nations, specialized agencies, medicosocial organizations and agencies whose work is of special interest to the Regional Office.

SC 02 Preparatory arrangements for conferences (1964–73) R—To make preparations and preliminary arrangements for conferences, seminars, etc., to be held in the following year.
Afghanistan

1001 Vaccine production (1970–73) R—To draw up structural plans for the premises of a vaccine institute. Provided—a consultant architect and supplies and equipment.

Plans for the construction of a vaccine institute in Kabul were drawn up in 1970 with the assistance of the WHO consultant, who subsequently visited Afghanistan on several occasions for discussions with government officials. In June 1973 he again went to Afghanistan to review the building and ensure that construction was proceeding according to plan.

1201 National tuberculosis programme (1958; 1961– ) UNDP—UNICEF—To implement a national tuberculosis control programme integrated into the basic health services.

1801 Smallpox eradication (1967–75) R—To keep the country free from smallpox by mass vaccination of the population and the operation of a reporting and surveillance/containment system.

2001 Malaria eradication programme (1956– ) R UNICEF—To eradicate malaria from Afghanistan north of the Hindu Kush, and to continue antimalarial “holding” operations to conserve the gains achieved south of this mountain range, with the ultimate objective of achieving the eradication of malaria from the whole country.

3001 Environmental health (1966– ) R—To develop the environmental sanitation unit in the Ministry of Public Health and plan and implement a long-term programme of community water supply, waste disposal and general sanitation.

3201 Water supply, sewerage and drainage for Greater Kabul (1966; 1968–69; 1971–74) UNDP—To make a detailed study of the water supply, sewerage and drainage situation in Greater Kabul and formulate a master plan and a phased programme of development.

4001 Development of basic health services (1965–75) R UNICEF—To establish, throughout the country, basic health services into which the malaria eradication services may be integrated when the consolidation phase of the eradication programme is well advanced; and to strengthen the provincial health administration so as to secure adequate supervision of the basic health services personnel.

4201 Histopathology department, Avicenna Hospital (1972–73) R—To establish a histopathology department at the Avicenna Hospital, Kabul, for training students and conducting routine histopathological work.

4202 Institute of Public Health, Kabul (1956–58; 1961– ) R UNICEF—To develop the Institute of Public Health for service, research and training of public health workers and to reinforce the teaching of sanitary engineering subjects in the undergraduate civil engineering course.

4401 Nursing advisory services (1957–75) UNDP—To strengthen nursing administration at national and local levels, and develop and coordinate nursing and midwifery education and services.

4402 Nursing administration and education (1967– ) R—To improve nursing services administration in order to provide effective nursing care of patients.

4701 School of Radiography, Kabul (1969– ) R—To develop the School and train personnel.

4901 Advisory services in vital and health statistics (1971– ) R—To develop the national vital and health statistical services and train the necessary staff.

4902 Infant and childhood mortality survey (1971– ) UNFPA—To organize a survey on infant and childhood mortality that will provide information on the magnitude of the problem, the factors affecting it, and the impact of specific public health measures; to test statistical methods for collecting information on infant and childhood mortality in the absence of or as a supplement to a vital statistics system; and to train staff for the project.

5101 Maternal and child health/family planning (1972– ) UNDP—To reorganize and strengthen comprehensive services for maternal and child health care, including family planning, and to provide refresher and orientation courses in maternal and child health for professional and auxiliary health personnel.

6201 Medical education (1952– ) R—To develop medical education, with particular attention to improving the teaching of the basic medical sciences and community medicine and to the further training of teachers in their subjects and in educational science and methodology.

7401 Pharmaceutical quality control (1972– ) R—To establish a division of pharmacy and medical supplies in the Ministry of Public Health; and to develop the quality control laboratory for the analysis and assay of pharmaceutical preparations and administrative control measures such as legislation, licensing and registration of locally manufactured and imported drugs.

Bahrain

3301 Bahrain sewerage (1973–74) R UNDP—To make a pre-investment survey for sewerage and drainage for the metropolitan areas of Bahrain, and to formulate a master plan and a phased programme for development.

4101 Health legislation (Jan.–Feb. 1973) R—A consultant made a review of existing health legislation and assisted in drafting new legislation and regulations.

Cyprus


4801 Services for spastic and crippled children (May–July 1973) UNDP—A consultant assisted in organizing a centre for the rehabilitation of spastic and crippled children.

5401 Mental health (Oct.–Nov. 1973) R—A consultant assessed the nature and extent of mental health problems, reviewed the existing services, and submitted recommendations for strengthening the delivery of psychiatric care.

8501 Survey on Cooley’s anaemia (1973) R—Following the visit, in 1971, of a consultant who advised on the methodology
for diagnosing Cooley's anaemia in Cyprus, the procedures for assessing the prevalence of the disease and measures for limiting its incidence, supplies and equipment were provided to assist the Government in establishing a genetic counselling centre.

Democratic Yemen

1201 Tuberculosis control (1971-) R UNICEF—To implement a comprehensive national tuberculosis control programme, integrated into the general health services in the provinces and with a specialized service at the central level.

1801 Smallpox eradication (1969-75) R VS—To carry out mass vaccination against smallpox and to organize and intensify reporting and surveillance, in order to keep the country free from smallpox.

2001 Malaria control (1969-) R—To carry out antimalaria measures and coordinate the development of the malaria service with that of the rural health services.

3201 Community water supply (Dec. 1972-Jan. 1973) R—A consultant advised the Government on the utilization of UNICEF supplies for the development of rural water supplies. He studied the water situation in 2 governorates and prepared a water supply plan, including rough cost estimates for the towns of Dhala and Lodar.

4001 Public health advisory services (1968-) R—To strengthen the administration of the health services and develop health programmes.

4201 National health laboratory (1971-76) R—To establish a central public health laboratory that will serve as the nucleus for the development of national health laboratories.


6101 Institute of Health Manpower Development, Aden (1970-) UNDP—To establish an institute for training the technical personnel (nursing staff and middle-grade personnel of various categories) required for the health services.

Egypt

1201 BCG vaccine production, Virus Institute, Cairo (1972-74) UNDP—To establish a laboratory for the large-scale production of freeze-dried BCG vaccine.

1601 Shigella and Salmonella survey (1969-) R—To establish a national reference centre for the classification of Shigella and Salmonella.

1901 Virus research, training and production centre, Agouza (1966-75) UNDP—To set up a vaccine production centre for poliomyelitis, measles and other virus vaccines.

2001 Malaria eradication programme (1957-) R—To carry out studies on malaria in the country, with particular emphasis on the bionomics of the vectors and their susceptibility to insecticides, and to make studies of spraying equipment.

2101 Schistosomiasis control pilot project and training centre (1961-) R UNDP—To test measures for controlling schistosomiasis, so as to find those cheapest and most effective under conditions in the country. The project serves as a field demonstration and training centre for the Region.


4201 Concentrated sera production (1972-) R—To establish a unit for the production and purification of concentrated sera at the Agouza laboratories, Cairo.

4301 Intensive care units, Alexandria University Hospital (1970-) R—To develop an intensive care unit at the Hospital.

4303 Intensive care units (1972-) R—To plan, organize and manage intensive care units in the large hospitals and train the necessary staff.

4402 High Institute of Nursing, Cairo University (1965-75) R—To develop a basic four-year degree programme in nursing, designed to prepare nurses for leading posts in nursing service and educational programmes.

4901 Health data processing (1970-) R—To improve the use made of computers for vital and health statistics and research, and to train national staff.

5101 Prophylaxis of recurrence of rheumatic fever in schoolchildren (1972-) R—To prevent and control rheumatic fever in schoolchildren.

6001 Centre for educational technology in the health sciences (1973-) R—To develop a centre for the application of modern educational technologies in order to increase the number and raise the standard of health personnel in Egypt and prepare teaching/learning material of high quality that can be used in health manpower training programmes in other countries.

6201 Medical education (1970-) R—To develop undergraduate and postgraduate medical education, and scientific research, in the medical schools.

6401 High Institute of Public Health, University of Alexandria (1956-) R—To develop the Institute, which provides postgraduate training in public health for Egyptian graduates and WHO fellows from other countries of the Region.

7401 Pharmaceutical quality control (1970-) R—To develop specific aspects of drug control for locally manufactured and imported pharmaceutical preparations, and to carry out research and train specialists in this field.

8401 Neurosurgical centre, Shoubra Hospital, Cairo (1971-73) UNDP—To establish a neurosurgical centre in Shoubra Hospital, Cairo, and develop satellite centres in other governorates.

8801 Centre for allergic diseases of the respiratory system (1971-73) UNDP—To establish a centre for allergic diseases of the respiratory system.

9601 Family planning (1970-) UNFPA—To implement the health component of the national family planning programme and train technical personnel for the programme.

Ethiopia

1001 Advisory services in epidemiology (1966-73) UNDP—To plan, develop and operate epidemiological services at all levels of the health services.

1201 Tuberculosis control (1959-73) UNDP UNICEF—To implement a comprehensive national tuberculosis control programme, integrated into the provincial health services.

1801 Smallpox eradication (1968-75) R VS—To achieve the eradication of smallpox through a system of reporting and
Ethiopia (continued)

surveillance/containment operated with the cooperation of the health services.

2001 Malaria eradication training centre (1959- ) R — To train various categories of personnel for the malaria eradication programme.

2002 Malaria eradication programme (1967- ) R (USAID) — To eradicate malaria from those areas in which technical and administrative conditions ensure its feasibility.

3001 Environmental health services (1967- ) R — To plan and administer a national environmental health programme.

3002 Public and environmental health control, Awash valley (1971-74) UNDP — To review the epidemiological situation and assess the health and environmental hazards in the area covered by the Awash valley development programme, to plan a network of basic health services and to improve sanitary facilities, especially as regards community water supplies, disposal of domestic and industrial wastes and control of schistosomiasis.

3201 Community water supply (1967-74) UNDP — To plan, design, and supervise the construction of community water supplies in the small towns.

4001 Development of provincial health services (1962-73) R UNICEF — A public health adviser (1962-71), a nurse/midwife (1963-67), a public health nurse (1967-69; 1971-72), and a sanitary (1962-68; 1971-72) assisted in providing technical supervision and guidance to the personnel of rural health centres, and later also, in developing the provincial health services, including sanitation services. Fellowships and supplies and equipment were also provided.

In view of the complexity of the project, achievements are considered to be reasonable; there is, however, still much to be done before an adequate level of basic health services is reached.

4101 Health planning (1968-73) UNDP — To plan and develop national health services and coordinate health programmes as part of the national five-year development programme.

4201 National health laboratory service (1972- ) R — To establish a national health laboratory service by strengthening and modernizing the Imperial Central Laboratory and Research Institute and expanding the services to cover the provinces; and to train the necessary personnel.

4301 Hospital planning and administration (1970; 1972- ) R — To develop the hospital and medical care services.

4901 Health statistics (1966-73) UNDP — To strengthen the health statistical unit in the Ministry of Public Health, improve the collection, compilation and publication of vital and health statistical data and train statistical personnel of various categories at central and provincial levels.

6201 Medical education (1964- ) R — To develop medical education at the Haile Sellassie I University, with special attention to the improvement of teaching in the basic medical sciences and in-community medicine, and to providing further training to teachers in their subjects and in educational science and methodology.

6401 Public Health College and Training Centre, Gondar (1954-74) R — To train health personnel to staff the expanding health services, particularly in rural areas.

7401 Pharmaceutical services (1971- ) R — To establish a division of pharmacy and medical supplies in the Ministry of Public Health; and to develop the quality control laboratory for the analysis and assay of pharmaceutical preparations and administrative control measures such as legislation, licensing and registration of locally manufactured and imported drugs.

Iran

3001 Teaching of sanitary engineering, Pahlavi University, Shiraz (1968; 1970; 1972- ) R — To develop a programme of sanitary engineering education and research, initially at undergraduate level, at the University.

3301 Pre-investment survey of sewerage needs and facilities in Teheran (1968; 1970-74) UNDP — To undertake a pre-investment survey for sewerage and storm drainage in the Greater Teheran area and to draw up master plans and first-stage feasibility studies to assist in securing investment for construction. The survey will also cover the treatment and re-use of waste water for agricultural purposes.

3302 Kermanshah sewerage (Jan.-April 1973) R — A consultant studied the Kermanshah sewerage system and advised on methods of sewage treatment and disposal.

3601 Control of food products (May-June 1973) R — A consultant advised on programmes for the epidemiological surveillance of foodborne diseases.

4401 High Institute of Nursing, Teheran (1967- ) UNDP — To develop basic nursing education at university level.

4402 Postbasic nursing education (1967- ) R — To develop a two-year postbasic programme leading to a degree of Bachelor of Science in nursing at the Department of Nursing, College of Arts and Sciences, Pahlavi University, Shiraz.

4701 Planning of radiotherapy departments (Oct.-Nov. 1973) R — A consultant advised on the design of radiotherapy departments at the Shahinz Hospital, Meshed, and the Medical School, Ahwaz.

4801 Rehabilitation of the physically handicapped (1969- ) R — To train personnel required for the development of rehabilitation services throughout the country at the school of physical therapy, University of Teheran, and the Shafa Yahayaan Rehabilitation Hospital.

5201 Occupational health (1963-64; 1972-76) R — To develop teaching and research in the School of Public Health, University of Teheran, and carry out a field survey for assessment and control of the working environment in a selected sample of Iranian industry.

5401 Mental health services (Nov. 1973) R — A consultant reviewed and advised on the facilities for the care and rehabilitation of mentally retarded children, and also reviewed mental health activities in the country.

6201 Medical education (1971- ) R — To develop medical education, with particular attention to improving the teaching of the basic medical sciences and community medicine and to the further training of teachers in their subjects and in educational science and methodology.

6401 Postgraduate education in public health (1964- ) R — To develop the School of Public Health of the University of Teheran, giving particular attention to the further training of teachers in the various disciplines and to the improvement of the teaching of radiation health.

7401 Laboratory for pharmaceutical quality control (1966- ) R UNDP — To develop the quality control laboratory for the
8101 Cancer control (1973-76) R—To plan a radiotherapy department for the treatment of cancer.

Oman

2001 Malaria control (1972- ) R—To institute antimalaria measures shown to be feasible by a survey completed in 1972.

Pakistan

1201 Tuberculosis control (1962- ) R UNDP UNICEF—To implement a national tuberculosis control programme integrated into the general health services.

1801 Smallpox eradication (1967-75) R VS—To implement a smallpox eradication programme comprising mass vaccination, with concurrent assessment, and the organization and intensification of surveillance activities and a maintenance and containment system.

2001 Malaria eradication programme (1961- ) R

3001 Teaching of sanitary engineering, Lahore (1968- ) R UNICEF—To strengthen the postgraduate sanitary engineering course at the University of Engineering and Technology, Lahore.

3201 Community water supply and rural sanitation (1964- ) R—To formulate a national water supply and sanitation programme within the fifth 5-year plan, and to improve and develop community water supplies and rural sanitation in the provinces.

3202 Peshawar water supply extension (1973-75) UNDP—To plan and design the extension of the Peshawar water supply system.

4201 National health laboratories, Islamabad (1964- ) R—To establish national health laboratories in Islamabad, with a view to making them reference laboratories for the whole country.

4801 Occupational therapy workshop (1970- ) R—To reorganize the work of the occupational therapy unit of the Department of Physical Medicine and Rehabilitation, Jinnah Postgraduate Medical Centre, Karachi, and to improve the orthopaedic workshop.

5601 Nutrition Institute, Islamabad (1967-75) R UNICEF (FAO)—To organize a Nutrition Institute at Islamabad and promote nutrition programmes and services.

6201 Medical education (1973- ) R—To develop medical education through a programme of assistance to the 10 medical faculties, special attention being given to the development of the faculties' libraries and to the further training of teachers in their subjects and in educational planning and methodology.

6402 Institute of Hygiene and Preventive Medicine, Lahore (1966- ) R—To develop postgraduate teaching in public health at the Institute.

7401 Pharmaceutical quality control (1967- ) R—To establish a central laboratory for the quality control of pharmaceutical preparations, both locally manufactured and imported, and to train staff in modern techniques of drug testing and analysis.

9601 Family planning (1970- ) UNFPA—To plan and implement the health aspects of the national family planning programme and to train technical personnel for the programme.

Qatar

4201 Central public health laboratory (1973-75) R—To organize and develop the public health laboratory services.

6101 Training of health personnel (1969- ) R—To train auxiliary health personnel, including assistant sanitarians, assistant male nurses, laboratory assistants and others from Qatar and neighbouring countries for staffing health services and hospitals; also to develop in-service and refresher training of health personnel already in government employment.

Saudi Arabia

1201 Tuberculosis control (1963- ) R—To implement a national tuberculosis control programme.

1801 Smallpox eradication (1968-75) R—To carry out mass vaccination against smallpox and intensify reporting and surveillance, in order to keep the country free from smallpox.

2001 Malaria pre-eradication programme (1963- ) R—To build up the technical, administrative and operational facilities for a control programme as a step towards malaria eradication, and at the same time to develop the rural health services, so that they may provide efficient support to the control and eventual eradication operations.

2101 Schistosomiasis control (Nov.-Dec. 1973) R—A consultant made a study of the extent and public health importance of schistosomiasis and assisted in drawing up a programme for its prevention and control.

3002 Sanitary engineering and municipal programming (1963-74) FT—To develop the municipal environmental health programmes, especially as regards water supplies, disposal of sewage and other wastes, housing, and town planning; and to organize an environmental engineering service for the purpose in the Ministry of Interior.

4001 Public health advisory services (1962-63; 1967- ) R—To improve the administration of the public health services and the planning, coordination, evaluation and follow-up of health programmes.

4002 Centre for training and applied research in community development (1972-74) UNDP/UN—To establish a centre for training community development workers and conduct research into methods of promoting community responsibility and facilitating socioeconomic change. (WHO assists in the study of community health problems and in incorporating health components in the centre's training programmes and advises on community health services.)

4201 Public health laboratory services (1959- ) R—To provide the country with adequate national health laboratory services, starting with a central public health laboratory in Riyadh.

Somalia

1201 Tuberculosis control (1960- ) R UNDP UNICEF—To implement a comprehensive national tuberculosis control programme, integrated into the basic health services.

1801 Smallpox eradication (1967-75) R VS—To carry out mass vaccination against smallpox and intensify reporting and surveillance in order to keep the country free from smallpox.

2001 Malaria pre-eradication programme (1962- ) R UNDP—To coordinate the development of the national malaria service and that of the rural health services, and to carry out malaria control measures as a step towards malaria eradication.

4001 Basic health services (1962-64; 1969- ) R UNICEF—To develop an integrated basic health service and a rural demonstration area to be used for the training of health personnel.
Somalia (continued)

4201 Public health laboratory services (1966- ) R—To develop sound technical methods for laboratory investigation and to provide training facilities, including in-service training for all grades of technical staff.

4302 Centre for the repair and maintenance of medical equipment (1973- ) R—To establish a centre under the Ministry of Health and a country-wide service for the repair and maintenance of medical equipment, and to train the necessary staff.

4401 Postbasic nursing education (1961- ) R—To strengthen the nursing and midwifery services through provision of a 3-year diploma course at the nursing school in Hargeisa, followed by a 1-year programme in midwifery for graduate nurses.

6101 Health Training Institute (1959- ) R UNICEF—To train various categories of auxiliary health personnel, and provide in-service training and refresher courses.

6201 Medical education (1973- ) R—To develop medical education through a programme of assistance to the Faculty of Medicine of the National University, Mogadishu, in which special attention will be given to the development of a “block-teaching system” curriculum and to organizing the department of basic medical sciences.

Sudan

1301 Leprosy control (1972- ) R—To establish a pilot demonstration area for testing under local conditions the practicability of integrating leprosy control into the general health services, and to use the experience gained to draw up and implement a leprosy control system for all areas of the country where it is epidemiologically justified and economically feasible.

1801 Smallpox eradication (1967-75) R VS—To keep the country free from smallpox through mass vaccination of the population and the operation of a reporting and surveillance/containment system.

2001 Malaria control programme (1963- ) R—To build up the technical, administrative and operational facilities for a control programme as a step towards malaria eradication, and at the same time to develop the rural health services, so that they may provide efficient support to the antimalaria operations.

2201 Onchocerciasis control (1963- ) R—To carry out periodic surveys of onchocerciasis infection in the main section of the Nile north of Khartoum and in Bahr el Ghazal and Equatoria Provinces; to develop a programme for prevention and control of the disease; and to train personnel.

2401 Mycetoma survey (1963-73) R—To define the extent of the mycosis problem, teach diagnostic techniques, and stimulate the interest of medical and health officers in case-finding, diagnosis, treatment and control of mycoses. Provided—the services of a consultant, and supplies.

3001 Sanitary engineering course, University of Khartoum (1967- ) R—To improve the teaching of sanitary engineering subjects to students of civil engineering at the University of Khartoum, to provide additional optional courses for senior students and ultimately to organize a postgraduate course in sanitary engineering.

4003 Public health advisory services, southern region (1972- ) R UNICEF—To strengthen the planning, organization and administration of the health services in the southern region.

4201 National public health laboratory service (1969; 1971- ) UNDP—To establish a national public health laboratory service.

4701 Training of X-ray technicians (1970-75) R—To train X-ray technicians from Sudan and neighbouring countries.

4901 Advisory services in vital and health statistics (1970- ) R—To strengthen the vital and health statistics unit in the Ministry of Health, develop a vital and health statistics system, and train staff.

5201 Occupational health (1969- ) R—To develop the division of occupational health and draw up an occupational health programme, particularly with respect to industrial hygiene.

5601 Applied nutrition (1966-75) R UNDP/FAO UNICEF—To develop, through the Ministries of Health, Education, and Agriculture, nutrition services and programmes for improving the nutritional status of the population.

6201 Medical and dental education (1971- ) R UNDP—To develop the medical faculty of the University of Khartoum and, its dental school, special attention being given to improving teaching in the basic medical sciences, community medicine, and dentistry, and to the further training of teachers in their subjects and in educational science and methodology.

The former project Sudan 5101 (Teaching of paediatrics) has been incorporated into this project.

Syrian Arab Republic

1001 Advisory services in epidemiology (1972- ) R—To set up a department of epidemiology in the Ministry of Health and strengthen the epidemiological services for the control or eradication of the most prevalent communicable and non-communicable diseases.

1201 Tuberculosis control (1965- ) R UNICEF—To implement a national tuberculosis control programme.

1701 Communicable eye disease control (1966- ) R—To carry out a study of the epidemiology of trachoma and related eye infections, develop methods for their control, train personnel, and set up services, within the public health services, for maintaining the control programme permanently and extending it.

2001 Malaria eradication programme (1956- ) R

4201 Public health and endemic diseases laboratory (1959-75) R—To develop the services of the public health and endemic diseases laboratory, and particularly the food microbiology section.

4401 Nursing education, Damascus (1960- ) R—To develop a pattern of nursing education that will provide graduate nurses to meet the needs of the health services.

5501 Faculty of Dental Medicine, University of Damascus (1973- ) UNDP—To improve dental public health by introducing modern teaching methods and techniques and establishing a pilot dental clinic attached to the Faculty of Dental Medicine, University of Damascus.

Tunisia

2001 Malaria eradication programme (1966- ) R UNDP

2101 Schistosomiasis control (1970- ) R—To carry out an epidemiological and malacological survey of schistosomiasis, intensify control measures and train personnel.
3001 Environmental health services (1962–72) UNDP—To develop a national environmental health programme and train personnel for its implementation. Provided—a sanitary engineer (1963–72).

Activities carried out under the project included the organization of environmental health services, the drawing up of legislation, and the training of staff. Assistance was provided to the Société nationale d’Exploitation et de Distribution des Eaux in respect of the disinfection of community water supplies. Concurrently, sanitarians were trained at the Nabeul Institute of Public Health, many of them for control of the quality of water supplies throughout the country. Close collaboration was maintained with the Ministry of Agriculture, which deals with water supplies in rural areas. In addition, assistance was provided as required to municipalities for the improvement of their sanitation programmes.

In connexion with the floods that occurred in Tunisia in October 1966, the sanitary engineer and his national counterpart assisted the Government in taking the necessary measures for the protection of water supply facilities in all the cities affected.

4101 Health planning (Oct.–Dec. 1972) R—A consultant assisted the Government in analysing the available information on the health situation, and identifying areas, projects and programmes for development. He also reviewed the sectoral plan for health within the context of the fourth national socio-economic development plan and assisted in the development of health and medical care services.

4401 Nursing education (1964–73) R UNDP—To strengthen the nursing services and schools of nursing through the provision of postbasic courses to prepare qualified nurses as administrators, supervisors and teachers. Provided—nurse educators for a total of 184 months between March 1964 and February 1973, fellowships, and supplies and equipment.

During the course of the project, 62 students graduated from the postbasic programmes in supervision, teaching and administration. In 1972 a headquarters staff member reviewed the system of nursing education in the country, and submitted recommendations which led to the pattern of postbasic nursing education being revised. Midwives, public health (maternal and child health) nurses and nurse educators/administrators now follow a 2-year programme, the first year of which is common to all 3 groups.

4901 Health statistics (1968—) UNDP—To develop a system of vital and health statistics through the establishment of a permanent statistical service in the Secretariat of State for Public Health and the training of national staff in health statistics techniques.

6201 Medical education (1961—) R—To develop the medical faculty of the University of Tunis, special attention being given to improving the teaching of the basic medical sciences and to the further training of teachers in their subjects and in educational science and methodology.

8101 Cancer control (1964; 1972—) R—To develop the programme of the National Cancer Institute.

9601 Family planning aspects of maternal and child health (1971—) UNFPA—To develop integrated maternal and child health and family planning services as part of the health services, train personnel, and develop biomedical research.

United Arab Emirates

4001 Public health advisory services (1973—) R—To develop the public health services. Under this project advice is being provided to the ministries of health on the strengthening of the administration of the services and the formulation, coordination, evaluation and follow-up of health programmes.

Yemen

1201 Tuberculosis control (1970–) R—To implement a comprehensive national tuberculosis control programme, integrated into the basic health services.

1501 Plague control (Jan.–March 1973) R—A consultant carried out entomological and epidemiological surveys in areas potentially endemic for plague, advised on measures of control of rodents and fleas, and trained personnel in the investigation of infected rodents and fleas, rat control measures, and the use of insecticides.

1801 Smallpox eradication (1968–75) R VS—To carry out mass vaccination against smallpox and organize a reporting and surveillance system in order to keep the country free from smallpox.

2101 Schistosomiasis control (1972–) R—To make epidemiological and malacological studies of schistosomiasis, formulate and implement a control programme and train the necessary staff.

3201 Environmental health services and community water supply (1969—) R—To develop the national community water supply programme, investigate and design various types of water supply systems, particularly for towns and rural areas, and take measures for the solution of environmental health problems.

3202 Water supply, Sana'a and Hodeida, phase I (1970–73) UNDP—To prepare a master plan and carry out preliminary engineering and feasibility studies for the first stage programme of water supplies for Sana'a and Hodeida.

Construction of the Sana'a water supplies is expected to start in 1974, with assistance from the International Development Association.

3203 Water supply, Sana'a and Hodeida, phase II (1973–74) UNDP—To carry out final engineering design for the first stage water supply programme for Sana'a's, and to complete the preliminary engineering and feasibility studies for the first stage water supply programme for Hodeida. Work on the sewerage pre-investment studies is to begin in 1974.

4001 Local health services, Taiz (1965–) R UNICEF—To develop comprehensive health services for Taiz town and province, using a health centre in Taiz for demonstration and for training auxiliary health personnel, and establishing further centres and subcentres, training their staff and developing their services.

4002 Local health services, Hodeida (1963–) R UNICEF—To develop comprehensive health services for Hodeida town and province, using a health centre in Hodeida for demonstration and for training auxiliary health personnel, and establishing further centres and subcentres, training their staff and developing their services.

4003 Public health administration (1961–) R—To improve the planning and administration of health services.

4101 Health legislation (March–May 1973) R—A consultant reviewed existing health legislation and assisted in drafting new legislation and regulations.

4201 Public health laboratory services (1971–) R—To establish public health laboratory services, starting with a central public
Yemen (continued)

health laboratory in Sana'a and provincial laboratories in Taiz and Hodeida; and to train personnel.

4301 Organization of medical care (1962–72) R—To plan and coordinate medical care services, improve existing hospital services, integrate health centres and subcentres into the hospital systems of the various areas, and train technical and auxiliary health personnel. Provided—a medical officer (Jan. 1971–Dec. 1972), and supplies and equipment.

During the first months of the project, an assessment was made of the existing health facilities, as well as an analysis of the organization of services and the available manpower. Assistance was given in the improvement of hospital services, in the planning and utilization of medical care facilities, and in staffing and equipping the new wing of Al-Olfi Hospital, Hodeida. During the last months of the project assistance was provided in connection with the contemplated reorganization of the Health Ministry.

4801 Prosthetic appliances workshop, Sana’a (Jan.–April 1973) R—The consultant provided in 1972 returned in January 1973 to provide further assistance in upgrading the production of prosthetic appliances and in the manufacture of components with locally available material. He also advised on various matters relating to the administration and management of the workshop.

5601 Food and nutrition programme (1971– ) UNDP/FAO—To organize and extend school feeding and hospital dietary services, train personnel and promote nutrition education.

6101 Institute of Health Manpower (1956– ) UNDP—To develop the Institute, which provides training for auxiliary health personnel, including sanitarians, nurse/midwives and laboratory technicians; to demonstrate modern methods for the prevention and cure of certain diseases and for the control of communicable diseases; and to facilitate the organization of public health services.

EMRO

1001 Epidemiological services (1969– ) R VC VS—To assist governments in developing their epidemiological services in order to be able to cope with epidemics or natural disasters such as earthquakes and floods, and to develop epidemiological surveillance systems in conjunction with the development of basic health services.

1601 Cerebrospinal meningitis vaccine studies (1973) R—A technical officer and a consultant bacteriologist assisted (for two weeks and three and a half months respectively) with trials carried out in Sudan to assess the effectiveness of antimeingo-coecal polysaccharide vaccine. Some 48,000 vaccinations were performed in the southern part of Kordofan Province, and in Khartoum, Khartoum North, and Omdurman, where outbreaks of cerebrospinal meningitis were occurring.

1701 Communicable eye disease control (1973– ) R—To assist countries of the Region in the planning, implementation and assessment of their national programmes for the prevention of visual impairment and blindness, particularly programmes against trachoma, onchocerciasis and xerophthalmia.

1801 Smallpox eradication (1967–75) R VS—To assist countries of the Region in the planning, implementation and assessment of their smallpox eradication programmes, and also to assist national laboratories in developing diagnostic methodology and in improving the production of freeze-dried smallpox vaccine.

2001 Malaria coordinating meetings (1968– ) R—To facilitate participation in intercountry malaria coordinating meetings for discussion and exchange of information between national authorities responsible for malaria eradication programmes.

Two meetings were held during the period under review—one between Jordan and Saudi Arabia, in Damman, Saudi Arabia, on 28 and 29 April 1973, and one attended by officials from Jordan, Lebanon and the Syrian Arab Republic, in Beirut, on 6 and 7 June 1973.

3001 Refresher course for sanitarians, Damascus (May 1972–Feb. 1973) UNDP—To provide advanced training in sanitation and supervision of sanitation services, and training for experienced national sanitarians from certain countries of the Region.

This project was the continuation of a previous project entitled “Advanced training for sanitarians”, under which 3 courses (1966–67; 1968–69; 1969–70) were given, attended by a total of 33 trainees from the Syrian Arab Republic and certain other countries of the Region.

The refresher course, which was the fourth and final course of the series, had 12 trainees—6 from the Syrian Arab Republic and 6 from other countries of the Region. In the programme emphasis was placed on the provision of safe water supply, wastes disposal, healthy housing, health education, food sanitation, and vector control. The course included laboratory work and practical field training. Provided—a sanitarian tutor, 6 fellowships and supplies and equipment.

3601 Public health aspects of the hygiene of food under storage (1972– ) R—To define the extent and causes of food losses due to unhygienic conditions of storage, with a view to promoting public health measures to prevent such losses; and to train personnel of national food inspection systems.

3701 Rodent control (1967–74) R—To investigate problems of rodent infestation, to propose control measures and to train municipal, port and quarantine officers responsible for rodent control in the principles and practice of rodent control operations.

4003 Seminar on Modern Management Approach in Health Administration, Cairo (1–6 Oct. 1973) R—To discuss the value and use of modern management concepts and techniques in planning, developing, operating and evaluating health services. There were 17 participants—senior health administrators from 8 countries of the Region. Provided—a consultant, a temporary adviser, the cost of attendance of the participants, and the services of staff members.

4004 Seminar on Health Problems of Nomads, Shiraz, Iran (22–26 April 1973) R—To discuss the health problems of nomadic populations and ways of providing them with health services. The Seminar was followed by a 2-day field visit to Isfahan. There were participants from 13 countries of the Region and observers from FAO, UNESCO, UNICEF, IBRD and the World Food Programme. Provided—3 consultants, a temporary adviser, the cost of attendance of the participants, and the services of staff members.

4102 Study of health manpower needs in the Gulf States (Feb.–April 1973) R—A consultant visited a number of countries in the Gulf area to explore the health manpower needs and resources as a basis for planning the development of health manpower in the area.

4201 Training of laboratory technician tutors (2 Oct. 1972–28 Feb. 1973) R—A course, held in Beirut, to provide advanced training in the methodology of teaching several laboratory disciplines to laboratory technician tutors who were to occupy
teaching and supervisory posts in their countries of origin. There were 15 participants. In addition to theoretical teaching, the course included visits to several laboratories in Beirut. Provided—a consultant (laboratory technician tutor) for 6 months, fellowships for 13 participants from 12 countries of the Region, and supplies and equipment.

4302 Training courses in the maintenance and repair of medical equipment (1972–) R—To organize courses for training technicians to service and maintain hospital, laboratory and other equipment in health establishments in the Region.

4701 Radiological health (1973–75) R—To assist the School of Public Health of the University of Teheran in organizing a regional course leading to a master of science degree with specialization in radiological health.

4703 Radiotherapy centres (dosimetry services) (1972–74) R—To assist radiotherapy centres in the Region in the calibration of X-ray and isotope teletherapy units, and in the verification of the accuracy of their radiation dosimeters.

4801 Regional training centre for technical orthopaedics, Teheran (1972–) R—To develop the teaching programmes and improve the training at the centre.

4901 Medical records and statistical documentation (1966–) R UNDP—To provide advice on medical records in hospitals and health centres to countries in the Region that are developing medical records units, and to train national medical records officers.

5103 Regional training programme in child health and midwifery (1970–74) R UNICEF—To improve the teaching of child health to medical and other health personnel at the American University of Beirut and plan and initiate a programme for training graduate and public health nurses in midwifery.

5201 Industrial hygiene course, Zagreb (1970–73) R—To provide a training programme especially designed to meet the needs of industrial hygienists from developing countries. Two 9-month courses were organized, leading to a diploma in industrial hygiene. The first—1970/71—had 8 participants from 5 countries of the Region and 2 from outside the Region. The second—1972/73—had 6 participants from countries of the Region and 1 from the South-East Asia Region. The second course was followed by a one-month study tour in Yugoslavia. Provided—a consultant for 2 weeks for each course and the cost of attendance of the participants.

5502 Special Group Meeting on Dental Education, Baghdad (18–22 Sept. 1972) R—To exchange information on dental education at the professional and auxiliary levels in the Region, including postgraduate programmes in dental health; and to recommend programmes for the education and training of dental health personnel. The meeting was attended by 17 deans or representatives of dental faculties in the Region and a number of observers. Provided—a consultant, the cost of attendance of participants, and the services of staff members.

5601 Training in nutrition (1971–73) UNDP—To promote and strengthen nutrition programmes through the training of key personnel and follow-up assistance.

5604 Regional nutrition course for the Near East (1970–) R FR UNICEF (FAO) (UNESCO)—To establish within the Region adequate facilities for the training of nutrition workers and high-level government personnel from ministries of health, agriculture and planning and from other ministries in various aspects of nutrition, with a view to promoting the formulation of nutrition policies and the execution of food and nutrition programmes.

6002 Participation in educational meetings (1959–) R—To enable countries of the Region to participate in seminars, conferences and training courses organized in other regions and by other agencies.

6201 Health manpower development (1965–) R—To promote the development of health manpower in the Region at the subprofessional, undergraduate and postgraduate levels by a programme of assistance to the health training institutions, including particularly assistance in establishing new institutions.

6202 Exchange of professors and scientific workers (1969–) R—To promote the exchange of ideas among the health professional faculties of the Region, and the general development of education in the health professions, through a programme of exchange visits of professors and scientists.

6203 Training centres in educational sciences and medical pedagogy (1971–) R—To promote the training of members of the medical faculties of the Region in educational science and methodology. (Assistance is being provided through the regional teacher-training centre at the Pahlavi University, Shiraz, Iran, and national centres.)

7301 Drug dependence (1973–) R—To assess the nature and extent of the health problems posed by drug dependence in certain countries of the Region and advise on methods of prevention, and of treatment and rehabilitation of drug-dependent persons.

7401 Clinical pharmacology (1973–) R—To train clinical pharmacologists from countries of the Region, with a view to the provision of information on drugs and the monitoring of drug usage.

8202 Seminar on the Prevention of Major Cardiovascular Diseases, Teheran (10–16 Dec. 1972) R—To consider the epidemiology, control, prevention and treatment of major cardiovascular diseases, and the rehabilitation of patients suffering from these diseases. There were 33 participants from 19 countries of the Region, 14 observers from the host country, and representatives of United Nations agencies and cardiological societies. Provided—a consultant, 5 temporary advisers, the cost of attendance of the participants, and the services of staff members.

9601 Integration of family planning activities into health services (1970–) UNFPA—To assist countries of the Region in the planning, organization, management and evaluation of family planning programmes as part of the health services, in the training of all categories of personnel and in the upgrading of institutions for training and research in human reproduction and population dynamics.

9602 Maternity-centred family planning programme (1972–) UNFPA—To develop family planning aspects of maternal and child health work in countries of the Region. The project is aimed at providing opportunities for improved maternal and child care, including family planning guidance and related services, and organizing the training of technical personnel.

CO 01 United Nations Development Programme coordinating services (1970–) R—To help countries of the Region to obtain and use UNDP resources for assistance in the health field. A special service, available to governments, has been established under the direct supervision of the Regional Director.
WESTERN PACIFIC REGION

British Solomon Islands Protectorate

1301 Leprosy control (Sept. 1972–Aug. 1973) R VL—A consultant assisted in carrying out an evaluation to determine whether leprosy is still an important public health problem. Leprosy apparently still remains a health problem in the Protectorate. Recommendations for active leprosy control measures were made.

2001 Malaria eradication programme (1970–78) R UNDP

4001 Basic health services (1965–76) R UNDP UNICEF—To expand and strengthen the network of local health services and train auxiliary health personnel.

4501 Health education advisory services (1971–72) R—To strengthen the health education service in the Medical Department, establish a pattern for health education work to be carried out at village level by health personnel, improve the teaching of health education in schools and teacher-training colleges, and organize seminars, conferences and meetings on health education for other services, government departments and nongovernmental organizations. Provided—a health education specialist.

Assistance centred on problems encountered in the malaria project and the basic health services and, in cooperation with the Department of Education, on school health education and teacher training.

A pattern was developed for health education work to be carried out by health personnel, in cooperation with local leaders and organizations and related governmental and nongovernmental agencies, in a rural health service training and demonstration area. Village health committees were set up or strengthened. Information materials and visual aids were produced for use in health centres, schools and other institutions. A health and education joint working committee was set up for the planning and implementation of a school health policy, and a programme was established for training of teachers and orientation of school administrators. Assistance was given for the training of health workers, health education in schools and teacher-training colleges was promoted, and a school health syllabus for junior primary schools was drawn up. The organizational structure and health manpower needs for health education were studied and job descriptions were prepared in order to develop and strengthen the health education services throughout the Protectorate.

Brunei

3601 Food sanitation (Dec. 1972–April 1973) R—A consultant studied food sanitation problems and submitted recommendations on legislation and sanitary regulations for the control of food dispensing, food processing and other establishments.

Cook Islands

3001 Environmental health engineering advisory services (1973–75) UNDP—To develop plans for sewage disposal systems and for an improved water supply system for the island of Rarotonga, and water supply projects for the other islands, as well as programmes and standards for improved housing, and other sanitation activities.

Fiji

1001 Advisory services on skin diseases (Jan.–Feb. 1973) R—A consultant assisted in investigating susceptibility to infection with Tinea imbricata and the factors and modes of infection and in starting a therapeutic trial, and advised on problems related to other skin diseases.

6201 Fiji School of Medicine (1972–81) R—To strengthen the School of Medicine.

French Polynesia

8201 Advisory services on metabolic diseases (July–Sept. 1973) R—A consultant assisted in investigating the etiology and distribution of metabolic diseases, in particular gout and diabetes, and submitted recommendations on their prevention and management.

Gilbert and Ellice Islands

9601 Family health (1971– ) UNFPA UNICEF—To organize and make available to the whole population services related to human reproduction and fertility, including services for spacing and limitation of births and for treatment of subfertility, and to carry out a programme of information and education of the public.

Guam

3101 Environmental pollution control (May–Aug. 1973) R—A consultant assisted in formulating a short-range programme for the management of water pollution control facilities and in evaluating the operation of the Wastewater Division of the Public Utility Agency. He also helped to plan and conduct an in-service training course and submitted recommendations for strengthening day-to-day operations.

Japan

6401 College of Health Sciences, University of the Ryukyus (1970–73) R—To provide, in the University of the Ryukyus, a centre for training workers in the health sciences at baccalaureate level and for research in methods of training and utilizing them; to provide them with opportunities for refresher and postgraduate training; and to provide pre-professional education for students entering medical or dental colleges. Provided—consultants and 7 fellowships.

The College, which was opened in 1969, awards a bachelor of health sciences degree after 4 years of preparation. Enrolments for the course have been: 1969–57; 1970–60; 1971–45; 1972–69. The first class graduated in April 1973.

Between 1970 and 1972, because of the acute staff shortage at the College, WHU provided a number of consultants to undertake short-term teaching assignments.

In 1971 a consultant advised on the further development of the College and on WHO assistance, as a result of which, in that year and in 1972, consultants undertook short teaching assignments in the following fields: epidemiology, health care ad-
ministration, medical electronics, maternal and child health, population studies, radiation health, occupational health, and environmental engineering.

The Government of Japan has undertaken to fill the vacant teaching posts, so that the continued development of the College is assured. It is expected that the women graduates will largely be absorbed into the nursing professions and that the male graduates will be employed in hospitals and in various industries.

Khmer Republic

1201 Tuberculosis control (1965–76) R UNICEF—To set up the nucleus of a national tuberculosis control service, with emphasis on preventive measures, and to carry out a control programme.

2001 Malaria control (1962–76) R UNDP—To extend antimalaria activities in order to protect the people living under malaria risk; and to promote the development of an integrated health service by training malaria personnel for the provincial and district health organization and involving the rural health services in malaria case-detection and treatment.

2901 Epidemiology and health statistics (1966–75) R VC—To establish in the Ministry of Public Health an epidemiological and health statistical service responsible for planning and evaluating national disease control programmes; to study local epidemiological patterns of causes of morbidity and mortality as a basis for the formulation of such programmes; to reorganize the health statistics systems in hospitals, health centres, dispensaries and other health care institutions; and to train health service personnel in epidemiology and health statistics.

3001 Environmental health advisory services (1968–76) R—To establish a public health engineering unit in the Ministry of Public Health and coordinate its work with the work of other units of the Ministry; and to draw up and implement country-wide environmental health programmes.

3202 Preparation of a master plan for Phnom-Penh (water supply, sewerage and drainage studies) (1972–75) UNDP—To formulate a plan for improving urban health in Phnom-Penh and its environs through the provision of adequate quantities of safe water for domestic and other uses and of measures for the proper collection, treatment and disposal of waste water and the satisfactory removal of stormwater.

4201 and 4202 Health laboratory services (1968–76) R UNDP—

4301 Medical services administration (1971–76) R—To strengthen and adapt the existing medical care services, particularly hospital institutions, to the requirements of the emergency; to coordinate the medical and health care services to enable them to respond better to current demands; to formulate a country programme, to be implemented in stages, for the balanced development of the health and medical care services; and to train the necessary personnel.

4801 Rehabilitation of the physically handicapped (1971–77) R UNDP—To establish a unit that could later become a school for training physical and occupational therapists and set up a national rehabilitation service.

6401 Education and training of health personnel (1971–76) R—To develop and strengthen the centres for the training of all categories of health personnel and to develop a community health centre to serve as a model for centres to be established later in other parts of the country.

9601 Family health (1973–79) R UNFPA UNICEF—To develop and strengthen (i) family health care, including maternal and child health, family planning and nutrition care, as part of the basic health services; (ii) maternity, family planning, paediatric and nutrition services in hospitals; and (iii) the family health aspects of the basic, postbasic, in-service and refresher training of all categories of health personnel concerned.

Laos

1301 Leprosy control (Nov.–Dec. 1973) R—A consultant assisted in the collection of data on the leprosy cases so far detected and on the means available for controlling the disease, and prepared guidelines for a medium-term programme that could be used as a basis for expanding activities, possibly with international assistance.

2001 Malaria control (1969– ) R—To build up the administrative and operational facilities of the Central Malaria Service to the level required to carry out an antimalaria programme, in the first place in the Vientiane plain.

4001 Development of health services (1968–79) R UNDP UNICEF—To develop and strengthen the general health services, beginning in Vientiane Province, which will serve as a pilot area; to organize a central advisory body to review the organization, programmes and coordination mechanism of the health services; and to formulate and carry out a programme for training health manpower.

4201 Health laboratory services, Vientiane (1953–78) R UNICEF—To establish a public health laboratory service and train laboratory personnel.

4401 Nursing education (1962– ) UNDP UNICEF (USAID) (Asia Foundation) (Colombo Plan)—To set up a school of nursing and midwifery for training personnel for the country’s hospital and health services, which are to be extended and improved.

4801 Rehabilitation of the physically handicapped (1967–74) UNDP (UN Office of Technical Cooperation)—To assess the extent of the problem of the physically handicapped, plan and operate rehabilitation facilities and train staff for them, and review legislation dealing with the physically handicapped.

5601 Nutrition advisory services (1968–78) R UNICEF—To improve nutritional levels in the community and to coordinate, under a national nutrition policy, all health aspects of food and nutrition work carried out by international and national governmental and nongovernmental agencies.

6201 Royal School of Medicine (1967–78) R—To strengthen the faculty of the Royal School of Medicine.

9601 Maternal and child health/family welfare (1971–78) UNFPA VD UNICEF—To provide effective maternal and child health care and advice on family planning with the ultimate objective of securing a higher standard of living for the family as a whole.

Malaysia

2001 Malaria eradication programme, Peninsular Malaysia (1967–81) R
Malaysia (continued)

2002 Malaria control, Sabah (1961–78) R—To improve the control of malaria with the aim of eventually eradicating the disease. A review of the programme in 1972 showed that the present epidemiological situation and the state of development of the rural areas of Sabah do not make it feasible to eradicate malaria in the foreseeable future, and that the objective should be redirected to maintaining the gains already achieved by improving control operations and promoting greater involvement of the general health services in the antimalaria campaign.

2003 Malaria control, Sarawak (1961–78) R—To maintain the gains already achieved by continuing antimalaria operations throughout the malarious areas; to provide health assistance, particularly to the groups engaged in developing natural resources; and to continue the training of basic health service personnel and voluntary agents for work in the malaria programme. The project was redefined on the basis of the recommendations of a WHO team that reviewed the programme in 1971.

2901 Epidemiological services (1971–76) R—To establish, in the Division of Communicable Disease Control, Ministry of Health, an epidemiological and statistical service responsible for planning and evaluating national disease control programmes; to study the local epidemiology of causes of morbidity and mortality as a basis for the formulation of such programmes; to improve liaison and coordination among the Ministry's communicable disease control, medical records and health statistics services, the laboratory services (particularly the Institute of Medical Research) and other peripheral government units concerned with disease control; and to train staff in epidemiological work.

3001 Environmental health advisory services (1966–76) R—To develop a national environmental health scheme, to implement sanitation projects, including water supplies for rural communities, through the health authorities and other governmental agencies, and to train sanitation staff.

4001 Development of health services — advisory services (1964–78) R—UNICEF—To strengthen and expand the basic health services and train personnel according to a consolidated plan which includes phasing of expansion and the development of uniform standards throughout the country.

4201 Institute of Medical Research (Aug.–Oct. 1973) R—A consultant assisted in starting a training programme in general blood bank organization and technical procedures for laboratory technicians and medical officers, and helped to set up a donor panel and a rare-group file.

4501 Health education advisory services (1962–68; 1970–73) R—The original aim was to consolidate and strengthen health education activities. Starting in 1962, an extensive study was made of needs for health education services and a 10-year scheme for their development was drawn up. Initially, attention was concentrated on school health education from the primary to the teacher-training level. This accent shifted when in 1964 the Health Education Division of the Ministry of Health was established and a revised health education scheme became part of the first Malaysia plan in 1966 and the second Malaysia plan in 1970. In the meantime provision had been made for the inclusion of health education in training courses for all general health staff and for teacher trainees in all teacher-training colleges, and in adult education programmes. In consequence, the aim of the project was redefined, and activities were directed towards the development of the health education components in various special programmes (family planning, applied nutrition, etc.), the establishment of a one-year certificate course for health education personnel, the development of the school health programme, and the expansion of the health education services in Sabah and Sarawak. As a result of these activities, the need for a cadre of full-time health education staff was felt. Between August 1972 and February 1973 plans were made for their training, particular attention being given to the development of a one-year certificate course for health education personnel from the Ministries of Health and of Education. This course is given at the Public Health Institute and is designed to make available the trained staff needed to fill the health education posts envisaged in connexion with the further development of the public health services. Provided—a health education specialist (1962–67; 1971–72), and 4 consultants (Aug.–Oct. 1967; Oct.–Dec. 1968; Jan.–April 1970; Aug. 1972–Feb. 1973).

4801 Rehabilitation of the physically handicapped (Oct. 1973–April 1974) R—A consultant is assisting in drawing up guidelines for the development of the school of physiotherapy. These will include advice on staff and student selection, and on the preparation of a curriculum that is feasible with the resources available.

4901 Medical records (Sept. 1973–March 1974) R—A consultant is assisting in a review of the medical records of the maternal and child health services, and in the formulation of a standard system of records for use at all levels, of a plan for utilizing clerical assistance for record-keeping at health centres, and of a programme of training in medical records.

5601 Nutrition advisory services (1967–76) R—UNICEF (FAO)—To plan and carry out nutritional surveys in a pilot area where an applied nutrition programme is being launched, develop nutrition education and supplementary feeding programmes, and train the personnel needed for implementing and evaluating the health aspects of the programme.

6201 University of Malaya (1965–76) R—To strengthen the teaching staff of the Faculty of Medicine of the University of Malaya, particularly in the fields of preventive medicine, public health, nursing and medical recording.

6203 National University Faculty of Medicine (Nov. 1973–Feb. 1974) R—A consultant is advising on the development of the Faculty of Medicine.

6401 Public Health Institute (1970–) R—UNICEF—To develop the Public Health Institute, whose functions are to provide a high standard of training for health personnel, geared to the needs of the country; to undertake studies in public health and disseminate the knowledge thus gained; to provide services, not otherwise available, for the improvement of health programmes and for demonstration purposes; and to assist the Ministry of Health in the coordination of its various health training programmes.

9601 Maternal and child health/family planning in rural health services (1973–77) R—UNFPA—To strengthen the maternal and child health/family planning services as an integral part of the rural health services; to organize the training of medical, nursing and other health personnel in the clinical, medical and health aspects of maternal and child health/family planning; and to evaluate the programme.

New Hebrides

1301 Leprosy control (1973–75) R—VL—To assess the leprosy situation, strengthen and improve leprosy control work and integrate it into the general health services.
2001 Malaria control (1970–81) R—To build up the operational facilities for an antimalarial programme and organize antimalaria operations within the framework of the general health services.

4001 Development of health services (1969–76) R UNDP—To develop the general health services, establish methods and practices for the efficient operation of the rural health programme (particularly as regards maternal and child health, tuberculosis control and antimalaria and environmental sanitation work), and provide training, including in-service training, for health service personnel.

4401 Nursing education (1970–75) R—To formulate and implement short-term and long-term plans for the strengthening and development of a system of nursing education in the country.

Papua New Guinea

2001 Malaria control (1973–76) UNDP—To intensify the antimalaria programme and extend it progressively, in order to reduce malaria incidence to a level that will not affect socioeconomic development.

2002 Malaria training centre (1973–75) R—To train antimalaria project staff.

3001 Environmental health advisory services (1973–75) R—To develop an environmental health programme in the Department of Public Health, improve the coordination of environmental health activities, carry out surveys of environmental health problems (particularly those related to water supply, waste disposal, and environmental pollution) throughout the territory, prepare designs, standards and specifications for water supply and waste disposal facilities, and review the training programme for health inspectors.

4401 Nursing education (1970–75) R—To strengthen the public health nursing aspects of the curricula of the schools of nursing and establish a postbasic course in public health nursing.

6201 Medical faculty, University of Papua New Guinea (1970–80) R—To strengthen the faculty of the School of Medicine (formerly the Papua Medical College) and raise the standard of teaching.

6401 Education and training advisory services (1971–75) R—To plan, implement, and evaluate various types of courses in training institutions under the jurisdiction of the Division of Medical Training and other institutions designated by the Government for the purpose of training government personnel.

Philippines

1201 Tuberculosis control (Nov. 1973–Feb. 1974) UNICEF—A consultant is reviewing the operation of provincial tuberculosis control programmes and assisting in conducting courses for provincial tuberculosis coordinators.

2001 Malaria eradication programme (1958–76) R UNDP (USAID)

2801 Rabies control (May–July 1973) R—A consultant advised the Alabang Serum and Vaccine Laboratory on the production and control of freeze-dried avianized rabies vaccine for immunization of dogs.

3101 National pollution control programme (Nov.–Dec. 1972) UNDP—Two consultants assisted the Government, through the Department of Health and the National Water and Air Pollution Control Commission, in formulating a project request for assistance from international or bilateral agencies in the implementation of a medium-term programme for strengthening and expansion of functions and activities in water and air pollution control.

3203 Laguna de Bay water resources development (1972–74) UNDP/Asian Development Bank—Following consultant services provided earlier in the year, in November 1972 a consultant reviewed the proposals of the consulting engineering firms invited to participate in the study for the development of the Laguna de Bay water resources and, in May 1973, the plan of study submitted by the firm selected. The WHO regional advisor on water pollution control is also providing advice as required.

4001 General health services development (1969–76) R UNICEF—To improve the organization and administration of the health and medical care services, undertake national health planning in the context of overall planning for development, review health manpower education and training schemes, and develop working relationships between the national health administration and other agencies, both public and private, that are concerned with health.

4501 Research, development and training in family planning communication, Institute of Mass Communication, University of the Philippines (1973–74) UNFPA/UNESCO—A health education specialist is advising on the production of model communication medical materials for training, assisting in the introduction of new approaches in family planning communication, and in training family planning staff in the principles and techniques of interpersonal and mass communication.

5603 Goitre control (March–April 1973) R—A consultant assisted with a study of the prevalence of endemic goitre and its complications in the mountain provinces and in assessing (i) the response of persons treated for endemic goitre with iodized oil and (ii) the need for and feasibility of a goitre control programme on a wider scale in the same area. He also advised on the best type of goitre prophylaxis for the country and on related data collection and research.

6401 University of the Philippines (1971–81) R—To strengthen the staff of the University of the Philippines, in particular that of the Institute of Public Health, which is the only school of public health in the country and which serves as a regional training centre and is used by WHO in the organization of courses on national health planning.

8101 Cancer control (Nov.–Dec. 1973) R—A consultant assisted in evaluating the community cancer control programme in Rizal Province, in view of its importance as a possible model for the establishment of cancer control activities throughout the country.

Consultant services were provided under this project between 1967 and 1969.

9603 Maternity-centred family planning (1971–75) UNFPA UNICEF—To develop the staff and facilities of 25 teaching hospitals and associated teaching institutions with a view to the inclusion of maternity-centred family planning training and service in their work.

9604 Nursing education in family planning (1971–75) UNFPA—To organize national workshops to prepare faculty members to introduce family planning in basic nursing curricula.

The third workshop (for participants from schools of midwifery) was held from 19 April to 4 May 1973, and the fourth (for participants from schools of nursing) from 7 May to 1 June 1973 at the Institute of Public Health, Manila. The WHO nurse
9605 Assistance to the teaching programme of the Institute of
Public Health, University of the Philippines, in family planning,
human reproduction and population dynamics (1971 - ) UNFPA
—To expand the teaching facilities and activities of the Institute
of Public Health in family planning; to strengthen the long-
term academic programme of the Institute in family planning;
and to develop leadership of the Institute in curriculum planning
in the field of family planning, human reproduction and
population dynamics.

Republic of Korea

1201 Tuberculosis control (1962 - ) R UNICEF — To imple-
ment a national tuberculosis control programme.

R VL UNICEF — A consultant assisted the Ministry of Health
and Social Affairs in implementing the recommendations of
previous consultants and advised on the measures required to
coordinate the work of different agencies and integrate it into
the general health services. Staff of the leprosy control pro-
gramme and graduates of the medical and allied health profes-
sions were trained in control methods.

2901 Epidemiology and statistics advisory services (1968 -78)
R — To organize and develop a central epidemiological service
and a disease intelligence network in the Ministry of Health and
Social Affairs; to improve the collection, recording and utili-
zation of health statistics; and to coordinate health laboratory
services with the epidemiological services.

3201 Advisory services on community water supply and sewerage
(1972 -75) R — To plan and implement a comprehensive urban
and rural water supply and sewerage programme.

3202 Upland development and watershed management (1972 -73)
UNDP/FAO — A WHO sanitary engineer worked with the
community development component of the project for 18 months,
during which time several piped water supplies were constructed
and various physical improvements effected in villages of the
project area.

4001 General health services development (1961 -77) R UNICEF
— To develop the public health services in the demonstration
province (Chungchong Namdo) and the local health services in
other provinces; and to train local health personnel at the
Division of Training of the National Institute of Health.

5201 National seminar on the organization of industrial health
services for small industries (4-8 Dec. 1972) R — Two consult-
ants assisted in organizing a national seminar during which the
health situation in small industries was reviewed and the possibility
of finding practical solutions to the problems of providing them
with health services, taking into account available resources,
was studied. There were 40 participants and the seminar was
attended by a representative of ILO.

6401 Education and training of health personnel (1969 -78) R
UNFPA UNICEF — To provide education and training for
health and medical workers, including undergraduate and
postgraduate training for physicians and basic and postbasic
training for nurses, sanitarians and other health workers.

Singapore

1001 Communicable diseases advisory services (1972 -75) R —
To develop and strengthen the epidemiological service of the
Ministry of Health, study the epidemiology of the main causes
of morbidity and mortality (particularly communicable diseases),
develop procedures for the investigation, prevention, diagnosis
and control of certain diseases, and train staff in epidemiological
work.

1002 Advisory services on skin diseases (Jan.-Feb. 1973) R — A
consultant helped to assess the problem of industrial dermatitis,
advised on the setting up of a small industrial dermatitis unit
and on immunological techniques suitable in dermatology, and
assisted in establishing the prevalence of mycotic diseases.

3001 Environmental health advisory services (June-July 1973)
R — A consultant assisted the Environment Ministry in assessing
the air pollution control programme and advised on its further
development, particularly as regards additional control and
monitoring programmes and legislative and enforcement aspects.

3302 Planning for sewerage development and water pollution
control (1970 -73) UNDP — A sanitary engineer (1971 -73) and
2 consultants assisted the Public Works Department (absorbed
into the Environment Ministry in 1972) in preparing a long-range
master plan for the development of sewerage facilities geared to
present and projected plans for physical development in
Singapore, in conducting baseline studies on water pollution
and in developing concepts for its control. They also prepared
2 reports dealing with coastal water standards and waste water
pollution problems.

The completed master plan, to be implemented in stages,
covers an area of 42,000 acres. Construction work according to
the initial stages of the plan has started and it is estimated
that complete implementation of the sewerage scheme will cost
about US $200 million.

3303 Closed storm drainage system design (1973 -75) UNDP —
To draw up plans for closed storm drainage, pumping and
water storage schemes to serve new developments and other
selected areas; and to prepare a preliminary plan for a closed
storm drainage and storm-water capture scheme to replace the
existing open drain system serving the developed areas of
Singapore.

5601 Nutrition advisory services (1972 - ) R UNICEF (FAO)—
To plan the development of public health nutrition services.

6301 Development of medical specialties (1971 -76) R — To
establish and organize specialist units in hospitals and to train
in advanced techniques staff to man these units.
6401 University of Singapore (1968-76) R—To strengthen the teaching staff of the Faculty of Medicine of the University, particularly in the fields of preventive medicine, public health and organization of medical care. Consultant services in other fields and fellowships were provided between 1952 and 1966.

Tonga

4301 Hospital administration (1968-70; 1972-76) R—To develop a system of hospital operation and management that will enable the Nuku'alofa hospital to meet the medical care needs of the population more effectively.

4401 Nursing education (1969-76) R—To strengthen the basic nursing curriculum of the Queen Salote School of Nursing, improve the quality and increase the number of nursing and midwifery personnel for the expanding health services, and prepare nursing legislation.

8201 Cardiovascular diseases advisory services (May-June 1973) R—A consultant assisted in making a cardiovascular disease survey, special attention being given to rheumatic heart and hypertensive diseases; and advised on the type of preventive and therapeutic work that might be undertaken.

8701 Diabetes survey and advisory services (Jan.-Feb. and May-June 1973) R—In January 1973 a consultant discussed with the Government plans for a diabetes prevalence survey and, in May and June, when the survey was made, advised on the methods to be used for diabetes detection under the conditions prevailing in the country and on the type of treatment to be provided.

9601 Maternal and child health family planning (1972-76) UNFPA VD UNICEF—To organize and implement a family planning programme within the health services, particularly in the maternal and child health clinics, and to train the necessary staff.

Viet-Nam

1101 Venereal disease control (1966-73) R UNICEF—To reduce the incidence of the venereal diseases and improve the syphilis serological work carried out in national laboratories. Provided—a medical officer, a public health nurse, consultants, and fellowships (29 months).

Before the start of the project there was no laboratory, except for the Pasteur Institute in Saigon, able to guarantee the accuracy of serological tests for syphilis and none that practised dark field microscopy for syphilis. There was no proficiency testing between the public health laboratories and no accurate epidemiological information on the extent of the venereal disease problem. Treatment was not obligatory.

Efforts were directed towards the reorganization of an administrative structure which became a planning and controlling agency, and to effecting an increase in its personnel; the training of personnel in charge of nonspecialized services; the provision of technical information to physicians in private practice and public health; teaching in medical schools; enforcement of administrative measures concerning venereal diseases; and the creation of departments specializing in venereal serobacteriology.

In 1968 a venereal disease centre with an independent budget was set up in Saigon, its functions being to direct or carry out a venereal disease control programme and to be responsible for setting technical standards and for supervising and evaluating activities. Preventive examinations were introduced in the maternal and child health centres in 1969; the personnel of the service have been trained for systematic case-finding among pregnant women and infants, through home visiting. A laboratory for syphilis serology and gonorrhoeal bacteriology and culture was established in 1970. In 1971 it became the national reference laboratory. Syphilis serology sections, integrated with the public health diagnostic laboratories, have been set up in Huế, Vung Tau and Can Tho.

Training has been an integral part of the project since the beginning and courses on social venereology have been organized in the Faculties of Medicine in Saigon and Huế.

Although drafts of a law and decree have been prepared, there is as yet no medical legislation to support the programme, and no compulsory notification of infectious cases.

The programme, which is integrated into the public health activities of the Directorate-General of Health and the Prefectural Health Service of Saigon-Cholon, is continuing, and the organization for its further expansion has been established. It is planned to provide a consultant in 1974 to review progress.

1201 Tuberculosis control (1958-76) R UNDP UNICEF—To set up a national tuberculosis control programme as a permanent part of the basic health services.

2001 Malaria control (June-July 1973) R—A consultant made a study of the malaria situation, and assessed the effect of the antimalaria programme on the prevalence of the disease and the future prospects of malaria control. He also assisted in preparing a request to UNDP for assistance with a full-scale programme.

Assistance with antimalaria work began in 1959, but between 1967 and 1972 was limited to fellowships.

2901 Epidemiological surveillance and quarantine (1970-76) R—To develop epidemiological services at the central and regional levels, strengthen the application of the International Health Regulations (1969) and train staff for these purposes.

3001 Environmental health advisory services (1966-76) R—To strengthen the environmental sanitation service in the Ministry of Health and introduce improvements in public water supply, human excreta disposal, refuse disposal, food hygiene and vector control in urban and rural areas.

4101 National health planning (1972-75) R—To strengthen the national health planning unit in the Ministry of Health, formulate a national health policy and a national and manpower plan, and train staff.

4201 Health laboratory services (1964-76) R UNICEF—To establish a central health laboratory service and train health laboratory workers; and, later, to organize regional and peripheral health laboratory services.

4301 Hospital design (Sept. 1973-76) R—Two consultants (a medically qualified hospital administrator and a hospital architect) have been provided to assess the extent of the technical needs for reconstruction of hospitals and district health centres and to establish guidelines for this work. They will also assist in establishing a mechanism for consultation among the assisting agencies in order to ensure the adoption of standards for construction design and for equipment, and will make recommendations on the future development of hospital and health care facilities.

4801 Rehabilitation of the physically handicapped (Aug.-Oct. 1973) R—A consultant reviewed facilities and ongoing programmes for medical rehabilitation, including the programme for training various categories of rehabilitation personnel, and submitted recommendations.
Viet-Nam (continued)

4901 Vital and health statistics advisory services (1969-71; 1973-75) R—To organize an efficient and up-to-date system of collecting and recording vital and health statistical data so as to produce vital and health statistics that will meet national and international needs; and to train personnel in the administration and operation of a national health statistical service.

5401 Mental health advisory services (Nov. 1972-Feb. 1973) R—A consultant assessed the status of the mental health services and the psychiatric staffing pattern and submitted recommendations concerning the establishment of a national mental health programme and the training of personnel.

6001 Medical education (1972-77) R—To strengthen various aspects of the curricula of schools of medicine, with particular attention to preventive medicine and public health.

6401 National Institute of Public Health (1969-82) R VD—To build up a national institute of public health which will serve as a centre for the planning, standardization, organization, coordination, implementation and evaluation of training programmes for various categories of medical and health workers.

9601 Family health (1973-77) UNFPA UNICEF—To strengthen family health services by improving the health care of mothers and children and providing married couples with information and services for the planning of their families.

Western Samoa

1001 Advisory services on skin diseases (April-May 1973) R—A consultant studied the prevalence and etiology of the more common tropical skin diseases in the country and advised on curative and preventive measures.

1201 Tuberculosis control (1971-73) R—To consolidate and assess the tuberculosis control service in the demonstration area of Leulumoega; to standardize the methods and procedures used by all districts; and, ultimately, to integrate the tuberculosis control services into the general health services throughout the country.

2201 Filariasis control (July 1973) R—A consultant reviewed the progress in filariasis control, made an epidemiological assessment with special reference to microfilarial rates and densities, evaluated the field trial of vector control, and submitted recommendations with regard to the mass drug distribution programme and to future activities.

4001 National health services development (1967-76) R UNDP UNICEF—To develop and strengthen the organization and operation of the general health services, particularly at district and local levels; to improve the operation of the rural health programme; to organize in-service training for medical and allied personnel; to conduct epidemiological studies on the most important causes of morbidity and mortality in the country; and to plan disease control programmes as part of the general health services.

4301 Hospital administration (April-May 1973) R UNDP—A consultant made a study of the workload of the proposed central sterile supply department in the Apia General Hospital and advised on its planning, organization, operation and staff requirements.

Further assistance is planned.

4401 Nursing education (1972-75) UNDP—To improve the standard of nursing and midwifery education and services.

9601 Maternal and child health/family planning (1971-76) UNFPA VD UNICEF—To organize a family planning programme, including advice on the spacing and limitation of births and the treatment of subfertility, and train the necessary staff; to conduct surveys on the influence of high fertility and high birthrate on the health of mothers and children; and to undertake operational research on methods of meeting the country's family planning needs.

WPRO

0901 Public health advisory services (1961- ) R—To meet requests from countries of the Region for advisory services in connexion with the planning of long-term projects or with specific problems. The following assistance was provided during the period under review:

Relation of respiratory infections to air pollution, Japan (April 1973). A consultant reviewed with the staff of the Institute of Public Health, Tokyo, teaching and research programmes on the effects on health of air pollution; advised on the development of teaching and research in epidemiology, particularly as regards respiratory infections aggravated by air pollution; discussed with the staff of the Ministry of Health and Welfare and the Environment Agency, the teaching staff of medical schools, and epidemiologists in the Tokyo, Yokohama and Chiba areas their activities in this field; and reviewed the institution set up to deal with air pollution control.

Rodent control, Hong Kong (March-April 1973). A consultant carried out studies on rodent ecology and control in order to determine the effectiveness of current control programmes.

1201 Regional tuberculosis control team (1961-80) R—To assist countries of the Region in assessing their tuberculosis programmes.

1202 Tuberculosis course, Tokyo (17 June-24 Oct. 1973) R—To train national workers in the application of modern methods of tuberculosis control and stimulate the provision of practical training and demonstration in national institutions. There were 17 participants from 12 countries of the South-East Asia, Eastern Mediterranean and Western Pacific Regions. Provided—7 temporary advisers, instructors (from Japan), the cost of post-course country visits for all participants, reference material and the services of a consultant and a WHO staff member as lecturers.

1206 Regional BCG vaccine laboratory, Philippines (1973- ) R UNICEF—To develop and expand the Alabang BCG vaccine laboratory into a regional laboratory for the production of freeze-dried BCG vaccine for countries and territories of the Region.

2001 Malaria eradication training centre, Manila (1963-73) R VM (USAID/US Public Health Service)—The centre was established in October 1963 to meet the training needs of staff from countries in the Western Pacific Region and other regions engaged in malaria control and eradication work. It was a joint undertaking of the Government of the Philippines, USAID (the participation of the United States of America was transferred to the United States Public Health Service (USPHS) in 1966) and WHO. The centre was designed to provide training facilities primarily for senior professional staff, but also for certain categories of junior professionals. Special courses were also conducted for teachers, with a view to the promotion of national training centres, as well as for senior public health administrators, in order to increase the involvement of general health service staff in antimalaria work. Since its establishment the centre has trained 1326 persons from 47 countries in all 6
WHo regions. It has also assisted countries in the conduct of national group educational activities for senior health personnel and of certain special courses, and has extended support to national training centres in the Region.

The project was financed mainly by USAID/USPHS and WHO. The entire responsibility for maintaining the centre's activities was taken over by WHO in July 1971, when USAID technical assistance was withdrawn; it had, however, provided adequate funds under the Malaria Eradication Special Account to support the running of the centre until the end of June 1973, when the project was terminated, since the funds available under the WHO regular budget were not sufficient to maintain activities.

2002 Malaria eradication assessment team (1967-7 ) R—To make independent appraisals of the status of malaria eradication and of any special aspects of the malaria programme in the Region.

2101 Schistosomiasis survey, Khmer Republic and Laos (1971-73) R—To assess the distribution and importance of schistosomiasis in the area; to identify the snail intermediate hosts and establish their distribution and the mode of disease transmission; and to formulate and recommend measures for preventing the spread of infection, taking into account such factors as population movement, irrigation schemes and other activities connected with the development of the Mekong River basin. Activities under this project have been limited to Laos.

2201 Filarialis advisory services (1971-76) R—To assist governments, especially in the South Pacific area, in studying the epidemiology of filariasis and in carrying out or evaluating programmes for controlling the disease.

2902 Epidemiological and surveillance services (1972-81) R—To assist with epidemiological surveys, the strengthening of epidemiological and laboratory services, the establishment of disease intelligence networks, the investigation and control of outbreaks of communicable diseases such as cholera El Tor and other diarrhoeal infections, and the study of special disease problems in the South Pacific area. The following assistance was provided during the period under review:

Laos (Dec. 1972-Feb. 1973). A consultant assisted in the compilation of data on paragonimiasis in order to ascertain its public health importance, in the identification of the ecological determinants of the intermediate hosts and the conditions favouring the spread of the disease, and in the training of staff in its diagnosis and treatment, and submitted recommendations on control methods.

Malaysia (Feb.-April 1973). A consultant reviewed the characteristics of an outbreak of poliomyelitis and the measures for prevention and control of the disease, and assisted in planning further action.

Tonga (July-Aug. 1973). A consultant assisted in carrying out a survey of the incidence of leptospirosis and in developing diagnostic procedures suited to the country, and advised on treatment and preventive measures.

Western Samoa (Aug.-Sept. 1973) A consultant assisted in determining the extent of the problem posed by certain zoonoses of public health importance and studied certain communicable diseases in the transmission of which animals play a part.

3001 Environmental health advisory services, South Pacific area (1965- ) UNDP—To assist countries and territories in the area to improve community water supplies and environmental sanitation in general.

3101 Seminar on Air Pollution, Manila (22-28 May 1973) R—To exchange experience and discuss proposals or guidelines for a plan of action for the control of air pollution at the regional and national levels. There were 23 participants (including officials responsible for air pollution control, urban planning, transport and industrial organizations) from 14 countries and territories of the Region and observers from WMO, UNDP, UNICEF, ECAFE, USAID, the Asian Development Bank and the South Pacific Commission. Provided—3 consultants, a temporary adviser, and the cost of attendance of the participants.

3201 Provision of basic sanitary measures (1968-77) R—To assist governments in carrying out studies on water supply, sewerage and other environmental health programmes, and in developing such programmes.

4001 Public health advisory services, South Pacific (1962-63; 1965- ) R UNDP (South Pacific Commission)—To assist countries in the area in strengthening and developing their general health services, particular attention being given to maternal and child health work integrated into the general health services.

4003 Project systems analysis (1973-78) R—To meet requests from governments for assistance in the formulation of health development projects and in their management, including their monitoring and evaluation through systems analysis.

4101 Training in the field of health planning (1968-76) R UNICEF—To acquaint national health administrators with the general principles of national planning for socioeconomic development and familiarize them with the principles and methods of national health planning within the framework of such development planning and as an integral part of health administration.

Two courses on national health planning were held during the period under review: one in Malaysia (18 June to 27 July 1973), with 30 local participants and 2 from the Republic of Viet-Nam, and the other in Papua New Guinea (13 Aug.-7 Sept. 1973), with 19 participants from 7 countries and territories in the South Pacific. Provided—2 consultants, the cost of attendance of 20 participants, the services of a staff member, and teaching material.

4102 Advisory services on national health planning (1968-77) R—To assist governments, not otherwise receiving long-term assistance in planning, in formulating national health and manpower plans as part of their national development plans.

4104 Seminar on Health Manpower Planning, Manila (24-28 Sept. 1973) R—To review the current health manpower situation in the context of overall development planning in the countries and territories of the Region, the methods used for assessment of manpower requirements and the administrative and legislative arrangements for national health manpower planning; to discuss the training of health manpower; and to seek conclusions for better organization, development and utilization of countries' health manpower resources. There were 21 participants from 16 countries and territories of the Region and observers from the College of Medicine, University of the Philippines. Provided—3 consultants, 2 temporary advisers, and the cost of attendance of the participants.

4201 Health laboratory services (1971- ) R—To assist in the organization and development of public health laboratory services, coordinated with other laboratory facilities, that can support epidemiological work, rural health services and sanitation projects.

4202 Seminar on Health Laboratory Services, Manila (5-15 Dec. 1972) R—To discuss the organization of laboratory services as part of a national health service, the various activities of a health laboratory services programme, manpower problems,
training methods, specialization of laboratory personnel, and recognition of diplomas and specialities; to outline WHO's programme in the field, particularly the long-term intercountry programme; and to consider ways of strengthening collaboration between the countries and territories of the Region as regards exchange of information on reference services, quality control and training of personnel, and assistance in emergency situations. There were 16 participants from 15 countries and territories of the Region and observers from the Regional Public Health Laboratory, Dagupan City, Philippines, and USAID Saigon. Provided—6 consultants and the cost of attendance of the participants.

4204 Course in venereal disease diagnostic laboratory techniques, Singapore (12 March-6 April 1973) R—A course for bacteriologists/serologists, in which particular attention was given to syphilis and gonorrhoea and which dealt mainly with the collection, preparation, transport and conservation of specimens, the practice of various tests, the culture and identification of Neisseria gonorrhoea, the checking of antigens, and the introduction of quality control. There were 11 participants from 11 countries of the Region and 4 observers from Singapore. The course was organized in collaboration with the Department of Pathology of the Ministry of Health, Singapore. Provided—2 consultants, resource personnel, the cost of attendance of the participants, and the services of 2 staff members.

4301 Training in maintenance of X-ray and other laboratory equipment (1969–76) R—To assist governments in assessing the need regarding the maintenance of radiological equipment, advise on the organization of maintenance services, and assist in training X-ray operators in the installation, servicing and maintenance of X-ray equipment and in the proper use of radiographic and photofluorographic equipment.

4302 Regional centre for the training of anaesthetists (1970–80) R VD—To assist in the operation of a regional centre in Manila for training anaesthesiologists for the countries of the Region.

4304 Hospital design and management (Oct. 1973–March 1974) UNDP—A team of 4 consultants (in hospital design, hospital administration, hospital management, and the repair and maintenance of hospital equipment) is visiting countries of the Region to assess the situation before preparation of detailed project proposals for UNDP consideration.

4501 Seminar on the Training of Health Workers in Health Education, Manila (23 July–3 Aug. 1973) R—To promote planned and systematic development of health education and related social sciences as a part of the curricula of the schools and institutions in the Region that are responsible for the education of professional and auxiliary health personnel. There were 16 participants from 16 countries and territories of the Region and observers from UNESCO, UNICEF and the Silliman University Medical Centre, Dumaguete City, Philippines. Provided—2 consultants, 2 temporary advisers, and the cost of attendance of the participants.

4702 Seminar on Radiation Protection, Manila (6-14 Feb. 1973) R—To review the nature and extent of radiation hazards, and the legislative, organizational and technical aspects of radiation protection, in the countries of the Region; and to discuss the need for health and hospital physics services, the basic requirements for their establishment, and how they can be developed. There were 19 participants from 14 countries and territories of the Region, a representative of the International Commission on Radiological Protection, and 4 observers from the Philippine Atomic Energy Commission, the Philippine College of Radiology, and the Philippine Association for Radiation Protection. Provided—2 consultants, 2 temporary advisers, and the cost of attendance of the participants.

4901 Health statistics and records (1971–76) R—To assist governments to develop a system of basic health statistics and records to meet the needs of the countries concerned and facilitate international comparison; and to train personnel.

5501 Dental health advisory services (1972–75) R—To advise on the establishment or strengthening of national dental health services, particularly those for preventive dentistry, on the basis of data gathered from national surveys, and to assist in setting up or improving programmes for training dental auxiliaries.

5601 Nutrition advisory services, South Pacific area (1968–73) R UNICEF (FAO) (South Pacific Commission)—To improve nutritional levels in the community, coordinate all food and nutrition activities carried out by international and national governmental agencies, and establish patterns of nutrition training and nutrition extension work that could be implemented widely in the South Pacific area.

These objectives were to be attained by conducting short courses in medium-level nutrition work for national staff; assisting trainees in the implementation, supervision and evaluation of practical nutrition programmes at village level; providing higher level personnel with adequate training for continuing support of such programmes; conducting a baseline assessment of dietary levels and nutritional status in pilot communities to assist the formulation of priorities and evaluation; and improving, by the training programmes, knowledge of nutrition at village level, food production, and supplementary feeding programmes. Provided—a medical nutritionist (July 1968-Feb. 1973) and a public health nutritionist (March 1968–March 1970). (FAO provided a nutritionist for 2 years; UNICEF provided stipends and fares for participants in courses and supplies and equipment; the South Pacific Commission provided consultants for 2 short courses in 1967 and, from 1968, made the facilities of its community education training centre available for field training of nutrition students of the Fiji School of Medicine.)

The project area included American Samoa, British Solomon Islands Protectorate, Fiji, Gilbert and Ellice Islands, Papua New Guinea, Trust Territory of the Pacific Islands, and Western Samoa.

Baseline assessments of nutritional status and of feeding patterns were made, using existing data and through a series of surveys conducted in the British Solomon Islands Protectorate, Fiji, the Gilbert and Ellice Islands, Tonga, and Western Samoa. The main nutritional problems found were widespread borderline protein-calorie malnutrition, with pockets of severe marasmus and kwashiorkor, especially in towns. The most common vitamin deficiencies were lack of vitamin A, riboflavin and folic acid. Anaemia due to lack of iron and/or folic acid was found to be widespread. Endemic goitre occurred mainly amongst Indians in Fiji and in Papua New Guinea. Obesity, diabetes and cardiovascular diseases were common in parts of Polynesia and amongst Indians in Fiji.

The main causes of deficiency diseases were determined to be infrequent meals, uneven distribution of food within the family, the tendency towards early cessation of breastfeeding and late supplementation with solid food; custom limiting the range of food offered to children, low incomes or poor food availability, and environmental conditions predisposing to infectious disease.

A series of recommendations were submitted to governments on the action and services needed to alleviate these conditions.
The main contribution of the project was in the field of training. Reference material suitable for the locality was prepared; a more integrated system of teaching nutrition to nurses was established at the Fiji School in collaboration with WHO nurse educators working in the South Pacific, and similar revisions were initiated in the Gilbert and Ellice Islands, Papua New Guinea, Tonga and Western Samoa. A new nutrition syllabus was prepared for the Fiji School of Medicine and a small nutrition laboratory set up at the Colonial War Memorial Hospital in Suva. The international staff in the schools of medicine and nursing, and the dental, teacher-training and agricultural colleges in the area carried out direct teaching activities. In addition, postgraduate or in-service training courses were given for doctors and nurses in Fiji and Western Samoa. Because of lack of trained staff for conducting long courses, efforts were concentrated on introducing nutrition teaching into the basic courses for health, agriculture and education staff.

Although the project was successful as regards the collection of baseline data on nutritional status and feeding patterns and the introduction of nutrition teaching into basic training, particularly of nurses and doctors, much remains to be done to achieve the objectives set out on the original plan of operation. In order to assist in this work, it is intended to assign staff with nutritional experience to the public health advisory services project in the South Pacific.

6002 Regional teacher-training centre for health personnel, University of New South Wales, Sydney, Australia (1971-81) R

UNDP — To assist in establishing and developing a regional teacher-training centre for health personnel at the medical faculty of the University of New South Wales, and national centres in selected countries of the Region.

The following intercountry activities were undertaken during the period under review:

Workshop for the deans and other senior administrators in schools of medicine (9-22 June 1973) — 16 participants from 10 countries; workshop for teachers in medical schools in the South Pacific (1-16 Sept. 1973) — 16 participants from 4 countries; workshop for teachers in medical education (11 Nov.-8 Dec. 1973) — 20 participants from 10 countries. Provided — consultant services and the cost of attendance of participants from outside Australia.

In addition, consultant services were provided for the national workshop in medical education held in Malaysia from 30 October to 3 November 1973.

7303 Epidemiological pilot study on drug abuse (1973– ) R —

To determine the epidemiology of drug abuse in the Region and the availability of treatment, rehabilitation and research facilities.

9202 Course for teachers of Immunology in medical schools, Australia (7-25 May 1973) R — A course on the teaching of basic immunology and of various aspects of pathology, for scientists responsible for teaching immunology to medical students at universities and similar institutions. The course, held in Adelaide, Melbourne and Canberra, had 21 participants from 9 countries of the Region. Provided — a consultant, 10 temporary advisers and the cost of attendance of the participants.

9603 Family planning field advisory services (1971–76) UNFPA —

To provide advisory services to governments in connexion with the strengthening and development of family planning programmes and their integration within the framework of the basic health services. Special emphasis will be given to planning, organization, education and training.

9604 Teaching of family planning, human reproduction and population dynamics in medical schools (1972– ) UNFPA —

To assist in developing a systematic and coordinated approach to the teaching of family planning, human reproduction and population dynamics in medical schools of the Region.

9605 Advisory team on the development of educational materials for family health (1972– ) UNFPA —

To assist national health and other departments in the production and distribution of simple information material on family health, including family planning, maternal and child health, and nutrition. The project consists of workshops, and, following the workshops, visits of an advisory team to participating countries.

The second workshop was held in Tonga from 4 to 18 October 1973. There were 13 participants from 9 countries and territories of the Region, and observers from UNESCO, UNFPA, the South Pacific Commission, and the International Planned Parenthood Federation. Provided — 2 consultants, a temporary adviser, and the cost of attendance of the participants.

9606 Seminar on the Role of Health Education in Family Planning, Manila (16-24 Jan. 1973) UNFPA —

To define the role of health education in family planning activities, review the situation and practice in the countries represented, and consider the various approaches, including mass media; and to make suggestions for strengthening the health component in family planning activities, including the preparation of staff. There were 16 participants from 12 countries and territories of the Region, and observers from UNESCO, UNICEF and the South Pacific Commission. Provided — 2 consultants, a temporary adviser, and the cost of attendance of the participants.

9607 Seminar on Family Life Education (South Pacific), Tonga (24-31 Oct. 1973) UNFPA —

To orient educators from countries and territories of the South Pacific area in the field of family life education. There were 14 participants from 6 countries and territories of the area, and observers from UNFPA, UNICEF, the South Pacific Commission, the International Planned Parenthood Federation and the University of the South Pacific. Provided — 2 consultants, the cost of attendance of participants, supplies and equipment, and the services of staff members.
0051 Field research on seroepidemiology of treponematoses (1968- ). R—To participate in epidemiological research on patterns of regression and recrudescence of endemic treponematoses (yaws, pinta and endemic syphilis) and advise on the epidemiological surveillance of these conditions, to assist health administrations in assessing the outcome of previous mass penicillin campaigns against them; to undertake immunological surveys to determine low-level transmission and the recrudescence potential for the invasion by venereal syphilis of previously endemic treponematoses areas; to furnish representative serum collections for use in immunological studies of treponematoses by collaborating laboratories and assess the suitability for field use of immunological tests for the treponematoses; and to provide serum collections for multipurpose immunological studies in other WHO programmes.

0052 Field investigations on schistosomiasis (1967- ). R—Activities include assistance to governments, and WHO operational research. They are carried out by experts representing various disciplines (e.g., epidemiology, parasitology, malacology, pharmacology, statistics, and social anthropology), who are called as required and who work either individually or in groups.

0053 Malaria eradication: Advisory services (1961- ). R VM—To make provision for technical advisers who can be assigned at short notice to assist in the planning, implementation and evaluation of malaria control and eradication programmes and advise on special technical problems.

0079 Malaria eradication: Training programme (1958- ). R—To prepare international and national staff of professional and subprofessional categories for advisory, executive, and teaching responsibilities in malaria control and eradication projects by providing teaching aids, courses of instruction, facilities for field training, and group visits to antimalaria programmes.

0113.1 International course in the epidemiology and control of tuberculosis, Prague (4 April-19 July 1973) R UNDP—The twelfth of a series of annual courses organized in cooperation with the Postgraduate Medical and Pharmaceutical Institute, Prague, to acquaint tuberculosis workers in key positions with modern methods of controlling the disease on a national scale within the framework of the general health services and to familiarize them with recent knowledge in epidemiology and managerial sciences. The three-month course in Prague (in English) was followed by 10 days of field training in Sri Lanka. Provided—fellowships for 15 physicians from 14 countries, the services of lecturers (including WHO staff members), and supplies and equipment.

0113.2 International course in the epidemiology and control of tuberculosis, Rome (6 March-14 June 1973) R UNDP—The twelfth of a series of courses started in 1962 and organized in cooperation with the Carlo Forlanini Hospital, Rome, to acquaint tuberculosis workers in key positions with modern methods of controlling the disease on a national scale within the framework of the general health services and to familiarize them with recent knowledge in epidemiology and managerial sciences. The 11-week course in Rome (in French) was followed by two and a half weeks of field training in Turkey. Provided—fellowships for 8 physicians from 7 countries, the services of lecturers (including WHO staff members), and supplies and equipment.

0172 Field research on special epidemiological problems of malaria (1962-75) R VM—To study all aspects of epidemiology of malaria in a savanna area of Africa; to prepare from the baseline data so obtained a mathematical model which will assist in indicating the attack measures of choice aiming at the interruption of transmission of malaria and against which the results obtained may be assessed; to recommend the future approach to malaria control in savanna areas of Africa; and to provide training facilities for research and laboratory workers on the methods and techniques applied in this project.

0190 Leprosy/BCG trial, Burma (1964-74) R—To carry out a trial to assess the value of BCG vaccination in the prevention of leprosy in the child population and obtain information on epidemiology, immunology, bacteriology, therapy and clinical aspects of leprosy in the total population.

0228 Seminars and training courses on cholera control (1965- ). R UNDP—The following took place during the period under review:

Lomé (27 Feb.-8 March 1973)—A training course, in French, to provide information on the organization of laboratory service and on laboratory procedures for the diagnosis of cases and carriers, and for detecting Vibrio cholerae in various foodstuffs and water sources. Provided—A consultant, the services of 2 staff members, the cost of attendance of 12 bacteriologists from 11 countries, and laboratory supplies.

Surabaya (Indonesia) and Singapore (25 June-4 July 1973)—A course, in English, in the diagnosis and treatment of cholera. Provided—2 consultants, the services of a staff member, the cost of attendance of 14 participants from 11 countries, and supplies for treatment.

Manila (26 Nov.-6 Dec. 1973)—A course, in English, on sanitation in cholera control. There were 11 participants and 4 observers from 11 countries. Provided—The services of 2 staff members and the cost of attendance of the participants.

0234 Economic Commission for Africa (1964-74) R—WHO is providing a sanitary engineer to assist the Economic Commission for Africa on the environmental health aspects of its economic and social development programmes.

0266 Field investigations on filariasis (1968- ). R—To carry out applied research on problems of major importance in regions where filariasis is most prevalent. Investigations are made by consultants representing various disciplines (e.g., epidemiology, parasitology, entomology, vector ecology, pharmacology, and seroimmunology), working individually or in groups.

0270 Anopheles Control Research Unit No. 1, Kaduna, Nigeria (1960- ). R—To carry out hut trials and village-scale field trials of new insecticides of potential value in malaria eradication and perform research on the ecology, biology and control of human malaria vectors.

0276 Cholera control team (1964- ). UNDP VC—To render emergency assistance to Member States in controlling cholera outbreaks and to help them to develop their short-term and long-
term control programmes by training their personnel in different aspects of treatment and control of cholera; and to assist in the local production of cholera vaccine and rehydration fluid in laboratories where the facilities exist, and in improving sanitation.

0287 Fifth advanced training course in diagnosis, treatment and prevention of major cardiovascular diseases (in English), Copenhagen (2 Jan.–30 June 1973) VK—To train physicians from developing countries in clinical cardiology, including modern diagnostic techniques, and to give them basic training in respiratory pathophysiology, epidemiology and prevention of cardiovascular diseases. There were 10 participants from 10 countries. Provided—6 lecturers (temporary advisers) and fellowships for the participants. Three staff members also delivered lectures.

0306 Vector and Rodent Control Research Unit, Jakarta (formerly Aedes Research Unit, Bangkok) (1966–) R—The Aedes Research Unit was established in 1966 to carry out research on the biology, distribution and insecticide susceptibility of the mosquito vectors of dengue haemorrhagic fever, with the objective of developing economic methods for their control. It was demonstrated that the main Aedes aegypti larval habitats in Bangkok were large clay jars holding domestic water supplies, of which there are an average of more than 4 per house in the over-300 000 houses in the city. Treatment of these jars by sand granules impregnated with Abate, an insecticide of very low mammalian toxicity, provided up to 4 months of control, giving long suppression of the vector population. Methods were developed for emergency use in the case of epidemic outbreaks of the disease, mostly based on the application of ultra-low-volume quantities of undiluted concentrates of organophosphate insecticides; it was possible to treat an entire city by air in a single morning and achieve a rapid, if temporary, drop in the mosquito population. ULV ground treatments by large vehicle-mounted equipment not only provided immediate control, but, with several applications at 10-day intervals, controlled the mosquito population for 4 to 5 months. In view of the results of the Unit’s work, the government has decided to use the trained counterpart staff as the nucleus of a new Division of Medical Entomology in the Thai Ministry of Health which will receive support from the Organization.

After completion of its work in Bangkok at the end of 1972, the Unit (renamed the Vector and Rodent Control Research Unit) was moved to Jakarta early in 1973. Its present functions are to study (i) the ecology, biology and distribution of insect vectors of disease, (ii) the distribution, ecology and population dynamics of urban and commensal rodents, and (iii) techniques for the control of insect vectors and animal reservoirs of disease.

0308 Development of mental health services (1971–) R—To provide advice on the development of mental health services in developing countries and on the training of staff for such services.

0403 Anopheles Control Research Unit No. 2, Kisumu, Kenya (1966–) R VM (USAID)—To carry out extended field evaluation of insecticides for use in malaria programmes.

0439 Course on planning, administration and management of health services, Manila (8 Oct.–16 Nov. 1973) R—To review critically the concepts, methods and practical application of the planning of health services, as well as the administration and management of these services in developing countries; to develop understanding of these concepts and methods, and to promote their application, adapted as necessary to the conditions in developing countries. The course, which was organized in collaboration with the Institute of Public Health and the College of Public Administration, University of the Philippines, had 17 participants from as many countries in 5 WHO regions. Provided—a course coordinator, 16 lecturers, the services of a staff member, and publications, supplies and audiovisual material.

0458 Cancer control (1968–) R—To assist research programmes in different areas that are important for cancer control, including the evaluation of certain methods for treatment and early detection of cancer, definition of high-risk population groups, education, and development of internationally acceptable standardized methodology for recording medical data on oncological patients.

0465 International pilot study of schizophrenia (1971–) VR (National Institute of Mental Health, USA) (Field research centres in Aarhus (Denmark), Agra (India), Cali (Colombia), Ibadan (Nigeria), London, Moscow, Prague and Washington, D.C.)—To develop reliable methods for the identification and assessment of functional psychiatric disorders, particularly schizophrenia, and for the study and description of their course; to answer some of the basic questions about schizophrenia; and to produce simple and reliable instruments for investigations of social, cultural, biological and genetic factors that can cause, influence or prevent schizophrenia and for epidemiological studies of mental disorders.

0467 Team for special studies in virology, Africa (1968–) R—To conduct research on public health problems of viral etiology in tropical areas, collect and disseminate information on the diseases concerned, participate in collaborative studies of vaccination in the tropics, train local personnel, provide facilities for visiting scientists, and contribute to diagnostic services.


0473 Advanced course in maternal and child health for maternal and child health administrators, Warsaw (4 Sept.–28 Oct. 1973) R UNICEF—To provide maternal and child health administrators in key positions with up-to-date knowledge and skills in the planning, delivery, management and evaluation of maternal and child care, including family planning. The course, which was organized by the Institute of Mother and Child, Warsaw, in collaboration with UNICEF and WHO, had participants from 12 countries. Provided—2 consultants and a temporary adviser.

0475 Assistance to national radiation health programmes (1968–74) R—To assist governments in planning and implementing radiation health programmes and in training health personnel.1

0478 Development of research and training in immunology (1967–) R VD VR—To advise on training, organize courses in immunology and immunological techniques, and to collaborate in research and in developing regional training centres for research in immunology, especially as related to parasitic and other tropical diseases.

0498 Eight Joint FAO/WHO Training Course for Meat Inspectors, Athi River, Kenya (22 Jan.–21 June 1973) VK (FAO)—To train personnel from African countries in the hygienic handling and inspection of meat. In addition to covering national and international aspects of meat control, the course touched upon meat transport and trade, veterinary administration, and animal diseases. WHO nominated one fellow and took part in the preparation of the course.

0521  Anaesthesiology course, Copenhagen (15 Jan.–7 Dec. 1973)  
VK—A course similar to those held yearly since 1951 at the Anaesthesiology Training Centre, Copenhagen, for training medical personnel. Provided—fellowships for 16 trainees from 15 countries.

0522  Refresher course in anaesthesiology, Copenhagen (3–25 June 1973)  
VK—A course, the tenth of a series, for WHO trainees having attended one of the annual courses at the Anaesthesiology Training Centre, Copenhagen. Provided—fellowships for 16 trainees from 13 countries.

0524  Course on radiation protection, supervision and inspection, Holte, Denmark (5 Aug.–1 Sept. 1973)  
VK—To provide training for medical physicists, medical officers and sanitary engineers in relevant aspects of radiation protection measures, and in the supervision and inspection of these measures in radiological departments. There were 18 participants from 15 countries. Provided—22 lecturers, including a staff member. Lectures were also given by a staff member from IAEA. The course director was appointed by the Danish authorities.

0528  Arbovirus Vector Research Unit, Enugu, Nigeria (1973– )  
R—To study the ecology, distribution and extent of arbovirus vectors and hosts in Africa, with special reference to vectors of yellow fever, chikungunya, o’nyong-nyong and dengue; to carry out basic and operational research for developing suitable methods of controlling these vectors by both chemical and biological agents; and to contribute, as required, to investigations on the biology and control of major vectors other than mosquitoes.

0529  Research Unit on the Genetic Control of Mosquitoes, India (1969– )  
VR—To conduct research into the feasibility of controlling Culex fatigans, Aedes aegypti and Anopheles stephensi on an operational scale by genetic manipulation.

0537  Seminar on Methods of Epidemiological Surveillance of Zoonoses, Foodborne Infections and other Communicable Diseases, Bangkok (1–12 Oct. 1973)  
R—To enable senior epidemiologists and veterinary public health or animal health specialists to discuss the basic concepts and the methodology of the surveillance of communicable diseases, including the zoonoses and foodborne diseases. There were 29 participants from 17 countries. Provided—a consultant, 2 temporary advisers, lecturers, the cost of attendance of participants, and the services of staff members (in conjunction with project SEARO 0168).

0539  Seminars on smallpox surveillance and assessment (1973– )  
R—To provide training in smallpox surveillance, based on the specific situations encountered in a national or provincial area. The following assistance was provided in the period under review:

During the first half of 1973 a consultant assisted, in Sudan, in the training of sanitary inspectors working in the southern provinces. Later in the year, financial assistance was provided for a national seminar in Ethiopia, held from 17 to 20 September, the participants in which included all provincial health officers as well as the national and international volunteer staff attached to the eradication programme.

0541  Meeting of regional smallpox advisers, Geneva (29 May–1 June 1973)  
R—Responsible officers from all WHO regions except the European Region, headquarters staff and temporary advisers from the USA and the USSR discussed progress and future strategy of the smallpox eradication programme, as well as problems of the administration of multiple antigens and the development of mass immunization programmes, on the basis of experience with the programme.

0546  Assistance in epidemics (1971– )  
VC—To assist countries where epidemics of communicable diseases occur, or threaten to occur, by providing advice, facilities for diagnosis and assessment, and emergency supplies of vaccine, and meeting other requirements.

0547  Smallpox surveillance and assessment team (1970– )  
VS—To carry out regular independent assessments of the individual programmes in smallpox endemic countries; to identify, as the programmes progress, the specific operational problems and assist health administrations in carrying them out; to collect further information that is required for the future development of the global programme, and to conduct special epidemiological studies with a view to defining the patterns of transmission of residual smallpox, particularly with reference to nomads and other migrant groups.

During the period under review assistance was provided to the programmes in Bangladesh, Ethiopia, India, Pakistan and Sudan.

0559  Health services development institutes (1968– )  
R—To set up a chain of research and development institutes for the purpose of assisting national health administrations in programming the activities of health services and in developing them progressively, in accordance with changing social, economic and epidemiological situations in such a way as to improve their efficiency and effectiveness and enable them to satisfy to a greater extent the needs of the population. The first institute of this type is based on the Institute of Public Health Research, University of Teheran. (See also project Interregional 1195.)

0565  Field research on cardiovascular diseases (1968– )  
R—To undertake investigations in specific areas of Africa and Asia where natural conditions are suitable for studying the etiology of ischaemic heart disease and primary diseases of the heart but where personnel for undertaking such work are lacking; and to assist in the cardiovascular research training programme. The team provided under this project, which is composed of a cardiologist, an epidemiologist and a technician, works in cooperation with the WHO Research and Training Centre for Cardiovascular Diseases, Kampala, on research into the prevalence and control of valvular heart disease in primary school children in Uganda and into cardiovascular status in elderly Africans.

0567  Courses in immunology (1969– )  
R—The fifth of a series of courses was given at the WHO Immunology Research and Training Centre, Lausanne (Switzerland) from 9 to 25 September 1973. The course, which was given in English, dealt with the immunology of infectious diseases. Provided—6 temporary advisers and the cost of attendance of 16 participants from 13 countries (participants financed from the contribution of the Government of Switzerland to the Centre). One place was reserved for a local student.

R—To present to scientists and public health administrators with experience in research related to family planning programmes a review of the endocrinological and metabolic assessments of side-effects related to contraceptive methods. There were 18 participants from 7 countries. Provided—The services of 7 faculty members and 3 staff members and the cost of attendance of the participants.

0577  Vector Ecology and Control Research Unit, Republic of Korea (1969– )  
R—To investigate the distribution, density, ecology and control of the mosquito vectors of Japanese encephalitis, carry out observations on the epidemiology of the disease and the interrelationship of the vectors, man and animals, and investigate the reservoirs of infection.
0579 Exchange of teaching personnel (1972- ) R—To enable teachers of medical and allied health sciences to exchange experience and discuss teaching problems.

0581 Courses in epidemiology and control of communicable diseases (1973) R UNDP—A course was held in Moscow, in English, between 6 September and 30 October 1973, to train medical officers in basic practical epidemiology, in particular for the purpose of establishing a cadre of epidemiologists in communicable diseases in developing countries. Lecturers from the USSR, together with WHO staff members, assisted with the course, which included a field practice visit to the Stavropol region. Provided—fellowships for 11 participants from 10 countries.

A course, in French, similar to that outlined above, was held, for the first time, in Paris from 16 October to 22 December 1972, with visits to institutes in Rennes, Lyons, Avignon and Marseilles. Lecturers from France assisted together with WHO staff members. The course continued in Bobo-Dioulasso, Upper Volta, from 3 January to 23 February 1973, where field training was given. Provided—lecturers and administrative costs for the host institutes. (Fellowships for the participants—13 from 10 countries—were awarded under other projects.)

A second course, in French, with the same objectives, took place in Paris and Rennes from 15 October to 21 December 1973. It will be followed by a few days at WHO headquarters, Geneva, after which field training will be given in Bobo-Dioulasso from 7 January to 23 February 1974. Provided—lecturers and administrative costs for the host institutes. (Fellowships for the participants—10 from 10 countries—were awarded under other projects.)

0616 Course on control of coastal water pollution, Copenhagen and Aarhus (23 July–17 Aug. 1973) VK—To train personnel in up-to-date techniques for controlling pollution of coastal waters and coastal areas. Provided—5 lecturers (including two staff members) and fellowships for the 14 participants from 14 countries.

0618 Course on pesticides analysis, Copenhagen (10 Sept.–13 Oct. 1973) VK—To provide practical laboratory training in chemical and biochemical analytical techniques with pesticides. The pesticides studied were those used for vector control in public health as well as a few agricultural pesticides whose safe handling has presented difficulties. There were 12 participants from 11 countries. Teaching was by 2 Danish experts and several Danish laboratory instructors. Provided—the cost of attendance of the participants and the services of staff members.

0620 Course in dental public health, Copenhagen (17 Sept.–17 Nov. 1973) VK (Royal Dental College, Denmark)—To provide instruction in dental epidemiology, the prevention of oral diseases, and the organization of dental public health services. The course was held at the Royal Dental College, Copenhagen, and was followed by a 3-day study tour to Örebro, Sweden. There were 16 participants—dentists involved in the organization of dental services, in research on, or in teaching of dental public health—from 14 countries. Provided—fellowships for the participants.


0658 Research on the epidemiology and methodology of schistosomiasis control in man-made lakes (1971– ) UNDP—To undertake research for the development of effective and economical methods of schistosomiasis control in man-made lakes; in particular (i) to study the ecology and epidemiology of schistosomiasis in such lakes; (ii) to carry out preliminary control trials in the field; (iii) to make recommendations on methods of schistosomiasis control in man-made lake conditions; and (iv) to provide training in schistosomiasis research and control under those conditions.

0660 Comprehensive health planning research, Colombia (1970– ) R VR PR (Government of Colombia)—To make the benefits of good health planning more accessible to WHO Member States. To accomplish this project has been started in Colombia which will attempt to create, through gradual modification of an existing health planning system, an improved planning system that will utilize resources more effectively.

0673 Human environment (1970–75) R—To cooperate with the United Nations Environment Programme (UNEP), with UNESCO in respect of its “Man and the Biosphere” programme, and with other members of the United Nations system and international organizations concerned with environmental problems.

During the period under review a series of meetings were held with the abovementioned organizations to implement resolutions of the United Nations Conference on the Human Environment, held in Stockholm in June 1972, and of the first session of the UNEP Governing Council, held in Geneva in June 1973. Proposals for WHO activities in this connexion were formulated and submitted for UNEP financial support.

0674 Methodological study on behavioural and operational components of health intervention programmes, Rotterdam (Netherlands) and Kaunas (Lithuanian SSR) (1970– ) R VR—To investigate methodological problems involved in a health intervention programme, using cardiovascular diseases as the intervention vehicle, with the specific objective of ascertaining the factors that determine (i) which individuals among those identified in a population as being at risk will participate in an intervention programme; (ii) successful adherence to the programme; (iii) the relationship of the cost of undertaking such a programme to the benefits in terms of the proportion of individuals who will be at least risk through intervention, by developing a cost-effectiveness model.

This study is being carried out in cooperation with two research teams—one from the Municipal Health Department of Rotterdam, the other from the Kaunas Medical Institute. WHO’s contribution consists of making available epidemiological, sociological and statistical advice and coordinating the data-processing methods used in both study areas.

0676 Training course on the serodiagnosis of parasitic diseases, Bordeaux, France (1 June–14 July 1973) R (National Institute of Health and Medical Research, France)—To provide training in the serological diagnosis of parasitic diseases. The programme of the course was oriented so that the participants in their future responsibilities could guide, supervise and train their professional colleagues and intermediate-level personnel. There were 13 participants from 12 developing countries in the African, European, Eastern Mediterranean and Western Pacific Regions and an observer from the Region of the Americas. Provided—the services of 9 temporary advisers and 2 staff members and the cost of attendance of the participants.

0689 Project systems analysis (1969–75) R—To apply the techniques of systems analysis and action research to providing a detailed, consistent methodology for the formulation of development projects; identifying management techniques for development projects so as to make them susceptible of monitoring, control and evaluation; specifying information system
requirements for the support of project management; and proposing methods and mechanisms for propagating the development project concept, methodology and supporting systems.


0691 Training course on modern methods of teaching nursing, Copenhagen (2 April–19 June 1973) VK—To help nurses educators to improve their skills in stating educational goals in behavioural terms; planning a curriculum and defining learning objectives for courses or units of instruction; choosing and using teaching methods that permit the attainment of students’ and teachers’ objectives; and preparing tests and other methods of evaluating students’ progress and their final achievement at the end of each course or unit of instruction. There were 20 participants from 20 countries. Provided—the services of 2 temporary advisers and of staff members, and the cost of attendance of the participants.

0693 Training course on clinical chemistry, Copenhagen (17 Sept.–27 Oct. 1973) VK—To give senior laboratory personnel an opportunity of becoming better acquainted with new techniques in the field of chromatography and enzymatic determinations, as well as the use of automated equipment and the organization of a clinical chemistry laboratory. The course, which was the fifth of a series organized jointly by the Danish authorities and WHO, had 15 participants from 14 countries. Provided—the services of 3 consultants and a staff member, and the cost of attendance of the participants.

0700 Conference on the Control of Foodborne Diseases, Principles of Food Hygiene Practice and Food Standardization, Singapore (21–28 Nov. 1973) R—To enable food hygienists, epidemiologists, health officers, public health veterinarians and food laboratory workers to discuss recent advances in the epidemiology, surveillance and control of foodborne diseases prevalent in the 3 participating WHO regions (South-East Asia, Eastern Mediterranean, and Western Pacific). The discussions also included the organization and management of food hygiene programmes, national and international aspects of food hygiene practice and food legislation and standardization. There were 18 participants from 16 countries; a representative of FAO and 6 observers from Singapore also attended. Provided—3 temporary advisers, the cost of attendance of 17 participants and the services of 6 staff members.

0703 Group of Experts on the Scientific Aspects of Marine Pollution, fifth session, Vienna (18–22 June 1973) R—The function of the Group is to advise the sponsoring organizations (the United Nations, FAO, UNESCO, IMCO, WMQ, IAEA and WHO) on the scientific aspects of marine pollution, especially those of an interdisciplinary nature.

The fifth session of the Group was concerned mainly with the identification and control of marine pollutants of international significance; principles for developing coastal water quality criteria; scientific problems related to pollution monitoring systems; and environmental effects of activities carried out at the sea bed and ocean floors. Provided—services of 2 temporary advisers and a staff member.

0704 International Hydrological Decade, Working Group on the Quality of Water, second meeting, Geneva (5–9 March 1973) R—The functions of the Group are to prepare a guidebook for water quality surveys, with particular regard to hydrological measurements and data needed in water quality surveys; to study the scientific aspects of problems posed by the design, creation, establishment and operation of networks for the observation of water quality; and to consider problems of water quality forecasting.

At its second meeting, the Group reviewed the progress made in the preparation of the guidebook. Provided—the cost of attendance of 3 participants from 3 countries. The cost of attendance of the other participants was met by UNESCO which, with WHO, provided the technical secretariat for the meeting.

0711 Conference on Global Impacts of Applied Microbiology, São Paulo, Brazil (23–28 July 1973) R—To focus attention on the contribution which applied microbiology can bring to the economy and welfare of developing nations. The Conference, which was the fourth international conference on the subject, was organized by the Panel on Microbiology of the International Cell Research Organization, the Brazilian Society of Microbiology, and the Organization of American States, under the auspices of UNESCO and WHO, in consultation with UNIDO, FAO, IAEA, the International Association of Microbiological Societies, and the World Federation of Culture Collections. Provided—the cost of attendance of 7 participants from 6 countries, and the services of 3 staff members.

0715 Assistance to national occupational health programmes (1972–) R—To assist governments in planning and implementing occupational health programmes and in training national personnel.

0722 Training course on biological standardization, Zagreb, Yugoslavia (24 Sept.–19 Oct. 1973) R—To provide technical training in tests used in the control of potency and safety of certain immunological biological products used in medicine; to give general instruction on the need for and value of developing national activities for the control of biological substances used in prophylactic and therapeutic medicine; to exchange information on common problems in the technical aspects of control; and to encourage the development of national regulation of biological substances. The course, held at the Institute of Immunology, Zagreb, had 8 participants from 8 countries. Provided—the services of 4 consultants and a staff member who acted as teachers, the cost of attendance of the participants, samples of certain international biological standards and reference preparations, and documentation.

0725 International Occupational Safety and Health Information Centre (1963–) R (ILO)—To support the Centre, which was started by ILO and which provides references to and prepares abstracts from the literature on occupational health and safety. At its annual meeting in 1973, at which WHO participated, it was decided that the Centre would produce periodic bulletins containing technical reviews of up-to-date information on research and services in occupational health from different parts of the world.

0726 Coordination of activities for classification of diseases (1971–) R—To provide for consultation between the heads of the centres for classification of diseases and WHO headquarters in order that the preparation of the Ninth Revision of the International Classification of Diseases may proceed simultaneously in English, French, Russian and Spanish, and that the terminology in each language version may accurately reflect current medical usage in that language.

0727 Seminar on the Place of Epidemiology in Clinical Practice and Delivery of Health Care, and the Role of Epidemiology in Health Service Organization and National Health Planning, Teheran (3–7 Dec. 1972) R—To provide practical demonstrations
of the application of epidemiology to the planning, implementation and evaluation of health service delivery systems. The Seminar was organized in collaboration with the International Epidemiological Association (IEA) and the School of Public Health and the Institute of Public Health Research, Teheran. The sessions were led by 5 WHO/IEA consultants and attended by 43 professionals from Iran and 9 from 5 other countries of the Eastern Mediterranean Region. Provided—the cost of attendance of the 9 participants from outside Iran.

0737 Training course on diagnostic techniques for haemoglobinopathies and allied disorders (in French), Abidjan (11–23 June 1973) R—To familiarize haematologists and laboratory personnel with techniques for detecting abnormal haemoglobins, thalassemia and glucose-6-phosphate dehydrogenase deficiency. The course, held at the Centre hospitalier universitaire, Abidjan, had 12 participants from 8 countries. Provided—lecturers and the cost of attendance of the participants.

0739 Seminar on Health Economics, Geneva (2–16 July 1973) R—To enable health administrators and health service managers to discuss with health economists the ways in which they could cooperate in order to provide solutions to various problems. The main subjects considered were methods of financing health services, costs of various elements of these services, and the relation of costs to effectiveness of health services action. There were 18 participants from 15 countries in all WHO regions and a number of observers. Provided—3 consultants, the cost of attendance of the participants and the services of staff members.

0741 Second International Conference of National Committees on Vital and Health Statistics, Copenhagen (1–5 Oct. 1973) R—To review the Committees’ activities and to discuss their role and objectives in the development of national health statistics information systems. The Conference had participants from 62 countries, and representatives of 6 organizations of the United Nations system and 14 nongovernmental organizations attended. Provided—a temporary adviser, contractual services, and the services of staff members.

0742 Seminar on the Organization of Mental Health Services, Addis Ababa (27 Nov.–4 Dec. 1973) R—To consider the organization of mental health services in developing countries. There were some 50 participants from countries in all the WHO Regions. Provided—the services of 2 consultants, a temporary adviser and 2 staff members and the cost of membership of the participants (partly financed under other projects).

0743 Course on nutrition (in French), Paris (7 Feb.–8 April 1973) R (University of Paris) (School of Public Health, Rennes, France)—To improve the knowledge in nutrition of physicians working in the fields of preventive medicine, paediatrics and maternal and child health, in order to strengthen nutrition activities within the framework of the health services. There were 14 participants from 11 countries. Provided—2 temporary advisers, the cost of attendance of the participants and scientific documentation.

0744 Training in health statistics (1973) R—Two temporary advisers and contractual services were provided to prepare working documents for and to lecture at the Travelling Seminar for Teachers of Health Statistics held from 8 to 27 October 1973 in the United Kingdom and USA (see project Interregional 1167 below).

Assistance was further given with the preparation of the manuscript of a manual using the information collected during the Seminar.

0753 Meeting on trends and levels of air pollution, Research Triangle Park, North Carolina, USA (12–17 Nov. 1973) R—To review the organization of WHO activities in air monitoring, make proposals for the development and extension of current activities by the inclusion of other pollutants, initiate a programme of data quality control and interlaboratory comparison, and discuss methodology for the siting of air pollution monitoring stations. Provided—the cost of attendance of 8 participants from 8 countries and the services of a staff member.

0763 Course in human genetics (in English), Odense, Denmark (12 Nov.–1 Dec. 1973) VK—A refresher course held at the University Institute of Clinical Genetics, Odense, for research workers in the field of human genetics and teachers of the subject in medical schools. The course, which covered new developments in theoretical and applied genetics, consisted of lectures supported by laboratory work, and included the statistical analysis of data. Provided—lecturers, and the cost of attendance of 14 participants from 12 countries.

0770 IAEA/WHO course in calibration methods for secondary standards in radiation dosimetry, Braunschweig, Federal Republic of Germany (1–27 Oct. 1973) R VR—To train staff working in the WHO Regional References Centres for Secondary Standard Radiation Dosimetry in different calibration methods. The course, organized at the Federal Institute of Physics and Technology, Braunschweig, was attended by 6 staff members from the 6 WHO Reference Centres in Argentina, Iran, Mexico, Romania, Singapore and Thailand) and 2 staff members from a similar centre supported by IAEA in Brazil. Provided—3 lecturers (temporary advisers), the cost of attendance of the participants and the services of a staff member. IAEA, which co-sponsored the course, also provided the services of a staff member.

0784 Cooperative programme with the World Bank on water supply, sewerage and drainage (1971–75) FR VW (IBRD) (International Development Association)—To assist Member States in national planning, project planning, creation of efficient institutions, and investment planning for the development of community water supply and wastes disposal facilities.

0787 Research in the epidemiology and control of single diseases (1972–74) R—To study single diseases with well-defined mechanisms, using the disciplines of epidemiology, sociology, demography, mathematics, statistics, and computer technology, with the aim of improving knowledge of their dynamics for better planning and implementation of control; to prepare study designs and research protocols with special emphasis on multidisciplinary uses; to design detailed systems for data collection, analysis, interpretation and presentation; and to develop epidemiological models of transmission processes for varying health status, and test their usefulness in the planning of control activities.

0788 Disability in the productive age (1972–74) R—To assess the prevalence of disability, its causes and the associated social and environmental factors, through home interviews and detailed examination of a sample of disabled persons between the ages of 35 and 54 in Belgrade, Yugoslavia.

0793 Study on chronic effects of the long-term use of cannabis (1972– ) UNFDAC—To determine the physical, mental and social consequences of the use of different cannabis preparations taken at various dose and frequency levels for different time periods.

0794 Study on the therapeutic effectiveness of maintenance in the management of narcotic-dependent persons (1972– ) UNFDAC—To determine the changes in patterns of behaviour in different groups of narcotic-dependent persons when they shift from illegal to legal sources of supply of narcotics under differing levels of supervision and in different sociocultural settings.
0795 Information brochures for medical and related professions on the nonmedical use of dependence-producing drugs (1972- ) UNFDAC—To prepare and publish, in as many languages as possible, a basic brochure for the members of health professions, together with supplements for members of particular professions such as physicians, nurses, dentists, pharmacists, social workers and psychologists; and to update the material as necessary.

0796 Drug abuse control in Thailand (1972- ) UNFDAC—To improve the personal and social functioning of drug-dependent persons; to reduce the prevalence and incidence of the non-medical use of dependence-producing drugs; to stimulate the development of a flexible and dynamic system for preventive, therapeutic (including medical, vocational and social rehabilitation), after-care and follow-up activities that will foster continued planning and programme development; and to evaluate the effectiveness of various approaches and methods in achieving the above objectives.

0800 Workshop on Early Malnutrition and Mental Development, Saltsjöbaden, Sweden (23-24 Aug. 1973) R—To develop the methodology for research on the effects on mental development of malnutrition early in life, considering particularly the variables involved in such research. Both short-term cross-sectional studies and longitudinal observations were discussed. The workshop, which was organized in cooperation with the Swedish Nutrition Foundation following the symposium on the same subject organized by the Foundation, had 15 participants. Provided—the services of a consultant and 3 staff members.

0802 Task force for development of an expanded programme of cholera control (1973- ) VC—To prepare material and guidelines on simple treatment, control measures, and simple reporting systems, and assist in their implementation, in cholera-endemic and cholera-receptive countries, with the aim of suppressing the spread of cholera throughout the world. An interdivisional programme team has been established for the formulation of a long-term programme of cholera control.

0812 Research on maintenance of drug-dependent persons, Iran (1973- ) UNFDAC—To determine the relative effectiveness of methadone and other treatment regimes in the management of narcotic-dependent persons in Iran.

0823 Standardization of immunological reagents (1973) VD—To standardize immunological material used in clinical diagnostic laboratories. A meeting of 10 temporary advisers was held to decide the priorities of the material to be standardized. A consultant was provided for 2 months to assist in the organization of the meeting and the project.

0895 Chagas’ Disease Vector Research Unit, Venezuela (1973- ) VR—To investigate the biology, ecology, distribution and population densities of the domestic and sylvatic Triatominae vectors of Chagas’ disease; to carry out field trials of insecticides and biological and environmental methods for the control of the vectors; to assess the effects of such trials on the transmission of the disease in reservoir and human populations; and to study the ecology and distribution of animal reservoirs of the disease.

0897 Symposium on Rapid Methods and Automation in Microbiology, Stockholm (4-8 June 1973) R—The purpose of the Symposium, sponsored by the International Organization for Biotechnology and Bioengineering, was to discuss new advances in automation in microbiology. There were 350 participants. WHO assisted in bringing to Sweden prototype equipment used in automated techniques in microbiology. These prototypes were mainly developed in university laboratories and other research institutions.

1001 Development of family planning activities—country appraisals (1970- ) UNFPA—To assist in the development of family planning activities within health services, and to participate in interagency missions on family planning and population dynamics.

1002 Advisory team on health aspects of family planning (1970- ) UNFPA—To develop guidelines for the provision of family planning within health services, and to build up expertise within WHO and national health administrations.

1003 Development of family planning aspects of maternal and child health activities (1970- ) UNFPA—To establish family planning activities as an important and integral part of maternal and child health work. The project focuses on the maternity-centred approach to family planning and aims at improving the health of the family, emphasizing (i) provision of maternal and child health care, including prenatal care and assistance during delivery and post partum; (ii) care of the newborn, the infant, and the child; (iii) educational counselling of the parents; (iv) advice on nutrition; (v) immunizations; and (vi) provision of contraception as appropriate, proper supervision of the use of fertility-regulating methods, and management of side-effects and complications. This activity also emphasizes appropriate care for subfertility.

1008 Strengthening of health education for support of family planning (1970- ) UNFPA—To help health authorities to strengthen their health education services in support of family planning activities. The project includes (i) assistance in planning, utilizing and evaluating such services; (ii) examination of ways of strengthening family life education and related school health education; (iii) provision of short courses, workshops, seminars, and in-service training; and (iv) strengthening of the health education element in other WHO-assisted programmes concerned with the health aspects of family planning. Assistance is also being provided in developing collaborative activities in health education with other organizations of the United Nations system and with nongovernmental organizations.

1019 Operational and epidemiological research on health aspects of family planning and population dynamics (1970- ) UNFPA—To stimulate, coordinate and support operational research and administrative and epidemiological studies on the health aspects of family planning and population dynamics.

1020 Research in health education and behavioural sciences relevant to family planning (1971- ) UNFPA—To assist in planning and developing the research in health education and related social sciences that is essential for the planning of measures to enlist more effective cooperation of the public in the health aspects of family planning and related health services. During the period under review research grants were awarded (i) to the National Institute of Health Administration and Education, New Delhi, for the study of factors influencing adoption by hospital patients and their relatives of practices relating to health aspects of family planning, and (ii) to the School of Public Health, University of Tehran, for a study of cognition, attitude and behaviour of high school biology teachers in Iran regarding family planning. See also project SEARO 0213.

1021 Study of levels, trends and differentials in fetal, infant and early childhood mortality (1970-75) UNFPA (UN)—To carry out, jointly with the United Nations, an investigation into levels, trends and differentials in fetal, infant and early childhood mortality. A working group of 4 WHO temporary advisers was held in London on 4 and 5 June 1973 on the comparative study of
social and biological effects on perinatal mortality; the group discussed draft papers to form part of the final report on the study as a whole, and heard reports on visits made to the following countries participating in the project: Austria, Cuba, England and Wales, Hungary, Japan, Sweden and the United States of America.

A further meeting on the comparative study was held in Geneva from 24 to 28 September 1973 with 3 WHO temporary advisers and representatives from the following participating countries: Chile, Hong Kong, Mauritius, Poland, Romania and Yugoslavia.

1022 Combined ad hoc survey on fetal, infant and early childhood mortality and fertility patterns (1970-75) UNFPA—To provide estimates of levels and trends and differentials of fetal, infant and early childhood mortality in relation to fertility patterns and to test statistical methods and techniques suitable for carrying out the survey in selected countries.

A meeting of collaborators was held in Geneva from 17 to 21 September 1973 to discuss progress made in the survey and plan further activities for 1974; it was attended by the responsible statisticians in Afghanistan, Algeria, Sierra Leone, Sudan and Trinidad and Tobago, and their national counterparts.

1023 Registration of pregnancies and their outcome (1970-73) UNFPA—To establish a registry of pregnancies and assess the various outcomes of these, namely early fetal death corresponding to abortion, in addition to the usually recorded late fetal death and live birth.

Following the consultations held in 1970 and 1971 (see Official Records No. 197, page 370), France, Iceland and Israel completed the collection of data for the trial in 1972, and statistical tables were established as a basis for discussion at a third consultation, held in Geneva from 18 to 22 June 1973 with 9 participants (temporary advisers) from the countries involved (which also included Cyprus and Thailand). Some changes in the proposed certificate of registration were made, together with recommendations on the establishment of pregnancy registers before the twentieth week of gestation. Thailand completed the collection of data in June 1973, and Cyprus started its part in the project in the same month. The system used in the trial aroused great interest, and the participants recommended that further work be done in this field.

1025 Educational role and functions of health personnel in health aspects of family planning (1971-74) UNFPA—To study the educational role and functions of health personnel in health aspects of family planning, and to consider the implications of the findings for the training of health workers in health education.

1028 Evaluation of family planning activities within health services (1970-74) UNFPA—to assist governments in evaluating family planning activities in the context of health services, including collection of the necessary information, development of assessment methods, and field studies to test those methods.

1029 Research team on evaluation of fertility control methods (1972-76) UNFPA—To advise responsible authorities on the conduct of clinical trial of fertility-regulating agents and the assessment of their results; to develop and carry out research on methods for the evaluation of the effectiveness, side-effects and use of such agents; to conduct and coordinate clinical trials in collaboration with local staff; and to assist with relevant training programmes.

1030 Review and appraisal of health education services in the health context (1971-74) UNFPA—to assist in reviewing the health education services required to support family planning activities within the health services, and in developing appraisal methods and procedures; to exchange information on the subject; and to discuss objectives, requirements, scope and methods for the health education services.

A consultation on health aspects of family life education for school-age children and youth in Latin America was held in Caracas from 11 to 17 September 1973. Present education programmes in Latin America were reviewed to enable guidelines to be drawn up to assist Member governments in planning and implementing health education for school-age children and young people in the home, school and community. There were 16 participants—specialists in health education and maternal and child health, education planners, administrators and curriculum experts. UNDP, UNESCO, UNFPA, USAID and the World Confederation of Teaching Professions were represented. Provided—2 consultants and the cost of attendance of the participants.

1031 Teaching of human reproduction, family planning and population dynamics in medical schools (1971-74) UNFPA—To assist institutions in integrating subjects related to human reproduction, family planning and population dynamics into the curriculum, and in improving teaching methods, emphasizing the team approach.

1033 and 1038 Strengthening of teaching of human reproduction, population dynamics and family planning in nursing and midwifery education (1971-) UNFPA—To develop programmes, incorporating family planning, for nursing and midwifery education at basic and postbasic levels and as part of all continuing education for nursing and midwifery personnel; to strengthen the capability of faculty members in curriculum analysis and development to achieve the above objective and assist them in the use of modern educational technology in teaching programmes in family planning; to prepare teaching materials and produce manuals, guides and models of instruction for different categories of nursing and midwifery personnel.

1035 Health education in schools, including family life education (1971-) UNFPA—To promote the integration of health aspects of family life education, population dynamics and related areas in human biology, social studies, family planning, communications, and other relevant subjects, into health education projects.

1040 Workshops for national health statisticians on family planning programmes (1971-74) UNFPA—To familiarize statisticians in key positions with statistical methods for the study of health and population; to determine the principal statistical issues involved in the planning, execution and evaluation of family health programmes; and to provide up-to-date information on developments in statistical methodology.

The fifth workshop took place in Cotonou, Dahomey, from 9 to 20 April 1973 with 22 participants from French-speaking countries on the African continent, including Algeria and Tunisia, and from Madagascar and Réunion. A travelling workshop visited countries in the South-East Asia and Western Pacific Regions between 19 October and 9 November 1973. There were 17 participants from the 6 WHO regions.

1041 Teaching of human reproduction, family planning and population dynamics to auxiliary personnel (1971-) UNFPA—To incorporate the teaching of human reproduction into the basic training of auxiliary health personnel; to institute comparative trials of teaching/learning materials in different audio-visual formats; and to provide reference materials for the use of teachers in auxiliary health training.

1046 Health education material and communication media (1971-) UNFPA—To improve material for information and
education and to plan the more effective use of communication media for community health service activities involving health aspects of family planning.

An interregional UNESCO/WHO consultation on communication and education in family planning was held in New Delhi from 18 to 22 December 1972 to examine the priority education and communication needs of family planning programmes and consider how to make more effective use of existing resources. Twenty-two temporary advisers (12 from UNESCO and 10 from WHO) from 12 countries participated. Provided—2 consultants, 10 temporary advisers, and the services of 2 staff members.

A health education workshop for the Caribbean area was held in Kingston, Jamaica, from 20 to 26 November 1973, to enable a group of people with responsibilities in administration, planning and health education in national health and health organizations to share experiences and views concerning methods of integrating and strengthening health education in family planning and population dynamics programmes in the countries concerned. UNESCO, UNICEF and UNFPA sent observers. Provided—2 consultants, 3 temporary advisers, the cost of attendance of 38 participants, and the services of a staff member.

1047 Manual on fertility analysis (1971- ) UNFPA—To prepare a manual on methods and techniques in health statistics relating to studies in human reproduction and family planning programmes, with special reference to conditions in developing countries. The manual will deal with problems of collecting, estimating and adjusting basic data, the techniques useful for combined fetal, infant and early childhood mortality surveys and fertility surveys, evaluation methods for family planning programmes and other methods for evaluation of their impact on the health status of the population.

1048 Manual on morbidity and mortality analysis (1970-73) UNFPA—To prepare a manual on methods and techniques for the collection and analysis of numerical information on morbidity and mortality. The manual will deal with aspects of automatic data processing, population models in health statistics, the theory of competing risks, and other methods for evaluation of specific public health measures.

1054 WHO reference centres in human reproduction, family planning and population dynamics (1971- ) UNFPA—To establish standards, develop methodology, maintain surveillance, promote training and stimulate research in various fields of health relating to family planning, through the establishment of national, regional and international reference centres.

1055 Research training grants in the laboratory, clinical, epidemiological and public health aspects of human reproduction, family planning and population dynamics (1970-74) UNFPA—To provide research training in high-ranking institutions in various parts of the world for scientists, clinicians and health administrators, particularly from developing countries.

1065 Comparative pilot studies of statistical methodology and techniques in family planning programmes (1971-75) UNFPA—To test statistical methods and techniques for the collection, appraisal and analysis of quantitative information required in the planning, operation and evaluation of family planning programmes; to determine the needs for information in the various phases of programmes; to study the design of standard forms for data collection; and to investigate problems involved in the “feedback” of statistical information for policy decisions.

A meeting on family planning statistics was held in Geneva from 3 to 7 December 1973 with 7 participants from 5 regions, and observers from ECAFE, the Population Council, and the International Planned Parenthood Federation.

1066 Investigation of urban-rural differentials of mortality (1972-74) UNFPA—To study urban-rural mortality differentials in communities at various stages of socioeconomic development on the basis of available national data; to stimulate and support such studies in selected countries where the data are not readily available; and to promote investigations of the underlying causes of the observed differentials in various countries.

1138 Training of key teaching staff in health aspects of family planning (1972- ) UNFPA—To assist in strengthening family planning services by preparing health personnel at all levels to assume teaching and organizational responsibilities.

1139 Research administration in the fields of human reproduction, family planning and population dynamics (1971- ) UNFPA—To assist developing countries, by means of advisory services, workshops and training grants, in building up competence in research administration in these fields, mainly as regards evaluation of research needs and opportunities; inventory of research manpower and facilities; estimation of potential for development and training; setting of research priorities; appraisal of requests for support to research; organization and administration of research contracts, training grants, research meetings, etc., evaluation of research results, and dissemination of scientific and technical information.

A workshop was held in Geneva from 22 to 26 October 1973 with 6 participants from 3 countries. Provided—4 temporary advisers and the cost of attendance of the participants.

1140 Research and studies in education and training of auxiliary health personnel for family planning programmes (1971- ) UNFPA—To plan and initiate research in education and training of auxiliary health personnel for family planning programmes, in collaboration with existing and planned training and research centres in the WHO regions.

1141 Consultation on family health and development of a relevant bibliography (1973- ) UNFPA—A consultation on family health was held in Geneva from 5 to 12 November 1973, with the participation of 12 experts in various disciplines. They reviewed present knowledge relating to the concept of family health, family structure and function, family health needs, and biological, psychological, sociocultural, economic and educational factors influencing family health, and identified gaps in knowledge requiring priority research. They also discussed experience of the provision of family health services and its implications for the training of health personnel.

A review is being made of existing literature on family health and family studies and an extensive bibliography on the subject is being prepared.

1147 Health demography study areas (1972-75) UNFPA—To study the health condition of the population and develop improved methods for measuring health characteristics; to measure the impact of various factors, including family planning programmes, on the health of the population; and to study the quantitative relationship between population characteristics and health variables.

To follow up the first meeting, held from 16 to 20 October 1972, a second meeting was held in Geneva from 19 to 23 March 1973 to formalize plans for setting up health demography study areas in selected countries. There were 5 participants from 4 countries.

1148 Support to data processing centres (1971-74) UNFPA—To assist health demographic and family planning information centres.

A consultation on assistance to countries in planning and operating national health statistical information systems was held in Geneva from 26 to 30 March 1973; the 7 participants from 6 countries reviewed the reports of three study missions that had visited 9 countries in the African and Eastern Mediterranean
Regions in February and March 1973, and recommended further action for the development of information systems.

1151 Methodology of reporting and analysis of perinatal and maternal morbidity and mortality (1971–73) UNFPA—(i) To carry out studies with a view to establishing internationally acceptable criteria, definitions, classifications and nomenclature both for morbidity and causes of death and for the medical procedures—preventive, therapeutic and diagnostic—related to the perinatal period; (ii) to propose a methodology for the registration of pregnancies; (iii) to propose a methodology for the collection and analysis of information on child and mother (with special reference to multiple causes of illness and death) in countries with a high doctor/population ratio and those with a low one; (iv) to propose a statistical methodology for measuring the survival probability of the immature fetus; (v) to carry out studies on the multifactorial causation of mortality as related to population dynamics; and (vi) to set up a reference centre to advise on and assist the above activities.

At a consultation in Geneva from 26 to 30 March 1973, 7 temporary advisers from 7 countries studied the methodology and applications of lay reporting of perinatal and maternal morbidity and mortality data, discussed proposals arising out of the consultations held in 1972 (see Official Records No. 205, page 293), and analysed the results of trials carried out in India, Thailand, United States of America (Indian Health Service), and Yugoslavia. They recommended the continued use of methods relying on collaboration between medical and non-medical statistical personnel.

A consultation on alternative forms of perinatal death certificate was held in Geneva from 19 to 23 November 1973, with 7 participants (temporary advisers) from 5 countries.

1155 Study on influence of changing mortality on the life cycle of the family (1972–73) UNFPA—To investigate the influence of changing mortality at various stages in the development of the family in countries with relatively high mortality; and to compare this influence with other factors such as nuptiality and divorce so as to assess its relative importance.

1156 Cost/effectiveness studies of family planning programmes within the context of public health activities (1973) UNFPA—To study the technique of cost/effectiveness and its suitability for the evaluation of family planning and general health statistical projects.

A consultation was held in Geneva from 9 to 13 April 1973 with 6 participants from 5 countries to discuss the technique of cost/effectiveness as compared with cost/benefit analysis and examine the statistical data requirements and the factors and variables involved. Recommendations were formulated on the practical application of the technique for evaluation to future research work and WHO assistance to countries.

1163 Research on the interrelationship between health, population and socioeconomic development (1973– ) UNFPA—To study population characteristics, apart from age and sex, that affect health and mortality, including such variables as occupation, housing, nutritional habits, ethnic origins and physical environment.

1167 Study on curricula for the training of health statisticians in family planning statistics (1971– ) UNFPA—To strengthen the professional training of health statisticians in family planning statistics, by identifying the changes that should be made in training programmes and formulating the appropriate guidelines, and by recommending other measures to improve family planning aspects of health statistics training.

Following visits by study missions to 9 countries in the African and Eastern Mediterranean Regions (see project Interregional 1148 above) which also investigated training methods and curricula for health statisticians, a travelling seminar for teachers of health statistics was held from 8 to 27 October 1973. There were 11 participants from 10 countries. They visited 4 institutes in the United Kingdom and the USA to collect information on new teaching methods and developments in curricula, and discussed their suitability for the purposes of health planners and family planning administrators.

1168 Training centre for exfoliative cytology and obstetrical and gynaecological pathology in relation to family planning programmes (1971– ) UNFPA—To develop a training centre for exfoliative cytology and obstetrical and gynaecological pathology in relation to family planning programmes, which will function in collaboration with interregional training centres. Cytology laboratory facilities are to be established in the countries from which trainees are drawn. It is intended to develop, in a number of countries with family planning programmes, expertise that may serve to provide advice to governments and carry out cytological monitoring of, for example, possible adverse side-effects of certain contraceptive methods.

1195 Operations research in health services development (1972–75) UNFPA—To support a project on a provincial scale in Iran, in which a complex of measures designed to provide a better solution for the major health problems of the area through an efficient health delivery system is in the process of implementation and evaluation. The project operates in close cooperation with project Interregional 0559 (see above).

1212 World Population Year, 1974 (1972–74) UNFPA—To promote the family health component of activities planned under the auspices of World Population Year by means of public information and to create greater public awareness of the needs of family health and the means of its improvement; to explain the health aspects of family planning to authorities responsible for mass media, and to assist with the provision of accurate information.
ANNEXES
### MEMBERS AND ASSOCIATE MEMBERS OF THE WORLD HEALTH ORGANIZATION
### at 31 December 1973

At 31 December 1973 the World Health Organization had 138 Member States and two Associate Members. They are listed below, with the date on which each became a party to the Constitution or the date of admission to associate membership.

<table>
<thead>
<tr>
<th>Member State</th>
<th>Date of Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>19 April 1948</td>
</tr>
<tr>
<td>Albania</td>
<td>26 May 1947</td>
</tr>
<tr>
<td>Algeria *</td>
<td>8 November 1962</td>
</tr>
<tr>
<td>Argentina *</td>
<td>22 October 1948</td>
</tr>
<tr>
<td>Australia *</td>
<td>2 February 1948</td>
</tr>
<tr>
<td>Austria *</td>
<td>30 June 1947</td>
</tr>
<tr>
<td>Bahrain</td>
<td>2 November 1971</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>19 July 1972</td>
</tr>
<tr>
<td>Barbados *</td>
<td>25 April 1967</td>
</tr>
<tr>
<td>Belgium *</td>
<td>25 June 1948</td>
</tr>
<tr>
<td>Bolivia</td>
<td>23 December 1949</td>
</tr>
<tr>
<td>Brazil *</td>
<td>2 June 1948</td>
</tr>
<tr>
<td>Bulgaria *</td>
<td>9 June 1948</td>
</tr>
<tr>
<td>Burma *</td>
<td>1 July 1948</td>
</tr>
<tr>
<td>Burundi</td>
<td>22 October 1962</td>
</tr>
<tr>
<td>Byelorussian SSR *</td>
<td>7 April 1948</td>
</tr>
<tr>
<td>Cameroon</td>
<td>6 May 1960</td>
</tr>
<tr>
<td>Canada *</td>
<td>29 August 1946</td>
</tr>
<tr>
<td>Central African Republic *</td>
<td>20 September 1960</td>
</tr>
<tr>
<td>Chad *</td>
<td>1 January 1961</td>
</tr>
<tr>
<td>Chile *</td>
<td>15 October 1948</td>
</tr>
<tr>
<td>China *</td>
<td>22 July 1946</td>
</tr>
<tr>
<td>Colombia</td>
<td>14 May 1959</td>
</tr>
<tr>
<td>Congo *</td>
<td>26 October 1960</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>17 March 1949</td>
</tr>
<tr>
<td>Cuba *</td>
<td>9 May 1950</td>
</tr>
<tr>
<td>Cyprus *</td>
<td>16 January 1961</td>
</tr>
<tr>
<td>Czechoslovakia *</td>
<td>1 March 1948</td>
</tr>
<tr>
<td>Dahomey *</td>
<td>20 September 1960</td>
</tr>
<tr>
<td>Democratic People's Republic of Korea</td>
<td>19 May 1973</td>
</tr>
<tr>
<td>Democratic Yemen *</td>
<td>6 May 1968</td>
</tr>
<tr>
<td>Denmark *</td>
<td>19 April 1948</td>
</tr>
<tr>
<td>Dominican Republic *</td>
<td>21 June 1948</td>
</tr>
<tr>
<td>Ecuador *</td>
<td>1 March 1949</td>
</tr>
<tr>
<td>Egypt *</td>
<td>16 December 1947</td>
</tr>
<tr>
<td>El Salvador</td>
<td>22 June 1948</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>11 April 1947</td>
</tr>
<tr>
<td>Fiji *</td>
<td>1 January 1972</td>
</tr>
<tr>
<td>Finland *</td>
<td>7 October 1947</td>
</tr>
<tr>
<td>France *</td>
<td>16 June 1948</td>
</tr>
<tr>
<td>Gabon</td>
<td>21 November 1960</td>
</tr>
<tr>
<td>Gambia *</td>
<td>26 April 1971</td>
</tr>
<tr>
<td>German Democratic Republic *</td>
<td>8 May 1973</td>
</tr>
<tr>
<td>Germany, Federal Republic of</td>
<td>29 May 1951</td>
</tr>
<tr>
<td>Ghana *</td>
<td>8 April 1957</td>
</tr>
<tr>
<td>Greece</td>
<td>12 March 1948</td>
</tr>
<tr>
<td>Guatemala *</td>
<td>26 August 1949</td>
</tr>
<tr>
<td>Guinea *</td>
<td>27 September 1966</td>
</tr>
<tr>
<td>Guyana *</td>
<td>12 August 1947</td>
</tr>
<tr>
<td>Haiti *</td>
<td>8 April 1949</td>
</tr>
<tr>
<td>Honduras *</td>
<td>17 June 1948</td>
</tr>
<tr>
<td>Hungary *</td>
<td>12 January 1948</td>
</tr>
<tr>
<td>Iceland</td>
<td>23 May 1950</td>
</tr>
<tr>
<td>Iran *</td>
<td>23 November 1946</td>
</tr>
<tr>
<td>Iraq *</td>
<td>23 September 1947</td>
</tr>
<tr>
<td>Ireland *</td>
<td>20 October 1947</td>
</tr>
<tr>
<td>Israel *</td>
<td>21 June 1949</td>
</tr>
<tr>
<td>Italy *</td>
<td>11 April 1947</td>
</tr>
<tr>
<td>Ivory Coast *</td>
<td>28 October 1960</td>
</tr>
<tr>
<td>Jamaica *</td>
<td>21 March 1963</td>
</tr>
<tr>
<td>Japan *</td>
<td>16 May 1951</td>
</tr>
<tr>
<td>Jordan *</td>
<td>7 April 1947</td>
</tr>
<tr>
<td>Kenya *</td>
<td>27 January 1964</td>
</tr>
<tr>
<td>Khmer Republic *</td>
<td>17 May 1950</td>
</tr>
<tr>
<td>Kuwait *</td>
<td>9 May 1960</td>
</tr>
<tr>
<td>Laos *</td>
<td>17 May 1950</td>
</tr>
<tr>
<td>Lebanon</td>
<td>19 January 1949</td>
</tr>
<tr>
<td>Lesotho *</td>
<td>7 July 1967</td>
</tr>
<tr>
<td>Liberia</td>
<td>14 March 1947</td>
</tr>
<tr>
<td>Libyan Arab Republic *</td>
<td>16 May 1952</td>
</tr>
<tr>
<td>Luxembourg *</td>
<td>3 June 1949</td>
</tr>
<tr>
<td>Madagascar</td>
<td>16 January 1961</td>
</tr>
<tr>
<td>Malawi *</td>
<td>9 April 1965</td>
</tr>
<tr>
<td>Malaysia *</td>
<td>24 April 1958</td>
</tr>
<tr>
<td>Maldives *</td>
<td>5 November 1965</td>
</tr>
<tr>
<td>Mali *</td>
<td>17 October 1960</td>
</tr>
<tr>
<td>Malta *</td>
<td>1 February 1965</td>
</tr>
<tr>
<td>Mauritania</td>
<td>7 March 1961</td>
</tr>
<tr>
<td>Mauritius *</td>
<td>9 December 1968</td>
</tr>
<tr>
<td>Mexico *</td>
<td>7 April 1948</td>
</tr>
<tr>
<td>Monaco *</td>
<td>8 July 1948</td>
</tr>
<tr>
<td>Mongolia *</td>
<td>18 April 1962</td>
</tr>
<tr>
<td>Morocco *</td>
<td>14 May 1956</td>
</tr>
<tr>
<td>Nepal *</td>
<td>2 September 1953</td>
</tr>
<tr>
<td>Netherlands *</td>
<td>25 April 1947</td>
</tr>
<tr>
<td>New Zealand *</td>
<td>10 December 1946</td>
</tr>
<tr>
<td>Nicaragua *</td>
<td>24 April 1950</td>
</tr>
<tr>
<td>Niger *</td>
<td>5 October 1960</td>
</tr>
<tr>
<td>Nigeria *</td>
<td>25 November 1960</td>
</tr>
<tr>
<td>Norway *</td>
<td>18 August 1947</td>
</tr>
<tr>
<td>Oman *</td>
<td>28 May 1971</td>
</tr>
<tr>
<td>Pakistan *</td>
<td>23 June 1948</td>
</tr>
<tr>
<td>Panama *</td>
<td>20 February 1951</td>
</tr>
<tr>
<td>Paraguay</td>
<td>4 January 1949</td>
</tr>
<tr>
<td>Peru *</td>
<td>11 November 1949</td>
</tr>
<tr>
<td>Philippines *</td>
<td>9 July 1948</td>
</tr>
<tr>
<td>Poland *</td>
<td>6 May 1948</td>
</tr>
<tr>
<td>Portugal *</td>
<td>13 February 1948</td>
</tr>
<tr>
<td>Qatar *</td>
<td>11 May 1972</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>17 August 1949</td>
</tr>
<tr>
<td>Romania *</td>
<td>8 June 1948</td>
</tr>
<tr>
<td>Rwanda *</td>
<td>7 November 1962</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>26 May 1947</td>
</tr>
<tr>
<td>Senegal *</td>
<td>31 October 1960</td>
</tr>
<tr>
<td>Sierra Leone *</td>
<td>20 October 1961</td>
</tr>
<tr>
<td>Singapore *</td>
<td>25 February 1966</td>
</tr>
<tr>
<td>Somalia</td>
<td>26 January 1961</td>
</tr>
<tr>
<td>South Africa</td>
<td>7 August 1947</td>
</tr>
<tr>
<td>Spain *</td>
<td>28 May 1951</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>7 July 1948</td>
</tr>
<tr>
<td>Sudan *</td>
<td>14 May 1956</td>
</tr>
<tr>
<td>Swaziland</td>
<td>16 April 1973</td>
</tr>
<tr>
<td>Sweden *</td>
<td>28 August 1947</td>
</tr>
<tr>
<td>Switzerland</td>
<td>26 March 1947</td>
</tr>
<tr>
<td>Syrian Arab Republic *</td>
<td>18 December 1946</td>
</tr>
<tr>
<td>Thailand *</td>
<td>26 September 1947</td>
</tr>
<tr>
<td>Togo *</td>
<td>13 May 1960</td>
</tr>
<tr>
<td>Trinidad and Tobago *</td>
<td>3 January 1963</td>
</tr>
<tr>
<td>Tunisia *</td>
<td>14 May 1956</td>
</tr>
<tr>
<td>Turkey *</td>
<td>2 January 1948</td>
</tr>
<tr>
<td>Uganda</td>
<td>7 March 1963</td>
</tr>
<tr>
<td>Ukraine *</td>
<td>3 April 1948</td>
</tr>
<tr>
<td>Union of Soviet Socialist Republics</td>
<td>24 March 1948</td>
</tr>
<tr>
<td>United Arab Emirates *</td>
<td>30 March 1972</td>
</tr>
<tr>
<td>United Kingdom of Great Britain and Northern Ireland *</td>
<td>22 July 1946</td>
</tr>
<tr>
<td>United Republic of Tanzania *</td>
<td>15 March 1962</td>
</tr>
<tr>
<td>United States of America</td>
<td>21 June 1948</td>
</tr>
<tr>
<td>Upper Volta *</td>
<td>4 October 1960</td>
</tr>
<tr>
<td>Uruguay *</td>
<td>22 April 1949</td>
</tr>
<tr>
<td>Venezuela</td>
<td>7 July 1948</td>
</tr>
<tr>
<td>Viet-Nam *</td>
<td>17 May 1950</td>
</tr>
<tr>
<td>Western Samoa *</td>
<td>16 May 1962</td>
</tr>
<tr>
<td>Yemen *</td>
<td>20 November 1953</td>
</tr>
<tr>
<td>Yugoslavia *</td>
<td>19 November 1947</td>
</tr>
<tr>
<td>Zaire *</td>
<td>24 February 1961</td>
</tr>
<tr>
<td>Zambia *</td>
<td>2 February 1965</td>
</tr>
</tbody>
</table>

**Associate Members**

- Papua New Guinea: 26 July 1972
- Southern Rhodesia: 16 May 1950

* Member States that have acceded to the Convention on the Privileges and Immunities of the Specialized Agencies and its Annex VII.

1 Southern Rhodesia's associate membership is regarded as in suspense.
Annex 2

MEMBERSHIP OF THE EXECUTIVE BOARD

1. Fifty-first Session (Geneva, 16-25 January 1973)

Designated by

<table>
<thead>
<tr>
<th>Member</th>
<th>Designated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr H. Abdul-Ghaflar 1</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>Dr Esther Ammundsen</td>
<td>Denmark</td>
</tr>
<tr>
<td>Professor E. J. Auiai</td>
<td>France</td>
</tr>
<tr>
<td>Dr. O. Aviles</td>
<td>Nicaragua</td>
</tr>
<tr>
<td>Dr. T. Bana</td>
<td>Niger</td>
</tr>
<tr>
<td>Professor H. Flamm</td>
<td>Austria</td>
</tr>
<tr>
<td>Mr. Y. Wolde-Gerima</td>
<td>Tanzania</td>
</tr>
<tr>
<td>Sir George Godber</td>
<td>United Kingdom of Great Britain and Northern Ireland</td>
</tr>
<tr>
<td>Dr. C. Hemachudha</td>
<td>Thailand</td>
</tr>
<tr>
<td>Dr. M. U. Henry</td>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>Professor A. M. Khoshbeen</td>
<td>Afghanistan</td>
</tr>
<tr>
<td>Dr. R. Lekie</td>
<td>Zaire</td>
</tr>
<tr>
<td>Dr. R. Maldonado Mejia 5</td>
<td>Ecuador</td>
</tr>
</tbody>
</table>

Designated by

<table>
<thead>
<tr>
<th>Member</th>
<th>Designated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. J. M. Aashi, alternate, attended the session.</td>
<td></td>
</tr>
<tr>
<td>Dr. T. Bana, Vice-Chairman</td>
<td>Nigeria</td>
</tr>
<tr>
<td>Dr. Chol Haifeng</td>
<td>China</td>
</tr>
<tr>
<td>Dr. N. M. Chitimba</td>
<td>Malawi</td>
</tr>
<tr>
<td>Dr. S. P. Ehrlich, Jr 3</td>
<td>United States of America</td>
</tr>
<tr>
<td>Sir George Godber 4</td>
<td>United Kingdom of Great Britain and Northern Ireland</td>
</tr>
<tr>
<td>Dr. C. Hemachudha</td>
<td>Thailand</td>
</tr>
<tr>
<td>Dr. M. U. Henry, Rapporteur</td>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>Professor A. M. Khoshbeen, Rapporteur</td>
<td>Afghanistan</td>
</tr>
<tr>
<td>Professor J. Kostrezwski</td>
<td>Poland</td>
</tr>
<tr>
<td>Dr. R. Lekie</td>
<td>Zaire</td>
</tr>
<tr>
<td>Dr. A. Maisari</td>
<td>Democratic Yemen</td>
</tr>
<tr>
<td>Dr. R. Maldonado Mejia 5</td>
<td>Ecuador</td>
</tr>
<tr>
<td>Professor L. von Manger-Koenig</td>
<td>Federal Republic of Germany</td>
</tr>
<tr>
<td>Dr. J. L. Molapo 4</td>
<td>Lesotho</td>
</tr>
<tr>
<td>Dr. N. Ramzi, Chairman</td>
<td>Syrian Arab Republic</td>
</tr>
<tr>
<td>Dr. G. Restrepo Chavarriaga 6</td>
<td>Colombia</td>
</tr>
<tr>
<td>Dr. A. Ñeñ Sanguinetti</td>
<td>Uruguay</td>
</tr>
<tr>
<td>Dr. A. Sauter</td>
<td>Switzerland</td>
</tr>
<tr>
<td>Dr. M. Shahhouri</td>
<td>Iran</td>
</tr>
<tr>
<td>Professor Julie Suliandi Saroso</td>
<td>Indonesia</td>
</tr>
<tr>
<td>Dr. C. N. D. Taylor, Vice-Chairman 3</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Professor J. Tigi</td>
<td>Hungary</td>
</tr>
<tr>
<td>Professor R. Vannugli</td>
<td>Italy</td>
</tr>
</tbody>
</table>

2. Fifty-second Session (Geneva, 28-29 May 1973)

The Twenty-sixth World Health Assembly in resolution WHA26.14 elected China, Democratic Yemen, Federal Republic of Germany, Iran, Malawi, Poland, Switzerland and the United States of America to designate persons to serve on the Board in place of the retiring members—designated by Austria, Ethiopia, France, Kenya, Laos, Nicaragua, Saudi Arabia and the Union of Soviet Socialist Republics. This resulted in the following composition of the Board at the fifty-second session:

Designated by

<table>
<thead>
<tr>
<th>Member</th>
<th>Designated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. J. L. Molapo, Chairman</td>
<td>Lesotho</td>
</tr>
<tr>
<td>Dr. Z. Onyango</td>
<td>Kenya</td>
</tr>
<tr>
<td>Dr. N. Ramzi, Vice-Chairman</td>
<td>Syrian Arab Republic</td>
</tr>
<tr>
<td>Dr. G. Restrepo Chavarriaga</td>
<td>Colombia</td>
</tr>
<tr>
<td>Dr. A. Ñeñ Sanguinetti, Vice-Chairman</td>
<td>Uruguay</td>
</tr>
<tr>
<td>Dr. Oudom Souvanavong, Rapporteur</td>
<td>Laos</td>
</tr>
<tr>
<td>Professor Julie Suliandi Saroso, Rapporteur</td>
<td>Indonesia</td>
</tr>
<tr>
<td>Dr. C. N. D. Taylor 3</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Professor J. Tigi</td>
<td>Hungary</td>
</tr>
<tr>
<td>Professor R. Vannugli</td>
<td>Italy</td>
</tr>
<tr>
<td>Dr. D. D. Venediktov</td>
<td>Union of Soviet Socialist Republics</td>
</tr>
</tbody>
</table>

Unexpired term of office at the time of closure the Twenty-sixth World Health Assembly

<table>
<thead>
<tr>
<th>Member</th>
<th>Designated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. J. M. Aashi, alternate, attended the session.</td>
<td></td>
</tr>
<tr>
<td>Dr. D. B. Blood, adviser, attended the session.</td>
<td></td>
</tr>
<tr>
<td>Dr. J. J. A. Reid, alternate, attended the session.</td>
<td></td>
</tr>
<tr>
<td>Dr. J. Carvalho, alternate, attended the session.</td>
<td></td>
</tr>
<tr>
<td>Dr. S. Yacup Revelo, alternate, attended the session.</td>
<td></td>
</tr>
</tbody>
</table>

1 Dr. J. M. Aashi, alternate, attended the session.
2 Alternate to the member of the Executive Board to be designated by New Zealand.
3 Dr. D. B. Blood, adviser, attended the session.
4 Dr. J. J. A. Reid, alternate, attended the session.
5 Dr. J. Carvalho, alternate, attended the session.
6 Dr. S. Yacup Revelo, alternate, attended the session.
Annex 3

ORGANIZATIONAL AND RELATED MEETINGS IN 1973

Executive Board, fifty-first session: Standing Committee on Administration and Finance
Executive Board, fifty-first session
Executive Board, fifty-first session: Standing Committee on Nongovernmental Organizations
Executive Board: Ad Hoc Committee on Headquarters Accommodation

Executive Board: Ad Hoc Committee to consider the Reports of the External Auditor on the Accounts of the Organization for the year 1972

Twenty-sixth World Health Assembly
Executive Board, fifty-second session
Regional Committee for the Western Pacific, twenty-fourth session

Regional Committee for Africa, twenty-third session
Regional Committee for the Eastern Mediterranean: Subcommittee A

Regional Committee for Europe, twenty-third session
Regional Committee for South-East Asia, twenty-sixth session
Regional Committee for the Americas, twenty-fifth session/XXII Meeting of the Directing Council of PAHO

Geneva, 8-15 January
Geneva, 16-25 January
Geneva, 22 January
Geneva, 15 January and 11 May
Geneva, 13 April and 7 May
Geneva, 7-23 May
Geneva, 28-29 May
Wellington, 28 August-4 September
Lagos, 4-11 September
Bludan (Syrian Arab Republic), 8-11 September
Vienna, 11-15 September
New Delhi, 18-24 September
Washington, D.C., 8-18 October

Annex 4

EXPERT ADVISORY PANELS AND MEETINGS OF COMMITTEES AND SCIENTIFIC GROUPS IN 1973

1. EXPERT ADVISORY PANELS

The expert advisory panels in existence at 31 December 1973 were on the following subjects:

Air pollution
Antibiotics
Bacterial diseases
Biological standardization
Brucellosis
Cancer
Cardiovascular diseases
Chronic degenerative diseases
Dental health
Drug dependence
Drug evaluation
Environmental health
Food additives
Food hygiene
Health education
Health laboratory services

Health of seafarers
Health statistics
Human genetics
Human reproduction
Immunology
Insecticides
International pharmacopoeia and pharmaceutical preparations
International surveillance of communicable diseases
Leprosy
Malaria
Maternal and child health
Medical research ¹
Mental health
Neurosciences

Nursing
Nutrition
Occupational health
Organization of medical care
Parasitic diseases
Professional and technical education of medical and auxiliary personnel
Public health administration
Rabies
Radiation
Rehabilitation
Trachoma
Tuberculosis
Venereal infections and treponematoses
Virus diseases
Zoonoses

¹ See resolution WHA12.17.
2. MEETINGS OF COMMITTEES AND SCIENTIFIC GROUPS IN 1973

Expert Committees

Expert Committee on Trace Elements in Human Nutrition
Expert Committee on Biological Standardization
Expert Committee on Postgraduate Education and Training in Public Health
Joint FAO/WHO Expert Committee on Food Additives
Expert Committee on Continuing Education for Physicians
Expert Committee on Environmental and Health Monitoring in Occupational Health
Expert Committee on Internationally Acceptable Guidelines for Medical Education
WHO Expert Committee on Food Hygiene (Fish and Shellfish Hygiene) in cooperation with FAO
Expert Committee on Wastes Disposal (Disposal of Community Wastewater)
Expert Committee on Drug Dependence
Expert Committee on Filariasis
Expert Committee on the Planning and Administration of National Programmes for the Control of Adverse Effects of Pollutants
Expert Committee on Planning and Organization of Geriatric Services
Expert Committee on Malaria
Joint Meeting of the FAO Working Party of Experts on Pesticide Residues and the WHO Expert Committee on Pesticide Residues
Expert Committee on Tuberculosis

Advisory Committee on Medical Research

Fifteenth session

Scientific Groups

Scientific Group on Environmental Health Criteria
Scientific Group on Bioavailability of Drugs: Principles and Problems
Scientific Group on the Assessment of the Carcinogenicity and Mutagenicity of Chemicals
Scientific Group on Comparative Aspects of Reproductive Processes in Different Species and their Relevance to Human Reproduction
Scientific Group on the Assessment of the Relative Effectiveness, Safety and Acceptability of Different Methods of Birth Control

Scientific Group on Operational Research on Delivery of Family Planning Care in Health Services
Scientific Group on Ecology and Control of Rodents of Public Health Importance

Annex 5

WHO REFERENCE CENTRES, COLLABORATING INSTITUTIONS AND LABORATORIES

The institutions that served or were designated as international or regional reference centres, and collaborating institutions or laboratories during 1973 are listed below under the following headings (asterisks denote those designated during the year):

Air pollution
Antibiotics
Arbovirus diseases
Biological standardization
Blood groups
Brucellosis
Cancer
Cardiovascular diseases
Cell cultures
Chemical reference substances
Comparative medicine
Education
Enteric infections, bacterial
Enterovirus diseases
Filariasis
Food additives
Food contaminants
Genetics, human
Immunology
Influenza
Leishmaniasis
Leprosy
Leptospirosis
Malaria
Meningococcal infections
Mental health
Mycoplasmas
Nutritional anaemias
Occupational health
Pertussis
Plague
Rabies
Radiation
Reproduction, human
Respiratory virus diseases other than influenza
Rheumatic diseases
Rickettsioses
Schistosomiasis
Serum reference banks
Smallpox
Staphylococcal infections
Statistics (Classification of diseases)
Strengthening of health services
Streptococcal infections
Trachoma and other chlamydial infections
Trypanosomiasis
Tuberculosis
Vector biology and control
Venereal infections and treponematoses
Virus diseases, general
Wastes disposal
Water supply

Air Pollution

REFERENCE CENTRES

International Reference Centre for Clinical and Epidemiological Aspects of Air Pollution
Medical Research Council's Air Pollution Research Unit, Medical College, Royal Hospital of St Bartholomew, London, United Kingdom

International Reference Centre on Air Pollution Control
Air Pollution Control Office, National Environmental Research Center, Environmental Protection Agency, Research Triangle Park, N.C., USA

Regional Reference Centres on Air Pollution
Central Public Health Engineering Research Institute, Nagpur, India
Department of Community Environmental Sciences, Institute of Public Health, Tokyo, Japan
Department of Community Hygiene, Central Institute for Advanced Medical Studies, Ministry of Health of the USSR, Moscow, USSR

COLLABORATING INSTITUTIONS AND LABORATORIES

Air Pollution Control Service, SURSAN Institute of Sanitary Engineering, Rio de Janeiro, Brazil
Institute of Hygiene and Epidemiology, Prague, Czechoslovakia
Institute of Occupational Health, Helsinki, Finland
Centre de Recherches sur la Pollution atmosphérique, Institut national de la Santé et de la Recherche médicale, Le Vésinet, Yvelines, France
Regional Institute for Air Pollution and Land Use Control of North Rhine-Westphalia, Essen, Federal Republic of Germany
Industrial Hygiene Section, Labour Department, Hong Kong
Division of Air Pollution and Radiation Control, Ministry of Health, Tel Aviv, Israel
Laboratory of Air Pollution, Institute of Analytical Chemistry, University of Rome, Italy
Air Pollution Division, Research Institute for Public Health Engineering, Delft, Netherlands
Research Laboratory of the National Environmental Protection Board, Solna, Stockholm, Sweden
Institute of Medical Research and Industrial Hygiene, Zagreb, Yugoslavia

Antibiotics

REFERENCE CENTRE

International Centre for Information on Antibiotics
Laboratoire de Bactériologie et de Parasitologie, University of Liège, Belgium
### Arbovirus Diseases

**Reference Centres**

*International Reference Centre for Arboviruses*
- Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Conn., USA

*Regional Reference Centres for Arboviruses*
- Department of Virology, Queensland Institute of Medical Research, Brisbane, Australia
- Institute of Virology, Bratislava, Czechoslovakia
- Laboratoire des Arbovirus, Institut Pasteur, Paris, France
- Virus Research Centre, Indian Council of Medical Research, Poona, India
- Department of Virology and Rickettsiology, National Institute of Health, Tokyo, Japan
- Institut Pasteur, Dakar, Senegal
- East African Virus Research Institute, East African Common Services Organization, Entebbe, Uganda
- Department for Arboviruses, Institute of Poliomyelitis and Viral Encephalitides, Moscow, USSR
- Vector-Borne Diseases Branch, Center for Disease Control, Fort Collins, Colo., USA

**Collaborating Laboratories**
- Arbovirus Laboratory, Adolfo Lutz Institute, São Paulo, Brazil
- Department of Arboviruses, Ivanovskij Institute of Virology, Moscow, USSR

### Biological Standardization

**Reference Centres**

*International Laboratories for Biological Standards*
- Statens Serum Institut, Copenhagen, Denmark
- National Institute for Biological Standards and Control, London, United Kingdom
- Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, United Kingdom

**Collaborating Laboratories**

*Collaborating Laboratories for Research and Reference Services for Certain Immunological Biological Products*
- Biologics Control Laboratories, Laboratory Center for Disease Control, Department of National Health and Welfare, Ottawa, Ont., Canada
- State Institute for Drug Control, Ministry of Health, Prague, Czechoslovakia
- Statens Serum Institut, Copenhagen, Denmark
- Second Department of Bacteriology, National Institute of Health, Tokyo, Japan
- Laboratory of Biological Standards, National Institute of Public Health, Utrecht, Netherlands
- Division of Immunological Products Control, National Institute for Biological Standards and Control, London, United Kingdom
- Institute of Immunology, Zagreb, Yugoslavia

### Brucellosis

**Reference Centres**

*FAO/WHO Brucellosis Centres*
- Commonwealth Serum Laboratories, Parkville, Victoria, Australia
- State Veterinary Serum Laboratory, Copenhagen, Denmark
- Institut de Biologie, Montpellier, France
- Veterinary Microbiological Institute, Athens, Greece
- Indian Veterinary Research Institute, Mukteswar-Kumaon, Uttar Pradesh, India
- Institute of Hygiene, Faculty of Medicine, University of Florence, Italy
- National Institute of Animal Health, Tokyo, Japan
- Medical Research Institute, General Hospital, Mexico City, Mexico
- Institut Pasteur, Tunis, Tunisia
- Institute of Veterinary Bacteriology and Serology, Istanbul, Turkey
- Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, United Kingdom
- Department of Medicine, University of Minnesota Medical School, Minneapolis, Minn., USA

*WHO Brucellosis Centre*
- Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

### Cancer

**Reference Centres**

*International Reference Centre for Comparative Oncology*
- Armed Forces Institute of Pathology, Washington, D.C., USA

*International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Breast Cancer*
- Institut Gustave Roussy, Villejuif, Val-de-Marne, France

*International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Female Genital Tract (Ovarian) Cancer*
- N. N. Petrov Research Institute of Oncology, Leningrad, USSR

*International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Melanoma*
- National Institute for the Study and Treatment of Tumours, Milan, Italy

*International Reference Centre for Evaluation of Methods of Diagnosis and Treatment of Stomach Cancer*
- National Cancer Centre Hospital, Tokyo, Japan

*International Reference Centre for the Histological Classification of Bone Tumours*
- Latin American Registry of Bone Pathology, Osteo-articular Pathology Centre, Italian Hospital, Buenos Aires, Argentina

*International Reference Centre for the Histological Classification of Tumours of the Central Nervous System and Allied Structures*
- Department of General Neurology, Max-Planck Institute for Brain Research, Cologne, Federal Republic of Germany
International Reference Centre for the Histological Classification of Endocrine Tumours
Department of Pathology, Welsh National School of Medicine, Cardiff, United Kingdom

International Reference Centre for the Histological Classification of Eye and Orbit Tumours
Armed Forces Institute of Pathology, Washington, D.C., USA

International Reference Centre for the Histological Classification of Gastro-oesophageal Tumours
Department of Pathology, University of Tokyo Faculty of Medicine, Tokyo, Japan

International Reference Centre for the Histological Classification of Intestinal Tumours
Research Department, St Mark’s Hospital, London, United Kingdom

International Reference Centre for the Histological Classification of Leukaemias and other Neoplastic Conditions of the Haematopoietic Cells
Institut de Cancérologie et d’Immunogénétique, Hôpital Paul-Brousse, Villejuif, Val-de-Marne, France

International Reference Centre for the Histological Classification of Tumours of the Liver, Biliary Tract and Pancreas
Department of Pathology, Queen Mary Hospital, University of Hong Kong, Hong Kong

International Reference Centre for the Histological Classification of Lung Tumours
Institute of General and Experimental Pathology, University of Oslo, Norway

International Reference Centre for the Histological Classification of Male Urogenital Tract Tumours
Armed Forces Institute of Pathology, Washington, D.C., USA

International Reference Centre for the Histological Classification of Mammary Tumours
Bland Sutton Institute of Pathology, Middlesex Hospital, London, United Kingdom

International Reference Centre for the Histological Classification of Odontogenic Tumours
Department of Oral Pathology, Royal Dental College, Copenhagen, Denmark

International Reference Centre for the Histological Classification of Oral Precancerous Conditions
Department of Oral Pathology, Royal Dental College, Copenhagen, Denmark

International Reference Centre for the Histological Classification of Oropharyngeal Tumours
Sarojini Najdu Medical College, Agra, Uttar Pradesh, India

International Reference Centre for the Histological Classification of Ovarian Tumours
N. N. Petrov Research Institute of Oncology, Leningrad, URSS

International Reference Centre for the Histological Classification of Salivary Gland Tumours
Bland Sutton Institute of Pathology, Middlesex Hospital, London, United Kingdom

International Reference Centre for the Histological Classification of Skin Tumours
Pathology Department, University of Western Australia, Perth, Australia

International Reference Centre for the Histological Classification of Soft Tissue Tumours
Armed Forces Institute of Pathology, Washington, D.C., USA

International Reference Centre for the Histological Classification of Thyroid Tumours
University Institute of Pathology, Cantonal Hospital, Zurich, Switzerland

International Reference Centre for the Histological Classification of Upper Respiratory Tract Tumours
Department of Pathology, Faculty of Medicine, University of Singapore, Singapore

International Reference Centre for the Histological Classification of Uterine and Placental Tumours
Institute of Pathology, Municipal Hospital, Copenhagen, Denmark

International Reference Centre for Nomenclature in Cytology
Centre de Cytologie et de Dépistage du Cancer, Geneva, Switzerland

WHO/IARC International Reference Centre for the Provision of Frozen Transplantable Tumour Strains
Research Unit of Tumour Immunology, Karolinska Institute, Stockholm, Sweden

WHO/IARC International Reference Centre for the Provision and Study of Tumour-bearing Animals
Netherlands Cancer Institute, Amsterdam, Netherlands

Collaborating Institutions and Laboratories
Collaborating Laboratories for Comparative Medicine: Cancer Tumours of the Alimentary Canal
Department of Veterinary Pathology, Royal (Dick) School of Veterinary Studies, University of Edinburgh, United Kingdom

Bone Tumours
Pathology Department, Netherlands Cancer Institute, Amsterdam, Netherlands

Tumours of the Eye
Armed Forces Institute of Pathology, Washington, D.C., USA

Tumours of the Haematopoietic System
Veterinary School, University of Glasgow, United Kingdom

Coordination of Studies on Leukaemia
Royal Veterinary and Agricultural College, Copenhagen, Denmark

Tumours of the Liver
Department of Pathology, Institute of Experimental and Clinical Oncology, Academy of Medical Sciences of the USSR, Moscow, USSR

Tumours of the Mammary Gland
Pathological Department, University of Amsterdam, Netherlands
Tumours of the Respiratory Tract
Institute of Veterinary Pathology, University of Zurich, Switzerland

Skin Tumours
Institute of Veterinary Pathology, University of Giessen, Federal Republic of Germany

Tumours of the Thyroid Gland
Institute of General Pathology and Pathological Anatomy, Faculty of Veterinary Medicine, University of Munich, Federal Republic of Germany

Tumours of the Urinary Bladder
Department of Pathological Anatomy, Faculty of Veterinary Medicine, Ankara University, Turkey

Tumours of the Urogenital System
Department of Pathological Anatomy, Faculty of Veterinary Medicine, University of Milan, Federal Republic of Italy

Cardiovascular Diseases

Reference Centres

International Reference Centre for Lipid Determination in Cardiovascular Research
Lipid Standardization Laboratory, Medical Laboratory Section, Center for Disease Control, Atlanta, Ga., USA

Regional Reference Centre for Blood Lipid Research in Atherosclerosis and Ischaemic Heart Disease
Lipid Laboratory, Division of Cardiovascular Research, Institute of Clinical and Experimental Medicine, Prague, Czechoslovakia

Research and Training Centres for Cardiovascular Diseases
Makerere University Faculty of Medicine, Kampala, Uganda Laboratory of Cardiovascular Epidemiology, Mjasnikov Institute of Cardiology, Moscow, USSR

Collaborating Laboratories

Collaborating Laboratories for Research in the Etiology, Treatment and Prevention of Cardiovascular Diseases
Clinic of Tropical and Infectious Diseases, Faculty of Medicine, Federal University of Bahia, Brazil
Department of Pathology, Ribeirão Prêto Faculty of Medicine, University of São Paulo, Brazil
Second Department of Pathology, School of Medicine, Charles University, Prague, Czechoslovakia
Division of Cardiovascular Research, Institute of Clinical and Experimental Medicine, Prague, Czechoslovakia
Department of Medical Ecology, Hadassah Medical School, Jerusalem, Israel
Medical Research Council’s Epidemiological Research Unit (Jamaica), University of the West Indies, Kingston, Jamaica
Department of Pathology, Faculty of Medicine, University of the West Indies, Kingston, Jamaica
Epidemiology Unit, Wellington Hospital, Wellington, New Zealand
Laboratory of Environmental Physiology, Norwegian Research Council for Humanities and Sciences, Oslo, Norway

Cardiovascular Laboratory, High Altitude Research Institute, Peruvian University of Medical and Biological Sciences, Lima, Peru
Department of Pathology, General Hospital, Malmö, Sweden
Centre de Cardiologie, Hôpital cantonal, Geneva, Switzerland
Department of Cardiology, Royal Infirmary, University of Edinburgh, United Kingdom
Medical Research Council's Social Medicine Research Unit, London School of Hygiene and Tropical Medicine, London, United Kingdom
Department of Epidemiology, School of Public Health, University of Michigan, Ann Arbor, Mich., USA
Laboratory of Physiological Hygiene, School of Public Health, University of Minnesota, Minneapolis, Minn., USA
Laboratory for Lipid Metabolism, Institute of Experimental Medicine, Leningrad, USSR
Cardiovascular Diseases Division, Ministry of Health and Social Welfare, Caracas, Venezuela

Collaborating Laboratory for Rheumatic Fever and Rheumatic Heart Disease
* Division of Streptococcal Studies, Institute of Public Health Research, University of Teheran, Iran

Collaborating Laboratory for Comparative Medicine: Cardiovascular Studies
Comparative Cardiovascular Studies Unit, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., USA

Cell Cultures

Reference Centre

International Reference Centre for Cell Cultures
American Type Culture Collection, Rockville, Md., USA

Chemical Reference Substances

Reference Centre

Centre for Chemical Reference Substances
Centre for Authentic Chemical Substances, Apotekens Central-laboratorium Apoteksbolaget AB, Solna, Stockholm, Sweden

Comparative Medicine

Reference Centres

Regional Reference Centre for Simian Viruses
Division of Microbiology and Infectious Diseases, Southwest Foundation for Research and Education, San Antonio, Tex., USA

Research and Training Centres in Comparative Medicine
* College of Veterinary Medicine, Hanover, Federal Republic of Germany
* School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., USA

Collaborating Institutions and Laboratories

Collaborating Laboratories for Comparative Medicine

Studies in Epidemiology of Chronic Diseases
Royal Veterinary College, London, United Kingdom

1 See also under Cancer and Cardiovascular Diseases.
Nervous Diseases
Institute of Comparative Neurology, Faculty of Veterinary Medicine, University of Berne, Switzerland

Pathology of Undomesticated Vertebrates
Nuffield Institute of Comparative Medicine, Zoological Society of London, London, United Kingdom

Feline Viruses
Department of Microbiology, New York State Veterinary College, Cornell University, Ithaca, N.Y., USA

Education
Collaborating Institutions for Postgraduate Education
Central Institute for Advanced Medical Studies, Ministry of Health of the USSR, Moscow, USSR
Center for Educational Development, University of Illinois College of Medicine, Chicago, Ill., USA

Collaborating Institution in Educational Technology
* Centre for Individual Learning Materials in Medical Education, Department of Audio-Visual Communication, British Medical Association, London, United Kingdom

Enteric Infections, Bacterial
Reference Centres
International Reference Centres for Enteric Phage-Typing
Central Public Health Laboratory, London, United Kingdom

International Reference Centre for Escherichia
Statens Serum Institut, Copenhagen, Denmark

International Reference Centre for Salmonella
Institut Pasteur, Paris, France

International Reference Centres for Shigella
Central Public Health Laboratory, London, United Kingdom

International Reference Centre for Vibrios
Choler Research Centre, Calcutta, India

Enterovirus Diseases
Reference Centres
International Reference Centre for Enteroviruses
Department of Virology and Epidemiology, Baylor University College of Medicine, Houston, Tex., USA

Regional Reference Centres for Enteroviruses
Enteroviruses Department, Statens Serum Institut, Copenhagen, Denmark

Section de Virologie, Laboratoire national de la Santé publique, Lyons, France
Department of Enteroviruses, National Institute of Health, Tokyo, Japan

Department of Bacteriology, University of Singapore, Singapore Center for Disease Control, Atlanta, Ga., USA
Institute of Poliomyelitis and Viral Encephalitides, Moscow, USSR

Filariasis
Reference Centre
International Reference Centre for Filarioidea
Department of Medical Helminthology, London School of Hygiene and Tropical Medicine, London, United Kingdom

Food Additives
Collaborating Laboratories
Collaborating Laboratory on Toxicology
Institute of Experimental Pathology and Toxicology, Albany Medical College, Union University, Albany, N.Y., USA

Joint FAO/WHO Collaborating Laboratories on Food Colours
Max von Pettenkofer Institute, Munich
Food Advisory Bureau, Food and Drug Directorate, Department of National Health and Welfare, Ottawa, Ont., Canada

Laboratory of Chemical Food Analysis, National Institute of Public Health, Utrecht, Netherlands
Division of Colors and Cosmetics Technology, Food and Drug Administration, Department of Health, Education, and Welfare, Washington, D.C., USA

Food Contaminants
Reference Centres
FAO/WHO International Reference Centre for Documentation on Marine Biotoxins
World Life Research Institute, Colton, Calif., USA

Genetics, Human
Reference Centres
International Reference Centre for Abnormal Haemoglobins
Medical Research Council’s Abnormal Haemoglobin Research Unit, University of Cambridge, United Kingdom

International Reference Centre for Glucose-6-Phosphate Dehydrogenase
Department of Medicine, University of Washington, Seattle, Wash., USA

Regional Reference Centres for Glucose-6-Phosphate Dehydrogenase
Department of Haematology, Chaim Sheba Medical Centre, Tel Hashomer, Israel

Sub-Department of Haematology, University College Hospital, Ibadan, Nigeria

International Reference Centre for the Processing of Human Genetics Data
Population Genetics Laboratory, School of Medicine, University of Hawaii, Honolulu, Hawaii, USA

International Reference Centre for Serum Protein Groups
Zoology Department, University of Texas, Austin, Tex., USA
Immunology

REFERENCES CENTRES

International Reference Centre for Genetic Factors of Human Immunoglobulins
Centre départemental de Transfusion sanguine et de Génétique humaine, Bois-Guillaume, Seine-Maritime, France

Regional Reference Centres for Genetic Factors of Human Immunoglobulins
Department of Medical Microbiology, University of Lund, Sweden
Department of Biology, Western Reserve University, Cleveland, Ohio, USA

International Reference Centre for Immunoglobulins
Institut de Biochimie, University of Lausanne, Switzerland

Regional Reference Centres for Immunoglobulins
National Cancer Institute, National Institutes of Health, Bethesda, Md., USA

International Reference Centre for the Use of Immunoglobulin Anti-D in the Prevention of Rh Sensitization
Medical Research Council's Experimental Haematology Research Unit, St Mary's Hospital Medical School, London, United Kingdom

International Reference Centre for the Serology of Autoimmune Disorders
Department of Immunology, Middlesex Hospital Medical School, London, United Kingdom

Regional Reference Centres for the Serology of Autoimmune Disorders
Walter and Eliza Hall Institute of Medical Research, Melbourne University, Victoria, Australia
Center for Immunology, School of Medicine, State University of New York at Buffalo, N.Y., USA

International Reference Centre for Testing of Natural Resistance Factors
Department of Immunology, Institute of Microbiology, Prague, Czechoslovakia

International Reference Centre for Tumour-Specific Antigens
Division of Immunology and Oncology, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Research and Training Centres for Immunology
Instituto Butantan, São Paulo, Brazil
*Department of Biochemistry, All India Institute of Medical Sciences, Indian Council of Medical Research, New Delhi, India
Faculty of Medicine, University of Nairobi, Kenya
School of Medicine, American University of Beirut, Lebanon
Children's Hospital of Mexico, Mexico City, Mexico
Department of Chemical Pathology, University College Hospital, Ibadan, Nigeria
Faculty of Medicine, University of Singapore, Singapore
Institut de Biochimie, University of Lausanne, Switzerland

Research and Training Centres for Advanced Studies in Immunology
*Walter and Eliza Hall Institute of Medical Research, Melbourne University, Victoria, Australia

Department of Chemical Immunology and Cell Biology, Weizmann Institute of Science, Rehovot, Israel
Basle Institute of Immunology, Basle, Switzerland

COLLABORATING LABORATORY

Collaborating Laboratory for Research Training in General Immunology
Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Influenza

REFERENCES CENTRES

World Influenza Centre
National Institute for Medical Research, London, United Kingdom

International Influenza Centre for the Americas
Center for Disease Control, Atlanta, Ga., USA

Leishmaniasis

REFERENCES CENTRES

International Reference Centre for Leishmaniasis
Department of Parasitology, Hadassah Medical School, Jerusalem, Israel

Leprosy

REFERENCES CENTRES

International Reference Centre for the Serology of Leprosy
Department of Microbiology and Immunology, Ribeirão Preto Faculty of Medicine, University of São Paulo, Brazil

International Reference Centre for the Histological Identification and Classification of Leprosy
Division of Dermatology, Ministry of Health and Social Welfare, Caracas, Venezuela

Regional Reference Centres for Mycobacterium leprae
Center for Disease Control, Atlanta, Ga., USA
Division of Bacteriology and Virus Research, National Institute for Medical Research, London, United Kingdom

Regional Reference Centre for the Standardization of Lepromin
Laboratory of Serology, National Institute for Leprosy Research, Tokyo, Japan

Leonard Wood Memorial Laboratory for Leprosy Research, Johns Hopkins University, Baltimore, Md., USA

COLLABORATING INSTITUTIONS AND LABORATORIES

Collaborating Institution for Epidemiology of Leprosy
Département d'Epidémiologie, Ecole de Santé publique, Université Catholique de Louvain, Brussels, Belgium

Collaborating Laboratory for Immunology of Leprosy
Municipal Bacteriology Laboratory, Aurora Hospital, Helsinki, Finland

Collaborating Institutions and Laboratories for the Cultivation and Study of Mycobacterium leprae
Laboratoire de Bactériologie et de Virologie, Institut de Médecine tropicale Prince Léopold, Antwerp, Belgium
Service de Bactériologie et de Virologie alimentaires, Ecole de Santé publique, Université Catholique de Louvain, Brussels, Belgium

Institute of Microbiology and Hygiene, University of Montreal, Canada

Armauer Hansen Research Institute, Addis Ababa, Ethiopia

Ernst Rodenwaldt Institute of Experimental Medicine and Hygiene, Koblenz, Federal Republic of Germany

Laboratory Research Branch, US Public Health Service Hospital, Carville, La., USA

**Collaborating Laboratory for Transmission of Mycobacterium leprae**

Department of Biochemistry, Atchafalaya Basin Laboratories, Gulf South Research Institute, New Iberia, La., USA

**Collaborating Institution for the History of Leprosy**

* Medical Historical Museum, University of Copenhagen, Denmark

**Leptospirosis**

**REFERENCE CENTRES**

**WHO/FAO Leptospirosis Reference Laboratories**

Laboratory of Microbiology and Pathology, State Health Department, Brisbane, Australia

Israel Institute for Biological Research, Tel Aviv University Medical School, Ness-Ziona, Israel

Istituto Superiore di Sanità, Rome, Italy

National Institute of Health, Tokyo, Japan

Institute for Tropical Hygiene (Royal Tropical Institute), Amsterdam, Netherlands

London School of Hygiene and Tropical Medicine, London, United Kingdom

Division of Veterinary Medicine, Walter Reed Army Medical Center, Washington, D.C., USA

**WHO Leptospirosis Reference Laboratory**

Gamaleya Institute of Epidemiology and Microbiology, Moscow, USSR

**Malaria**

**REFERENCE CENTRES**

**International Reference Centre for Malaria**

Laboratory of Parasite Chemotherapy, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA

**Regional Reference Centre for Malaria**

National Institute of Communicable Diseases, New Delhi, India

**International Reference Centre for Avian Malaria Parasites**

Department of Biology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada

**Regional Reference Centre for Screening of Potent Antimalarial Compounds**

Department of Parasitology, Liverpool School of Tropical Medicine, Liverpool, United Kingdom

**Regional Reference Centre for the Study, Preparation and Distribution of Reference Samples and Standard Malaria Serological Preparations**

* Laboratory of Medical Parasitology, Faculty of Medicine, Catholic University, Nijmegen, Netherlands

**Collaborating Laboratories**

**Collaborating Laboratory for Cytogenetic Studies on Malaria Vectors**

* Institute of Parasitology, Faculty of Medicine and Surgery, University of Rome, Italy

**Collaborating Laboratory for the Development of Malaria Serological Techniques**

Nuffield Institute of Comparative Medicine, Zoological Society of London, London, United Kingdom

**Meningococcal Infections**

**REFERENCE CENTRE**

**International Reference Centre for Meningococci**

Laboratoire de Microbiologie, Centre de Recherches du Service de Santé des Troupes de Marine, Marseilles, France

**Mental Health**

**REFERENCE CENTRES**

**International Reference Centre for Information on Psychotropic Drugs**

National Institute of Mental Health, Rockville, Md., USA

**International Reference Centre for the Study of Adverse and Side Effects of Psychotropic Drugs**

Centre psychiatrique Sainte-Anne, Paris, France

**Regional Reference Centres for the Study of Psychotropic Drugs**

Faculty of Medicine, Hokkaido University, Sapporo, Japan

Clinique neuro-psychiatrique, Faculté mixte de Médecine et de Pharmacie, University of Dakar, Senegal

Psychiatric Clinic, Faculty of Medicine, University of Basle, Switzerland

**Research and Training Centre on Psychosocial Factors and Health**

* Laboratory for Clinical Stress Research, Karolinska Institute, Stockholm, Sweden

**Collaborating Institutions and Laboratories**

**Collaborating Centres for the Study of Psychotropic Drugs**

Clinic of Psychiatry and Neurology, Faculty of Medicine, University of Vienna, Austria

Clinique psychiatrique, Faculté de Médecine, University of Liège, Belgium

Division of Psychopharmacology, Department of Psychiatry, McGill University, Montreal, Canada

Behman Hospital, Helwan, Egypt

Department of Psychiatry, University of Ghana Medical School, Accra, Ghana

Psychiatric Department, Seth G.S. Medical College, Bombay, India

Institute of Clinical Psychiatry, University of Milan, Italy

Department of Neurobiology, Institute of Biomedical Investigations, National Autonomous University of Mexico, Mexico City, Mexico

Department of Psychiatry and Neurology, University of Ibadan Faculty of Medicine, Nigeria

Department of Psychiatry, Aasgaard Hospital, Tromsø, Norway

Department of Neurology and Psychiatry, School of Medicine, University of Zagreb, Yugoslavia
Mycoplasmas

**REFERENCE CENTRES**

*International Reference Centre for Human Mycoplasmas*
Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA

*FAO/WHO International Reference Centre for Animal Mycoplasmas*
Institute of Medical Microbiology, University of Aarhus Medical Faculty, Denmark

**COLLABORATING LABORATORY**

*Collaborating Laboratory for Mycoplasmas*
Laboratory for Mycoplasmas, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Nutritional Anaemias

**REFERENCE CENTRES**

*International Reference Centre for Anaemias*
School of Medicine, University of Washington, Seattle, Wash., USA

*Regional Reference Centres for Anaemias*
Department of Pathology, Medical College, Royal Hospital of St Bartholomew, London, United Kingdom
Venezuelan Institute for Scientific Research, Caracas, Venezuela

Occupational Health

**COLLABORATING INSTITUTIONS**

*Collaborating Institutions in Occupational Health*

*Division of Occupational Health and Pollution Control, New South Wales Department of Public Health, Lidcombe, Australia*

*Institute of Hygiene, Industrial Safety and Occupational Diseases, Centre of Hygiene, Information and Documentation Unit, Department of Environmental Health, Sofia, Bulgaria*

*Institute of Occupational Health and Air Pollution, Santiago, Chile*

*Department of Occupational Health, High Institute of Public Health, University of Alexandria, Egypt*
Institute of Occupational Health, Helsinki, Finland

*Department of Manpower, National Institute of Occupational Health and Industrial Hygiene, Jakarta, Indonesia*
Department of Public Health, Faculty of Medicine, Kurume University, Japan
Institute of Industrial Medicine, Catholic Industrial Medical Centre, Seoul, Republic of Korea

Occupational Health Division, Ministry of Health, Khartoum, Sudan

*Occupational Health Centre, Ministry of Public Health, Samutprakarn, Thailand*

TUC Centenary Institute of Occupational Health, London School of Hygiene and Tropical Medicine, London, United Kingdom

*Collaborating Institution on the Health of Seafarers*
Health Centre for Seafarers, Gdynia, Poland

Pertussis

**REFERENCE CENTRE**

*International Reference Centre for Bordetella pertussis*
*Department of Diphtheria-Pertussis-Tetanus Vaccine, Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR*

Plague

**REFERENCE CENTRE**

*International Reference Centre for Plague*
Antiplague Research Institute of the Caucasus and Transcaucasia, Stavropol, USSR

Rabies

**REFERENCE CENTRES**

*International Reference Centres for Rabies*
Institut Pasteur, Paris, France
Pasteur Institute of Southern India, Coonoor, India
Institute of Poliomyelitis and Viral Encephalitides, Moscow, USSR
Wistar Institute of Anatomy and Biology, Philadelphia, Pa., USA

*Regional Reference Centres for Rabies*
*Rabies Section, Institut Pasteur, Teheran, Iran*
Center for Disease Control, Atlanta, Ga., USA

Radiation

**REFERENCE CENTRES**

*International Reference Centre on Environmental Radiation*
Service central de Protection contre les Rayonnements ionisants, Le Vésinet, Yvelines, France

*Regional Reference Centres for Secondary Standards in Radiation Dosimetry (in collaboration with IAEA)*
Laboratory for Dosimetry, National Atomic Energy Commission, Buenos Aires, Argentina
Radiotherapy Department, Faculty of Medicine, Pahlavi Hospital, University of Teheran, Iran
Department of Radiotherapy, Institute of Oncology, National Medical Centre of the Mexican Social Security Institute, General Hospital, Mexico City, Mexico
Radiation Hygiene Laboratory, Institute of Hygiene, Bucharest, Romania
Radiotherapy Department, Outram Road General Hospital, Singapore
*Department of Medical Sciences, Ministry of Public Health, Bangkok, Thailand*

*International Reference Centre for Chromosome Aberrations: Comparison and Standardization of Methods*
Human Cytogenetics Division, Environmental Health Centre, Department of National Health and Welfare, Ottawa, Ont., Canada

*International Reference Centre for Chromosome Aberrations: Evaluation in Population*
Clinical Population Cytogenetics Research Unit, Medical Research Council, Edinburgh, United Kingdom
International Reference Centre for Effect of Environmental Factors on Chromosome Aberrations
Institute of Medical Genetics, Academy of Medical Sciences of the USSR, Moscow, USSR

International Reference Centre for General Nuclear Medicine (in collaboration with IAEA)
Institute of Nuclear Medicine, German Centre for Cancer Research, Heidelberg, Federal Republic of Germany

Regional Reference Centres for Nuclear Medicine (in collaboration with IAEA)
Radiation Medicine Centre, Atomic Energy Establishment, Trombay, Bombay, India
* Department of Nuclear Medicine, Central Hospital of 20 November, Mexico City, Mexico

Collaborating Laboratories on Environmental Radioactivity
* Radiation Protection Division, Department of National Health and Welfare, Ottawa, Ont., Canada
* National Radiological Laboratory, Department of Health, Wellington, New Zealand
* National Institute of Radiation Protection, Stockholm, Sweden
* National Environmental Research Center, Environmental Protection Agency, Las Vegas, N. Mex., USA

Reproduction, Human

Reference Centres
International Reference Centre for the Biology of Spermatozoa
Laboratory of Reproductive Pharmacology, New York Medical College, New York, N.Y., USA

International Reference Centre for Fertility Promoting Agents
Institute of Endocrinology, Chaim Sheba Medical Centre, Tel Hashomer, Israel

International Reference Centre for Epidemiological Studies in Human Reproduction
Population Epidemiology Unit and Carolina Population Center, University of North Carolina, Chapel Hill, N.C., USA

Research and Training Centres in Human Reproduction
Latin American Institute of the Physiology of Reproduction, Faculty of Medicine, University of Salvador, Buenos Aires, Argentina
Department of Human Reproduction, All India Institute of Medical Sciences, Indian Council of Medical Research, New Delhi, India
Reproductive Endocrinology Research Unit, Karolinska Institute, Stockholm, Sweden
All-Union Scientific Research Institute of Obstetrics and Gynaecology, Ministry of Health of the USSR, Moscow, USSR

Clinical Research Centres in Human Reproduction
Department of Obstetrics and Gynaecology, Queen Elizabeth II Research Institute for Mothers and Infants, University of Sydney, Australia
Clinique de Gynécologie et d’Obstétrique et Laboratoire de Gynécologie expérimentale, Hôpital universitaire Saint-Pierre, Free University of Brussels, Belgium
Department of Gynaecological Endocrinology, Faculty of Medicine, Free University of Berlin
Obstetrics Clinic, Clímerio de Oliveira Maternity Hospital, Faculty of Medicine, Federal University of Bahia, Brazil
Gynaecology and Obstetrics Unit, Barros Luco-Trudeau Hospital, Santiago, Chile
* Shatby Maternity Hospital, Faculty of Medicine, Alexandria University, Egypt
Department of Obstetrics and Gynaecology, Medical School, University of Szeged, Hungary
* Department of Obstetrics and Gynaecology, and Pharmacology and Preventive Medicine, Seth G.S. Medical College, University of Bombay and Institute for Research in Reproduction, Indian Council of Medical Research, Bombay, India
Department of Obstetrics and Gynaecology, Postgraduate Institute of Medical Education and Research, Chandigarh, Punjab, India
Research Division, Department of Reproductive Biology, National Institute of Nutrition, Mexico City, Mexico
Department of Obstetrics and Gynaecology, Academic Hospital, University of Utrecht, Netherlands
Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Ibadan, Nigeria
* Reproductive Biology Centre, Department of Obstetrics and Gynaecology, College of Medicine, University of the Philippines, Manila, Philippines
Department of Obstetrics and Gynaecology, Kandang Kerbau Hospital for Women, University of Singapore, Singapore
Family Planning Research Unit, Department of Obstetrics and Gynaecology, Siriraj Hospital, Mahidol University, Bangkok, Thailand
Department of Obstetrics and Gynaecology, Women’s Hospital, University of Southern California Medical Center, Los Angeles, Calif., USA
Family Planning Institute, University Clinical Hospital, University of Ljubljana, Yugoslavia

Collaborating Institution
Collaborating Institution for Epidemiological Studies in Human Reproduction
Gandhigram Institute of Rural Health and Family Planning, Gandhigram, Madurai District, Tamil Nadu, India

Respiratory Virus Diseases other than Influenza

Reference Centres
International Reference Centres for Respiratory Viruses other than Influenza
Common Cold Research Unit, National Institute for Medical Research, Harvard Hospital, Salisbury, Wilts., United Kingdom
Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., USA
Regional Reference Centres for Respiratory Viruses other than Influenza
Fairfield Hospital Communicable Disease Centre, Melbourne, Victoria, Australia
Department of Epidemiology and Microbiology, Institute of Hygiene and Epidemiology, Prague, Czechoslovakia
Respiratory Virus Laboratory, National Institute of Health, Tokyo, Japan
Ivanovskij Institute of Virology, Moscow, USSR
Center for Disease Control, Atlanta, Ga., USA

Rheumatic Diseases

**Reference Centres**

*International Reference Centre for the Study of Connective Tissue Diseases*

Hôpital Cochin, Paris, France

*Regional Reference Centres for the Study of Connective Tissue Diseases*

Rheumatology Service, Medical Clinic, Faculty of Medicine, University of Barcelona, Spain
Institute of Rheumatology, Academy of Medical Sciences of the USSR, Moscow, USSR
Connective Tissue Division, Johns Hopkins University School of Medicine, Baltimore, Md., USA
Medical Clinic, Faculty of Medicine, University of the Republic, Montevideo, Uruguay

Rickettsioses

**Reference Centres**

*Regional Reference Centres for Human Rickettsioses*

Institute of Virology, Bratislava, Czechoslovakia
Rocky Mountain Laboratory, National Institute of Allergy and Infectious Diseases, Hamilton, Mont., USA

Schistosomiasis

**Reference Centre**

*Snail Identification Centre*

Danish Bilharziasis Laboratory, Copenhagen, Denmark

Serum Reference Banks

Institute of Hygiene and Epidemiology, Prague, Czechoslovakia
National Institute of Health, Tokyo, Japan
Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Conn., USA

Smallpox

**Reference Centres**

*International Reference Centre for Smallpox*

Laboratory of Smallpox Prophylaxis, Research Institute of Virus Preparations, Moscow, USSR

*Regional Reference Centre for Smallpox*

Center for Disease Control, Atlanta, Ga., USA

*International Reference Centre for Smallpox Vaccine*

Virus and Rickettsial Diseases Laboratory, National Institute of Public Health, Utrecht, Netherlands

*Regional Reference Centre for Smallpox Vaccine*

Connaught Medical Research Laboratories, University of Toronto, Ont., Canada

Collaborating Laboratories

*Collaborating Laboratory for Laboratory Diagnostic Methods for Smallpox*

Section des Virus, Laboratoire national de la Santé publique, Paris, France

*Collaborating Laboratory for Poxvirus (Variola-Vaccinia-Monkeypox) Studies in Monkeys*

Department of Enteroviruses, National Institute of Health, Tokyo, Japan

*Collaborating Laboratory for Strain Specificity of Poxvirus*

Department of Microbiology, University of Reading, United Kingdom

*Collaborating Laboratory for Variations of Variola and Vaccinia Virus Strains*

Department of Virology, Wright-Fleming Institute of Microbiology, St Mary's Hospital Medical School, University of London, United Kingdom

Streptococcal Infections

**Reference Centre**

*International Reference Centre for Staphylococcal Phage-Typing*

Central Public Health Laboratory, London, United Kingdom

Statistics (Classification of Diseases)

**Reference Centres**

*International Reference Centres for the Classification of Diseases*

Section Information sur la Santé publique, Institut national de la Santé et de la Recherche médicale, Boulogne-sur-Seine, France
Department of Public Health Statistics, Semaško Institute of Social Hygiene and Public Health Administration, Moscow, USSR
Office of Population Censuses and Surveys, Somerset House, London, United Kingdom
Latin American Centre for Classification of Diseases, Centro Simón Bolívar, Caracas, Venezuela

Strengthening of Health Services

*Health Services Development Institute*

* Institute of Public Health Research, School of Public Health, University of Teheran, Iran

**Collaborating Institution**

*Collaborating Institution for Integrated Health Service Training and Development*

Regional University Centre for Health Sciences, Negev University, Beer Sheba, Israel

Streptococcal Infections

**Reference Centre**

*International Reference Centre for Streptococcus Typing*

Streptococcus Reference Laboratory, Institute of Hygiene and Epidemiology, Prague, Czechoslovakia
Trachoma and other Chlamydial Infections

**REFERENCE CENTRE**

*International Reference Centre for Trachoma and other Chlamydial Infections*

Francis I. Proctor Foundation for Research in Ophthalmology, University of California Medical Center, San Francisco, Calif., USA

**COLLABORATING LABORATORY**

Ornithosis Department, Statens Seruminstitut, Copenhagen, Denmark

Trypanosomiasis

**REFERENCE CENTRE**

*International Reference Centre for Trypanosomiasis*

East African Trypanosomiasis Research Organization, Tororo, Uganda

Tuberculosis

**REFERENCE CENTRES**

*International Reference Centre for the Diagnosis of Tuberculosis*

Tuberculosis Research Institute, Prague, Czechoslovakia

*Regional Reference Centre for the Diagnosis of Tuberculosis*

Department of Tuberculosis, National Institute of Health, Tokyo, Japan

*International Reference Centre for BCG Seed-lots and Control of BCG Products*

BCG Department, Statens Seruminstitut, Copenhagen, Denmark

*Regional Reference Centre for Bacteriology of Tuberculosis*

National Tuberculosis Institute, El Algodonal, Caracas, Venezuela

**COLLABORATING INSTITUTION**

*Collaborating Centre for Tuberculosis Chemotherapy*

Second Tuberculosis Clinic, Medical Faculty, Charles University, Prague, Czechoslovakia

Vector Biology and Control

**REFERENCE CENTRES**

*International Reference Centre for the Diagnosis of Diseases of Vectors*

Department of Zoology and Entomology, Ohio State University, Columbus, Ohio, USA

*International Reference Centres for the Evaluation and Testing of New Insecticides*

Toxicology Research Unit, Medical Research Council Laboratories, Carshalton, Surrey, United Kingdom

Tropical Pesticides Research Unit, Porton Down, Salisbury, Wils., United Kingdom

Department of Entomology, College of Liberal Arts and Sciences, University of Illinois, Urbana, Ill., USA

Entomological Research Division, United States Department of Agriculture, Agricultural Research Service, Gainesville, Fla., USA

Center for Disease Control, Savannah, Ga., USA

Mission entomologique, Centre Muraz, Bobo Dioulasso, Upper Volta

*International Reference Centre for Maintenance and Distribution of Standardized Strains of the Aedes Complex*

Department of Biology, University of Notre Dame, Ind., USA

*International Reference Centre for Maintenance and Distribution of Standardized Strains of Anopheles*

Ross Institute of Tropical Hygiene, London, United Kingdom

*International Reference Centre for Maintenance and Distribution of Standardized Strains of the Culex pipiens Complex*

Institute of Genetics, Johannes Gutenberg University, Mainz, Federal Republic of Germany

*International Reference Centre for Maintenance and Distribution of Standardized Strains of Musca domestica*

Institute of Zoology, University of Pavia, Italy

*Regional Reference Centres for the Biology and Distribution of Ticks*

Institute of Parasitology, Prague, Czechoslovakia

United States Naval Medical Research Unit No. 3, Cairo, Egypt

Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Department of Zoology, University of Maryland, College Park, Md., USA

**COLLABORATING LABORATORIES**

*Collaborating Laboratory for the Study of Insect Viruses*

Station de Recherches cytopathologiques, Faculté des Sciences, University of Montpellier, France

*Collaborating Laboratory for Parasites and Pathogens of Mosquitoes*

Gulf Coast Mosquito Research Laboratory, United States Department of Agriculture, Lake Charles, La., USA

*Collaborating Laboratory for the Study of Pathogens and Parasites to Control Insect Vectors of Disease*

*Research Unit on Vector Pathology, Faculty of Arts and Sciences, Memorial University of Newfoundland, St John's, Newfoundland, Canada

*Collaborating Laboratories for Work on Insecticide Resistance*

Danish Pest Infestation Laboratory, Lyngby, Denmark

Laboratory for Research on Insecticides, Wageningen, Netherlands

Department of Entomology, London School of Hygiene and Tropical Medicine, London, United Kingdom

Department of Entomology, University of California, Riverside, Calif., USA

*Collaborating Laboratory for Work on Pesticide Toxicology*

Department of Toxicology, Institute of Medical Research, Yugoslav Academy of Sciences and Arts, Zagreb, Yugoslavia

---

1 See also Malaria.
Venereal Infections and Treponematoses

**REFERENCE CENTRES**

*International Reference Centre for Endemic Treponematoses*
Institut Alfred-Fournier, Paris, France

*International Reference Centre for Gonococci*
Neisseria Department, Statens Seruminstitut, Copenhagen, Denmark

*International Treponematosis Laboratory Centre*
Johns Hopkins University, Baltimore, Md., USA

*International Reference Centres for the Serology of Treponematosis*
Treponematosis Research Laboratory, Statens Seruminstitut, Copenhagen, Denmark
Center for Disease Control, Atlanta, Ga., USA

*Regional Reference Centre for Venereal Diseases and Treponematosis*
Venereal Diseases Reference Laboratory, Institute of Clinical Pathology and Medical Research, New South Wales Department of Public Health, Lidcombe, Australia

**Virus Diseases, General**

**COLLABORATING INSTITUTIONS AND LABORATORIES**

*Virus Collaborating Laboratories*

Virus Laboratories, Laboratory Center for Disease Control, Department of National Health and Welfare, Ottawa, Ont., Canada

Department of Virology, National Institute of Public Health, Budapest, Hungary

Department of Microbiology, University of the West Indies, Mona, Kingston, Jamaica

Department of Medical Microbiology, Faculty of Medicine, University of Ibadan, Nigeria

Stefan S. Nicolau Institute of Virology, Bucharest, Romania

Institute of Bacteriology, St Gall, Switzerland

Trinidad Regional Virus Laboratory, Port of Spain, Trinidad and Tobago

Gamaleja Institute of Epidemiology and Microbiology, Moscow, USSR

Standards Laboratory for Serological Reagents, Central Public Health Laboratory, London, United Kingdom

Virus Reference Laboratory, Central Public Health Laboratory, London, United Kingdom

Division of Bacteriology and Virus Research, Medical Research Council’s National Institute for Medical Research, London, United Kingdom

Department of Virology, Andrija Štampar School of Public Health, University of Zagreb, Yugoslavia

**Wastes Disposal**

**REFERENCE CENTRES**

*International Reference Centre for Wastes Disposal*
Central Public Health Engineering Research Institute, Nagpur, India

**COLLABORATING INSTITUTIONS AND LABORATORIES**

*Collaborating Institutions and Laboratories for Wastes Disposal*

Institute of Sanitary Engineering, Faculty of Engineering, University of Buenos Aires, Argentina

Water Science Laboratories, Melbourne Water Science Institute Ltd, Carlton, Victoria, Australia

Institute for Water Supply, Sewage Purification and Water Pollution Control, Vienna Technical University, Austria

Centre belge d’Etude et de Documentation des Eaux, Liège, Belgium

Central Office for Wastes Disposal, Berlin

Sursan Institute of Sanitary Engineering, Rio de Janeiro, Brazil

Department of Environmental Health, School of Public Health, University of São Paulo, Brazil

Institute of Hygiene, Industrial Safety and Occupational Diseases, Centre of Hygiene, Information and Documentation Unit, Department of Environmental Health, Sofia, Bulgaria

Water Research Institute, Bratislava, Czechoslovakia

Sanitary Engineering Department, Faculty of Engineering, University of Alexandria, Egypt

Institut de Recherches hydrologiques, Nancy, France

Centre d’Etudes et Recherches des Charbonnages de France, Paris, France

Institut national de Recherche chimique appliquée, Vert-le-Petit, Essonne, France

Faculty of Engineering, University of Science and Technology, Kumasi, Ghana

Research Institute for Water Resources Development, Budapest, Hungary

Institute of Public Health Research and School of Public Health, University of Teheran, Iran

Sanitary Engineering Laboratories, Israel Institute of Technology, Haifa, Israel

Environmental Health Laboratory, Department of Medical Ecology, Hadassah Medical School, Jerusalem, Israel

Institute of Sanitary Engineering, Milan Polytechnic, Milan, Italy

Centre for Study and Research in Sanitary Engineering, University of Naples, Italy

Japan Environmental Sanitation Centre, Kawasaki City, Japan

Department of Civil Engineering, Faculty of Engineering, University of Nairobi, Kenya

Faculty of Engineering and Architecture, and School of Public Health, American University of Beirut, Lebanon

Foundation for Waste Disposal, Amersfoort, Netherlands

Government Institute of Sewage Purification, Voorburg, Netherlands

Works Division, Auckland Regional Authority, Auckland, New Zealand

Faculty of Engineering, University of Lagos, Nigeria

---

1 See also Arbovirus diseases, Enterovirus diseases, Influenza, Respiratory virus diseases other than influenza, and Smallpox.
Department of Civil Engineering, Ahmadu Bello University, Zaria, Nigeria
Norwegian Institute for Water Research, Royal Norwegian Council for Scientific and Industrial Research, Oslo, Norway
Department of Sanitary Engineering and Environmental Pollution, National Institute of Public Health, Oslo, Norway
Department of Sanitation, National University of Engineering, Lima, Peru
Pan American Centre for Sanitary Engineering and Environmental Sciences, Lima, Peru
National Institute for Water Research, Council for Scientific and Industrial Research, Pretoria, South Africa
Battelle Geneva Research Centre, Geneva, Switzerland
Division of Environmental Engineering, Asian Institute of Technology, Bangkok, Thailand
Environmental Engineering Department, Middle East Technical University, Ankara, Turkey
* Academy of Community Services, Moscow, USSR
Water Pollution Research Laboratory, Stevenage, Herts., United Kingdom
American Public Works Association, Chicago, Ill., USA
Office of Solid Waste Management Programs, Environmental Protection Agency, Rockville, Md., USA
Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina, Chapel Hill, N.C., USA
National Environmental Research Center, Environmental Protection Agency, Cincinnati, Ohio, USA
Center for Research in Water Resources, Balcones Research Center, University of Texas, Austin, Tex., USA
Faculté polytechnique, National University of Zaire, Kinshasa, Zaire

Water Supply

Reference Centre

International Reference Centre for Community Water Supply
Chemical and Bacteriological Department, Institute for Water Supply, The Hague, Netherlands

Regional Reference Centres for Community Water Supply
* Central Public Health Engineering Research Institute, Nagpur, India
* Pan American Centre for Sanitary Engineering and Environmental Sciences, Lima, Peru

Collaborating Institutions and Laboratories

Collaborating Institutions for Community Water Supply
Institut d'Hygiène et d'Epidémiologie, Ministère de la Santé publique, Brussels, Belgium
SURSAN Institute of Sanitary Engineering, Rio de Janeiro, Brazil
Institute of Hygiene and Epidemiology, Prague, Czechoslovakia

Institute of Hygiene, University of Aarhus, Denmark
Sanitary Engineering Department, Faculty of Engineering, University of Alexandria, Egypt
Section d'Hydrologie, Office de la Recherche scientifique et technique outre-mer, Paris, France
Department of Civil Engineering, Faculty of Engineering, University of Science and Technology, Kumasi, Ghana
Victoria Jubilee Technical Institute, Matunga, Bombay, India
All India Institute of Hygiene and Public Health, Calcutta, India
Institute of Hydro-Sciences and Water Resources Technology, University of Teheran, Iran
Environmental Health Laboratory, Hadassah Medical School, Jerusalem, Israel
Centre for Study and Research in Sanitary Engineering, University of Naples, Italy
Institute of Water Research, National Research Council, Rome, Italy
Department of Sanitary Engineering, Faculty of Engineering, University of Tokyo, Japan
Department of Civil Engineering, Faculty of Engineering, University of Nairobi, Kenya
Faculty of Engineering and Architecture, and School of Public Health, American University of Beirut, Lebanon
Institute for Control of Waterpipe Material, Rijswijk, Netherlands
Faculty of Engineering, University of Lagos, Nigeria
Department of Sanitation, National University of Engineering, Lima, Peru
Faculty of Engineering and Architecture, University of Khartoum, Sudan
Battelle Geneva Research Centre, Geneva, Switzerland
Division of Environmental Engineering, Asian Institute of Technology, Bangkok, Thailand
Environmental Engineering Department, Middle East Technical University, Ankara, Turkey
* Academy of Community Services, Moscow, USSR
Water Research Association, Medmenham, Marlow, Bucks., United Kingdom
Department of Civil Engineering, University of Newcastle upon Tyne, United Kingdom
Department of Environmental Engineering, College of Engineering, University of Florida, Gainesville, Fla., USA
Division of Water Hygiene, Water Quality Office, Environmental Protection Agency, Rockville, Md., USA
National Sanitation Foundation, Ann Arbor, Mich., USA
Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina, Chapel Hill, N.C., USA
Department of Sanitary Engineering, Faculty of Engineering, Central University of Venezuela, Caracas, Venezuela
Annex 6

RESEARCH GRANTS AWARDED FOR TRAINING AND EXCHANGE IN 1973, BY SUBJECT AND TYPE OF GRANT

<table>
<thead>
<tr>
<th>Subject</th>
<th>Training grants</th>
<th>Grants for exchange of research workers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacterial diseases (other than leprosy and tuberculosis)</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Cancer</td>
<td>2</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Food additives</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Health manpower development</td>
<td>—</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Human genetics</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Human reproduction</td>
<td>27</td>
<td>5</td>
<td>32</td>
</tr>
<tr>
<td>Immunology</td>
<td>5</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Leprosy</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Malaria</td>
<td>—</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mental health</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Noncommunicable diseases</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Nutrition</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Parasitic diseases</td>
<td>—</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Prophylactic and therapeutic substances</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Radiation health</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Strengthening of health services</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Vector biology and control</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Venereal diseases and treponomatoses</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Veterinary public health</td>
<td>—</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Virus diseases (other than smallpox)</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>38</strong></td>
<td><strong>97</strong></td>
</tr>
</tbody>
</table>

1 In addition, three research grants were supported by the Swedish National Association against Heart and Chest Diseases.
## Annex 7

**Fellowships Awarded, by Subject of Study and by Region,**

1 December 1972 – 30 November 1973

<table>
<thead>
<tr>
<th>Subject of Study</th>
<th>Region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Africa</td>
<td>The Americas</td>
</tr>
<tr>
<td><strong>Health Organization and Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Public Health Administration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public health administration</td>
<td>52</td>
<td>88</td>
</tr>
<tr>
<td>Hospital and medical care administration</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Construction of health institutions</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Medical librarianship</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td><strong>Subtotal — Public Health Administration</strong></td>
<td>58</td>
<td>138</td>
</tr>
<tr>
<td><strong>Environmental Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental sanitation</td>
<td>68</td>
<td>96</td>
</tr>
<tr>
<td>Housing and town planning</td>
<td>1</td>
<td>—</td>
</tr>
<tr>
<td>Food control</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td><strong>Subtotal — Environmental Health</strong></td>
<td>70</td>
<td>114</td>
</tr>
<tr>
<td><strong>Nursing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing and midwifery</td>
<td>94</td>
<td>12</td>
</tr>
<tr>
<td>Public health nursing</td>
<td>38</td>
<td>9</td>
</tr>
<tr>
<td>Medical social work</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td><strong>Subtotal — Nursing</strong></td>
<td>135</td>
<td>22</td>
</tr>
<tr>
<td><strong>Maternal and Child Health</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal and child health</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Paediatrics and obstetrics</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td><strong>Subtotal — Maternal and Child Health</strong></td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td><strong>Other Health Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental health</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Health education</td>
<td>18</td>
<td>13</td>
</tr>
<tr>
<td>Occupational health</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Nutrition</td>
<td>9</td>
<td>43</td>
</tr>
<tr>
<td>Health statistics</td>
<td>13</td>
<td>37</td>
</tr>
<tr>
<td>Dental health</td>
<td>18</td>
<td>20</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Control of pharmaceutical and biological preparations</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td><strong>Subtotal — Other Health Services</strong></td>
<td>74</td>
<td>159</td>
</tr>
<tr>
<td><strong>Total — Health Organization and Services</strong></td>
<td>358</td>
<td>454</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>50</td>
<td>62</td>
</tr>
</tbody>
</table>
### Annex 7 (continued)

<table>
<thead>
<tr>
<th>Subject of Study</th>
<th>Africa</th>
<th>The Americas</th>
<th>South-East Asia</th>
<th>Europe</th>
<th>Eastern Mediterranean</th>
<th>Western Pacific</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Communicable Diseases</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaria</td>
<td>24</td>
<td>2</td>
<td>17</td>
<td>3</td>
<td>15</td>
<td>29</td>
<td>90</td>
</tr>
<tr>
<td>Venereal diseases and treponematoses</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>—</td>
<td>2</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>8</td>
<td>25</td>
<td>14</td>
<td>11</td>
<td>20</td>
<td>21</td>
<td>99</td>
</tr>
<tr>
<td>Other communicable diseases</td>
<td>23</td>
<td>66</td>
<td>50</td>
<td>2</td>
<td>26</td>
<td>19</td>
<td>186</td>
</tr>
<tr>
<td>Laboratory services</td>
<td>73</td>
<td>43</td>
<td>31</td>
<td>29</td>
<td>57</td>
<td>19</td>
<td>252</td>
</tr>
<tr>
<td>Chemotherapy, antibiotics</td>
<td>2</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total — Communicable Diseases</strong></td>
<td>133</td>
<td>149</td>
<td>120</td>
<td>47</td>
<td>125</td>
<td>95</td>
<td>669</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>19</td>
<td>21</td>
<td>22</td>
<td>9</td>
<td>19</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td><strong>Clinical Medicine, Basic Medical Sciences and Medical and Allied Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Clinical Medicine</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surgery and medicine</td>
<td>8</td>
<td>2</td>
<td>10</td>
<td>12</td>
<td>18</td>
<td>5</td>
<td>55</td>
</tr>
<tr>
<td>Anaesthesiology</td>
<td>7</td>
<td>6</td>
<td>9</td>
<td>14</td>
<td>24</td>
<td>7</td>
<td>67</td>
</tr>
<tr>
<td>Radiology</td>
<td>9</td>
<td>3</td>
<td>16</td>
<td>2</td>
<td>23</td>
<td>4</td>
<td>57</td>
</tr>
<tr>
<td>Haematology</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td>7</td>
<td>1</td>
<td>25</td>
</tr>
<tr>
<td>Other medical and surgical specialties</td>
<td>13</td>
<td>10</td>
<td>19</td>
<td>43</td>
<td>24</td>
<td>14</td>
<td>123</td>
</tr>
<tr>
<td><strong>Subtotal — Clinical Medicine</strong></td>
<td>40</td>
<td>22</td>
<td>63</td>
<td>75</td>
<td>96</td>
<td>31</td>
<td>327</td>
</tr>
<tr>
<td><strong>Basic Medical Sciences and Medical and Allied Education</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Basic medical sciences</td>
<td>28</td>
<td>11</td>
<td>38</td>
<td>22</td>
<td>31</td>
<td>17</td>
<td>147</td>
</tr>
<tr>
<td>Medical and allied education</td>
<td>1</td>
<td>93</td>
<td>20</td>
<td>17</td>
<td>18</td>
<td>14</td>
<td>163</td>
</tr>
<tr>
<td>Undergraduate medical studies</td>
<td>148</td>
<td>—</td>
<td>2</td>
<td>—</td>
<td>68</td>
<td>14</td>
<td>232</td>
</tr>
<tr>
<td><strong>Subtotal — Basic Medical Sciences and Medical and Allied Education</strong></td>
<td>177</td>
<td>104</td>
<td>60</td>
<td>39</td>
<td>117</td>
<td>45</td>
<td>542</td>
</tr>
<tr>
<td><strong>Total — Clinical Medicine, Basic Medical Sciences and Medical and Allied Education</strong></td>
<td>217</td>
<td>126</td>
<td>123</td>
<td>114</td>
<td>213</td>
<td>76</td>
<td>869</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>31</td>
<td>17</td>
<td>22</td>
<td>20</td>
<td>32</td>
<td>18</td>
<td>24</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td>708</td>
<td>729</td>
<td>558</td>
<td>568</td>
<td>665</td>
<td>419</td>
<td>3647</td>
</tr>
</tbody>
</table>
Annex 8

PUBLICATIONS ISSUED IN 1973

MONOGRAPH SERIES
23 Laboratory Techniques in Rabies, third edition (E)
38 Insecticide Resistance in Arthropods, by A. W. A. Brown & R. Pal, second edition (F, S)
60 Waste Stabilization Ponds, by E. F. Gloyna (S)

PUBLIC HEALTH PAPERS
42 The Prevention of Perinatal Morbidity and Mortality, report on a Seminar (R)
43 Principles of Health Planning in the USSR, by G. A. Popov (F, R)
44 Planning and Programming for Nursing Services (F, R)
45 Mass Health Examinations (R)
46 Approaches to National Health Planning, by H. E. Hilleboe, A. Barkhuus & W. C. Thomas, Jr (F, R, S)
47 Aspects of Medical Education in Developing Countries. Selected Papers presented at the Second WHO Conference on Medical Education in the Eastern Mediterranean Region (F, S)
48 Evaluation of Community Health Centres, by Milton I. Roemer (F)
49 Interrelationships between Health Programmes and Socio-economic Development (E, F, S)
50 Hospital Legislation and Hospital Systems, by R. F. Bridgman & M. I. Roemer (E, F)
51 Health Practice Research and Formalized Managerial Methods, by F. Grundy & W. A. Reinke (E, F)
52 Development of Educational Programmes for the Health Professions (E)
53 Family Planning in the Education of Nurses and Midwives, edited by Lily M. Turnbull & Helena Pizurki (E)
54 Control of Air Pollution in the USSR, by N. F. Izmerov (E)

TECHNICAL REPORT SERIES
440 Programmes of Analysis of Mortality Trends and Levels, report of a Joint United Nations/WHO Meeting (R)
454 Multipurpose Serological Surveys and WHO Serum Reference Banks, report of a WHO Scientific Group (R)
462 Evaluation of Food Additives, fourteenth report of the Joint FAO/WHO Expert Committee on Food Additives (R)
463 WHO Expert Committee on Biological Standardization, twenty-third report (R)
464 Joint FAO/WHO Expert Committee on Brucellosis, fifth report (R)
466 Methodology for Family Studies of Genetic Factors, report of a WHO Scientific Group (R)
491 The Planning and Organization of a Health Laboratory Service, fifth report of the WHO Expert Committee on Health Laboratory Services (R)
492 The Medical Uses of Ionizing Radiation and Radioisotopes, report of a Joint IAEA/WHO Expert Committee (R, S)
493 WHO Expert Committee on Smallpox Eradication, second report (R)
494 The Etiology and Prevention of Dental Caries, report of a WHO Scientific Group (R)
495 Opiates and their Alternates for Pain and Cough Relief, report of a WHO Scientific Group (R)
496 Clinical Immunology, report of a WHO Scientific Group (R)
497 Genetic Disorders: Prevention, Treatment, and Rehabilitation, report of a WHO Scientific Group (R)
498 International Drug Monitoring: The Role of National Centres, report of a WHO Meeting (R)
499 Organization of Local and Intermediate Health Administrations, report of a WHO Expert Committee (R)
500 Oral Enteric Bacterial Vaccines, report of a WHO Scientific Group (R)
502 Pesticide Residues in Food, report of the 1971 Joint FAO/WHO Meeting (R, S)
504 Inherited Blood Clotting Disorders, report of a WHO Scientific Group (S)
505 Evaluation of Certain Food Additives and the Contaminants Mercury, Lead, and Cadmium, sixteenth report of the Joint FAO/WHO Expert Committee on Food Additives (S)
506 Air Quality Criteria and Guides for Urban Air Pollutants, report of a WHO Expert Committee (S)
509 Treatment of Haemoglobinopathies and Allied Disorders, report of a WHO Scientific Group (S)
512 Viral Hepatitis, report of a WHO Scientific Group (E, F, S)
513 Safe Use of Pesticides, twentieth report of the WHO Expert Committee on Insecticides (E, F, S)
514 Agents Stimulating Gonadal Function in the Human, report of a WHO Scientific Group (E, F, S)
515 Schistosomiasis Control, report of a WHO Expert Committee (E, F)
516 Youth and Drugs, report of a WHO Study Group (E, F, S)
517 Reuse of Effluents: Methods of Wastewater Treatment and Health Safeguards, report of a WHO Meeting of Experts (E, F)
518 The Prevention of Blindness, report of a WHO Study Group (E, F, S)
519 Cell-mediated Immunity and Resistance to Infection, report of a WHO Scientific Group (E, F, S)
520 Reproductive Function in the Human Male, report of a WHO Scientific Group (E, F, S)

1 The language of issue is denoted as follows: C = Chinese; E = English; F = French; P = Portuguese; R = Russian; S = Spanish; E-F = English and French; E-S = English and Spanish; E/F, E/S = bilingual edition.
521 Training and Preparation of Teachers for Schools of Medicine and of Allied Health Sciences, report of a WHO Study Group (E, F, S)

522 Energy and Protein Requirements, report of a Joint FAO/WHO Ad Hoc Expert Committee (E, F)

523 WHO Expert Committee on Rabies, sixth report (E, F, S)

524 Pharmacogenetics, report of a WHO Scientific Group (E, F, S)

525 Pesticide Residues in Food, report of the 1972 Joint FAO/WHO Meeting (E, F)

526 WHO Expert Committee on Drug Dependence, nineteenth report (E, F)

527 Advances in Methods of Fertility Regulation, report of a WHO Scientific Group (E, F)

528 Evaluation of Environmental Health Programmes, report of a WHO Scientific Group (E, F)

529 Chemotherapy of Malaria and Resistance to Antimalarials, report of a WHO Scientific Group (E, F)

530 WHO Expert Committee on Biological Standardization, twenty-fifth report (E, F)

531 The Use of Viruses for the Control of Insect Pests and Disease Vectors, report of a Joint FAO/WHO Meeting on Insect Viruses (E, F)

532 Trace Elements in Human Nutrition, report of a WHO Expert Committee (E, F)

533 Postgraduate Education and Training in Public Health, report of a WHO Expert Committee (E, F)

534 Continuing Education for Physicians, report of a WHO Expert Committee (E, F)

535 Environmental and Health Monitoring in Occupational Health, report of a WHO Expert Committee (E, F)

OFFICIAL RECORDS SERIES

190 Executive Board, Forty-seventh Session
Part II — Report on the Proposed Programme and Budget Estimates for 1972 (R)


194 Twenty-fourth World Health Assembly
Part II — Plenary Meetings: Verbatim Records. Committees: Summary Records and Reports (R)


204 Proposed Programme and Budget Estimates for 1974 (R)

205 The Work of WHO, 1972
Annual Report of the Director-General (E, F, R, S)

206 Executive Board, Fifty-first Session
Part I — Resolutions, Annexes (E, F, S)

207 Executive Board, Fifty-first Session
Part II — Report on the Proposed Programme and Budget Estimates for 1974 (E, F, S)

208 Financial Report, 1 January-31 December 1972, and Reports of the External Auditor (E, F, S)

209 Twenty-Sixth World Health Assembly
Part I — Resolutions and Decisions, Annexes (E, F, S)

210 Twenty-Sixth World Health Assembly
Part II — Plenary Meetings: Verbatim Records. Committees: Summary Records and Reports (E, F, S)

211 Executive Board, Fifty-second Session (E, F, S)

212 Proposed Programme and Budget Estimates for 1975 (E, F, S)

Basic Documents, twenty-third edition (R)

Handbook of Resolutions and Decisions, Volume I: 1948-1972 (E, F, S)

OTHER PUBLICATIONS

International Health Regulations (1969). First annotated edition (R)

Mortality from Malignant Neoplasms, 1955-1965. Part II (R)

Public Health Implications of Radioactive Waste Releases, by C. P. Straub (R)


Specifications for Pesticides Used in Public Health, fourth edition (E)

Training of Research Workers in the Medical Sciences. Proceedings of a Round Table Conference organized by CIOMS with the assistance of WHO and UNESCO, Geneva 10-11 September 1970 (F)

International Standards for Drinking-Water, third edition (R)

Vector Control in International Health (F)

Application of the International Classification of Diseases to Dentistry and Stomatology, ICD-DA (E)

Dictionary of Epilepsy, Part I: Definitions, by H. Gastaut in collaboration with an international group of experts (E, F, S)

Methods for the Analysis of Human Chromosome Aberrations, edited by K. E. Buckton & H. J. Evans (E, F)

Drug Therapy of Cancer, by G. Brulé, S. J. Eckhardt, T. C. Hall & A. Winkler (F)

Drug Treatment in Intestinal Helminthiasis, by A. Davis (E)

Field Methods for the Control of Trachoma, edited by M. L. Tarizzo (E)

World Directory of Schools of Public Health, 1971 (F)

World Directory of Medical Schools, 1970 (E/F)

World Directory of Veterinary Schools, 1971 (E)

International Histological Classification of Tumours No. 7: Histological Typing of Salivary Gland Tumours, by A. C. Thackray & L. H. Sobin (S)

International Histological Classification of Tumours No. 8: Cytology of the Female Genital Tract, by G. Riolto, W. M. Christopherson in collaboration with R. Lunt (E, F, S)

International Histological Classification of Tumours No. 9: Histological Typing of Ovarian Tumours, by S. F. Serov, R. E. Scully in collaboration with L. H. Sobin (E, F, S)

International Histological Classification of Tumours No. 10: Histological Typing of Urinary Bladder Tumours, by F. K. Mostofi in collaboration with L. H. Sobin & H. Torloni (E)

WHO Food Additives Series No. 1: Toxicological Evaluation of Some Enzymes, Modified Starches and Certain Other Substances (F)

WHO Food Additives Series No. 2: Specifications for the Identity and Purity of Some Enzymes and Certain Other Substances (F)

WHO Food Additives Series No. 4: Evaluation of Mercury, Lead, Cadmium and the Food Additives Amaranth, Diethylpyrocarbonate, and Octyl Gallate (E)
WHO Pesticide Residues Series No. 1: 1971 Evaluations of Some Pesticide Residues in Food (E)
Offset Publications No. 1: Manual on Larval Control Operations in Malaria Programmes (E)

PERIODICALS

World Health
Monthly (E, F, P, R, S)

WHO Chronicle
Volume 26, No. 2-10 (C)
Volume 26, No. 8-12 (R)
Volume 27, No. 1-12 (E, F, S)
Volume 27, No. 1-8 (R)

Bulletin of the World Health Organization
Volume 45, No. 6 (R)
Volume 46, No. 1-6 (R)
Volume 47, No. 1-6 (E-F)
Volume 48, No. 1-5 (E-F)

Supplement to Vol. 48 of the Bulletin

International Digest of Health Legislation
Volume 23, No. 4 (E, F)
Volume 24, No. 1-3 (E, F)

World Health Statistics Report
Volume 25, No. 12 (E/F)
Volume 26, No. 1-11 (E/F)

World Health Statistics Annual
1969 — Volume III (E/F)
1970 — Volume I (E/F)

TRANSLATED WHO PUBLICATIONS ISSUED BY OTHER PUBLISHERS IN 1973

Monograph Series
2 Maternal Care and Mental Health, by J. Bowlby

Public Health Papers
42 The Prevention of Perinatal Morbidity and Mortality, report on a seminar
43 Principles of Health Planning in the USSR, by G. A. Popov
44 Planning and Programming for Nursing Services
48 Evaluation of Community Health Centres, by Milton I. Roemer

Technical Report Series
320 University Health Services, fourteenth report of the WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel
365 Epidemiological Methods in the Study of Chronic Diseases, eleventh report of the WHO Expert Committee on Health Statistics

Other Publications
First International Seminar on Bovine Tuberculosis for the Americas (E, S)
Seminario sobre Enseñanza de Enfermería a Nivel Universitario (S)
Comité de Expertos de la OPS/OMS en la Enseñanza de Enfermería Maternoinfantil en las Escuelas de Enfermería de América Latina (S)
Glosario de términos hospitalarios (S)
Patterns of Mortality in Childhood — Report of the Inter-American Investigation of Mortality in Childhood, by R. R. Puffer & C. V. Serrano (E, S)
International Symposium on the Control of Lice and Louse-borne Diseases (E)
Unidades de cuidado intensivo para la América Latina — Hacia la atención progresiva del paciente (S)

PUBLICATIONS ISSUED BY THE PAN AMERICAN HEALTH ORGANIZATION IN 1973

SCIENTIFIC PUBLICATIONS SERIES
235 II Simposio Internacional sobre los Aspectos de Salud del Transporte de Animales (S)
241 Manual de Nomenclatura de Tumores y Codificación de Tumores (S)
256 V Inter-American Meeting on Foot-and-Mouth Disease and Zoonoses Control (E, S)
257 Epidemiologic Studies and Clinical Trials in Chronic Diseases (E)
258 First International Seminar on Bovine Tuberculosis for the Americas (E, S)
259 Seminario sobre Enseñanza de Enfermería a Nivel Universitario (S)
260 Comité de Expertos de la OPS/OMS en la Enseñanza de Enfermería Maternoinfantil en las Escuelas de Enfermería de América Latina (S)
261 Glosario de términos hospitalarios (S)
262 Patterns of Mortality in Childhood — Report of the Inter-American Investigation of Mortality in Childhood, by R. R. Puffer & C. V. Serrano (E, S)
263 International Symposium on the Control of Lice and Louse-borne Diseases (E)
264 Unidades de cuidado intensivo para la América Latina — Hacia la atención progresiva del paciente (S)
OFFICIAL DOCUMENTS SERIES

PUBLICATIONS OF THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER IN 1973

Annual Report, 1972-1973 (E, F)
Transplacental Carcinogenesis, edited by L. Tomatis & U. Mohr (IARC Scientific Publications No. 4) (E)
Pathology of Tumours of Laboratory Animals, Vol. I—the Rat, Part I, edited by V. S. Turusov et al. (IARC Scientific Publications No. 5) (E)

Annex 9

WHO LIBRARY STATISTICS, 1973

Acquisitions
Periodicals received ........................................ 3 117
by subscription .................................................. 863
by exchange with WHO publications .................... 1 395
by gift .................................................................. 859

Annual reports received .................................... 1 846
Books and pamphlets ordered ............................. 740
Books and pamphlets received ............................. 2 714
Volumes bound .................................................. 1 090

Catalogue
Titles catalogued .................................................. 2 094
Documents indexed .............................................. 6 196
Index cards filed ............................................... 64 865

Loans
Lent to WHO secretariat .................................... 11 070
Lent to other libraries ......................................... 5 934

Borrowed from other libraries ......................... 3 201
Periodicals circulated to WHO secretariat ............ 88 060
Photocopying (number of exposures) .................. 223 978
Items consulted in reading rooms ..................... 50 284

Medical literature supply
Orders placed for:

Headquarters secretariat (number) .................... 776
(items) ......................................................... 1 898
Regional Offices (number) ................................. 2 461
(items) ......................................................... 12 605

Duplicates distributed to Regional Offices and to other libraries ............................................. 1 495

WHO MEDLARS Centre

Retrospective bibliographies .............................. 268
Current awareness bibliographies ..................... 11 391
Annex 10

INTERGOVERNMENTAL ORGANIZATIONS WHICH HAVE ENTERED INTO FORMAL AGREEMENTS WITH WHO APPROVED BY THE WORLD HEALTH ASSEMBLY

at 31 December 1973

International Committee of Military Medicine and Pharmacy
International Office of Epizootics
League of Arab States
Organization of African Unity
World Intellectual Property Organization

NONGOVERNMENTAL ORGANIZATIONS IN OFFICIAL RELATIONS WITH WHO

at 31 December 1973

Biometric Society
Christian Medical Commission
Council for International Organizations of Medical Sciences
Inter-American Association of Sanitary Engineering
International Academy of Legal Medicine and of Social Medicine
International Air Transport Association
International Association for Accident and Traffic Medicine
International Association of Agricultural Medicine
International Association for Child Psychiatry and Allied Professions
International Association of Logopedics and Phoniatrics
International Association of Medical Laboratory Technologists
International Association of Microbiological Societies
International Association for Prevention of Blindness
International Association on Water Pollution Research
International Astronautical Federation
International Brain Research Organization
International Commission on Radiation Units and Measurements
International Commission on Radiological Protection
International Committee of Catholic Nurses
International Committee on Laboratory Animals
International Committee of the Red Cross
International Confederation of Midwives
International Council on Alcohol and Addictions
International Council on Jewish Social and Welfare Services
International Council of Nurses
International Federation of Ophthalmological Societies
International Cystic Fibrosis (Mucoviscidosis) Association
International Dental Federation
International Diabetes Federation
International Epidemiological Association
International Ergonomics Association
International Federation of Fertility Societies
International Federation of Gynecology and Obstetrics
International Federation for Housing and Planning
International Federation for Information Processing
International Federation for Medical and Biological Engineering
International Federation of Medical Student Associations
International Federation of Multiple Sclerosis Societies
International Federation of Ophthalmological Societies
International Federation of Pharmaceutical Manufacturers Associations
International Federation of Physical Medicine
International Federation of Sports Medicine
International Federation of Surgical Colleges
International Hospital Federation
International Hydatidological Association
International League of Dermatological Societies
International League against Epilepsy
International League against Rheumatism
International Leprosy Association
International Organization for Standardization
International Organization against Trachoma
International Paediatric Association
International Pharmaceutical Federation
International Planned Parenthood Federation
International Radiation Protection Association
International Society of Biometeorology
International Society of Blood Transfusion
International Society for Burn Injuries
International Society of Cardiology
International Society of Endocrinology
International Society of Hematology
International Society of Orthopaedic Surgery and Traumatology
International Society of Radiographers and Radiological Technicians
International Society of Radiology
International Society for Rehabilitation of the Disabled
International Sociological Association
International Solid Wastes and Public Cleansing Association
International Union of Architects
International Union against Cancer
International Union for Child Welfare
International Union for Conservation of Nature and Natural Resources
International Union for Health Education
International Union of Immunological Societies
International Union of Local Authorities
International Union of Nutritional Sciences
International Union of Pharmacology
International Union of Pure and Applied Chemistry
International Union of School and University Health and Medicine
International Union against Tuberculosis
International Union against the Venereal Diseases and the Treponematosis
International Water Supply Association
Joint Commission on International Aspects of Mental Retardation
League of Red Cross Societies
Medical Women's International Association
Permanent Commission and International Association on Occupational Health
Population Council  
Transplantation Society  
World Association of Societies of (Anatomic and Clinical) Pathology  
World Confederation for Physical Therapy  
World Council for the Welfare of the Blind  
World Federation of Hemophilia  
World Federation for Mental Health  
World Federation of Neurology  
World Federation of Neurosurgical Societies  
World Federation of Occupational Therapists  
World Federation of Parastologists  
World Federation of Public Health Associations  
World Federation of Societies of Anaesthesiologists  
World Federation of United Nations Associations  
World Medical Association  
World Psychiatric Association  
World Veterans Federation  
World Veterinary Association  

---

Annex 11

REGULAR BUDGET FOR 1973

<table>
<thead>
<tr>
<th>Appropriation section</th>
<th>Purpose of appropriation</th>
<th>Amounts approved 1</th>
<th>Supplementary estimates 2</th>
<th>Transfers: Increase (decrease)</th>
<th>Revised appropriations US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>PART I. ORGANIZATIONAL MEETINGS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. World Health Assembly</td>
<td></td>
<td>585 000</td>
<td>94 400</td>
<td></td>
<td>679 400</td>
</tr>
<tr>
<td>2. Executive Board and its committees</td>
<td></td>
<td>332 430</td>
<td>15 300</td>
<td></td>
<td>347 730</td>
</tr>
<tr>
<td>3. Regional committees</td>
<td></td>
<td>142 500</td>
<td></td>
<td></td>
<td>142 500</td>
</tr>
<tr>
<td><strong>Total — PART I</strong></td>
<td></td>
<td><strong>1 059 930</strong></td>
<td><strong>109 700</strong></td>
<td></td>
<td><strong>1 169 630</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PART II. OPERATING PROGRAMME</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Communicable diseases</td>
<td></td>
<td>17 629 970</td>
<td>118 864</td>
<td>80 000</td>
<td>17 828 834</td>
</tr>
<tr>
<td>5. Environmental health</td>
<td></td>
<td>7 754 315</td>
<td>204 857</td>
<td>(171 380)</td>
<td>7 787 792</td>
</tr>
<tr>
<td>6. Strengthening of health services</td>
<td></td>
<td>24 640 395</td>
<td>(163 534)</td>
<td>(558 605)</td>
<td>23 918 256</td>
</tr>
<tr>
<td>7. Noncommunicable diseases</td>
<td></td>
<td>3 506 716</td>
<td>162 176</td>
<td>232 000</td>
<td>3 900 892</td>
</tr>
<tr>
<td>8. Health manpower development</td>
<td></td>
<td>9 704 943</td>
<td>97 198</td>
<td>560 985</td>
<td>10 363 126</td>
</tr>
<tr>
<td>9. Other activities</td>
<td></td>
<td>13 954 968</td>
<td>1 753 565</td>
<td>(315 800)</td>
<td>15 392 733</td>
</tr>
<tr>
<td>10. Regional offices</td>
<td></td>
<td>7 941 135</td>
<td>194 122</td>
<td>119 000</td>
<td>8 254 257</td>
</tr>
<tr>
<td><strong>Total — PART II</strong></td>
<td></td>
<td><strong>85 132 442</strong></td>
<td><strong>2 367 248</strong></td>
<td><strong>(53 800)</strong></td>
<td><strong>87 445 890</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PART III. ADMINISTRATIVE SERVICES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Administrative services</td>
<td></td>
<td>6 415 428</td>
<td>964 052</td>
<td>50 000</td>
<td>7 429 480</td>
</tr>
<tr>
<td><strong>Total — Part III</strong></td>
<td></td>
<td><strong>6 415 428</strong></td>
<td><strong>964 052</strong></td>
<td><strong>50 000</strong></td>
<td><strong>7 429 480</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PART IV. OTHER PURPOSES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Headquarters building: Repayment of loans</td>
<td></td>
<td>566 600</td>
<td>67 500</td>
<td>3 800</td>
<td>637 900</td>
</tr>
<tr>
<td><strong>Total — Part IV</strong></td>
<td></td>
<td><strong>566 600</strong></td>
<td><strong>67 500</strong></td>
<td><strong>3 800</strong></td>
<td><strong>637 900</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>EFFECTIVE WORKING BUDGET (PARTS I, II, III AND IV)</strong></td>
<td></td>
<td><strong>93 174 400</strong></td>
<td><strong>3 508 500</strong></td>
<td></td>
<td><strong>96 682 900</strong></td>
</tr>
</tbody>
</table>

---

1 See resolutions WHA25.46 and EB51.R6.
2 Approved by the Twenty-sixth World Health Assembly in resolution WHA26.16.
3 Subject to such additional transfers as may be necessary in conjunction with the closure and audit of the final accounts for 1973.
# Annex 12

## NUMBERS AND DISTRIBUTION OF THE STAFF

### at 30 November 1972 and 30 November 1973

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Staff as at 30 November 1972</th>
<th>Staff as at 30 November 1973</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Regular Budget</td>
</tr>
<tr>
<td>Headquarters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional offices</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Africa</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Americas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>South-East Asia</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Eastern Mediterranean</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Pacific</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Excluding short-term consultants.

2 Including liaison offices.
Annex 12 (continued)

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Staff as at 30 November 1972</th>
<th>Staff as at 30 November 1973</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Regular Budget</td>
</tr>
<tr>
<td>WHO representatives' and zone offices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>119</td>
<td></td>
</tr>
<tr>
<td></td>
<td>163</td>
<td>163</td>
</tr>
<tr>
<td>Field staff in countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>935</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1024</td>
<td>732</td>
</tr>
<tr>
<td>International Agency for Research on Cancer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td></td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>Interregional and other activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>106</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>29</td>
<td></td>
</tr>
<tr>
<td></td>
<td>135</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>3 705</td>
<td>3 176</td>
</tr>
<tr>
<td>Staff on loan to WHO, or on leave without pay</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>Staff seconded to other organizations</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>WHO GRAND TOTAL</td>
<td>3 758</td>
<td></td>
</tr>
<tr>
<td>PAHO GRAND TOTAL</td>
<td>1 141</td>
<td></td>
</tr>
</tbody>
</table>
## Annex 13

### COMPOSITION OF THE STAFF BY NATIONALITY

**at 30 November 1973**

<table>
<thead>
<tr>
<th>Country</th>
<th>WHO</th>
<th>PAHO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Argentina</td>
<td>24</td>
<td>30</td>
<td>54</td>
</tr>
<tr>
<td>Australia</td>
<td>32</td>
<td>—</td>
<td>32</td>
</tr>
<tr>
<td>Austria</td>
<td>15</td>
<td>—</td>
<td>15</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>3</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Barbados</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Belgium</td>
<td>40</td>
<td>1</td>
<td>41</td>
</tr>
<tr>
<td>Bolivia</td>
<td>12</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Brazil</td>
<td>14</td>
<td>27</td>
<td>41</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>6</td>
<td>—</td>
<td>6</td>
</tr>
<tr>
<td>Burma</td>
<td>3</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Burundi</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Cameroon</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Canada</td>
<td>64</td>
<td>6</td>
<td>70</td>
</tr>
<tr>
<td>Central African Republic</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Chile</td>
<td>17</td>
<td>43</td>
<td>60</td>
</tr>
<tr>
<td>China</td>
<td>20</td>
<td>4</td>
<td>24</td>
</tr>
<tr>
<td>Colombia</td>
<td>21</td>
<td>32</td>
<td>53</td>
</tr>
<tr>
<td>Congo</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>6</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>Cuba</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Cyprus</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>17</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Dahomey</td>
<td>9</td>
<td>—</td>
<td>9</td>
</tr>
<tr>
<td>Democratic Yemen</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td>25</td>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>—</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Ecuador</td>
<td>9</td>
<td>14</td>
<td>23</td>
</tr>
<tr>
<td>Egypt</td>
<td>39</td>
<td>—</td>
<td>39</td>
</tr>
<tr>
<td>El Salvador</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Finland</td>
<td>9</td>
<td>—</td>
<td>9</td>
</tr>
<tr>
<td>France</td>
<td>139</td>
<td>1</td>
<td>140</td>
</tr>
<tr>
<td>Gambia</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Germany, Federal Republic</td>
<td>49</td>
<td>2</td>
<td>51</td>
</tr>
<tr>
<td>Ghana</td>
<td>7</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>Greece</td>
<td>12</td>
<td>—</td>
<td>12</td>
</tr>
<tr>
<td>Guatemala</td>
<td>4</td>
<td>32</td>
<td>36</td>
</tr>
<tr>
<td>Guyana</td>
<td>—</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Haiti</td>
<td>14</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Honduras</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Hungary</td>
<td>10</td>
<td>—</td>
<td>10</td>
</tr>
<tr>
<td>India</td>
<td>68</td>
<td>2</td>
<td>70</td>
</tr>
<tr>
<td>Indonesia</td>
<td>7</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>Iran</td>
<td>9</td>
<td>—</td>
<td>9</td>
</tr>
<tr>
<td>Iraq</td>
<td>7</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>Ireland</td>
<td>12</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Israel</td>
<td>8</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Italy</td>
<td>47</td>
<td>—</td>
<td>47</td>
</tr>
<tr>
<td>Jamaica</td>
<td>7</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>Japan</td>
<td>18</td>
<td>—</td>
<td>18</td>
</tr>
<tr>
<td>Jordan</td>
<td>12</td>
<td>—</td>
<td>12</td>
</tr>
<tr>
<td>Kenya</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Lebanon</td>
<td>17</td>
<td>—</td>
<td>17</td>
</tr>
<tr>
<td>Lesotho</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Liberia</td>
<td>3</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Madagascar</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Malaysia</td>
<td>6</td>
<td>—</td>
<td>6</td>
</tr>
<tr>
<td>Mali</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>1770</td>
<td>428</td>
<td>2198</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>WHO</th>
<th>PAHO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malta</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Mauritius</td>
<td>10</td>
<td>—</td>
<td>10</td>
</tr>
<tr>
<td>Mexico</td>
<td>9</td>
<td>17</td>
<td>26</td>
</tr>
<tr>
<td>Morocco</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Nepal</td>
<td>5</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>28</td>
<td>—</td>
<td>28</td>
</tr>
<tr>
<td>New Zealand</td>
<td>13</td>
<td>—</td>
<td>13</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Nigeria</td>
<td>12</td>
<td>—</td>
<td>12</td>
</tr>
<tr>
<td>Norway</td>
<td>10</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Pakistan</td>
<td>23</td>
<td>—</td>
<td>23</td>
</tr>
<tr>
<td>Panama</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Paraguay</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Peru</td>
<td>19</td>
<td>29</td>
<td>48</td>
</tr>
<tr>
<td>Philippines</td>
<td>25</td>
<td>—</td>
<td>25</td>
</tr>
<tr>
<td>Poland</td>
<td>27</td>
<td>—</td>
<td>27</td>
</tr>
<tr>
<td>Portugal</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>15</td>
<td>—</td>
<td>15</td>
</tr>
<tr>
<td>Romania</td>
<td>10</td>
<td>—</td>
<td>10</td>
</tr>
<tr>
<td>Senegal</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>5</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>Singapore</td>
<td>3</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Somalia</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>South Africa</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Spain</td>
<td>21</td>
<td>8</td>
<td>29</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>15</td>
<td>—</td>
<td>15</td>
</tr>
<tr>
<td>Sudan</td>
<td>10</td>
<td>—</td>
<td>10</td>
</tr>
<tr>
<td>Sweden</td>
<td>31</td>
<td>—</td>
<td>31</td>
</tr>
<tr>
<td>Switzerland</td>
<td>50</td>
<td>1</td>
<td>51</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>12</td>
<td>—</td>
<td>12</td>
</tr>
<tr>
<td>Thailand</td>
<td>7</td>
<td>—</td>
<td>7</td>
</tr>
<tr>
<td>Togo</td>
<td>8</td>
<td>—</td>
<td>8</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Tunisia</td>
<td>3</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Turkey</td>
<td>4</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Uganda</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Union of Soviet Socialist</td>
<td>38</td>
<td>—</td>
<td>38</td>
</tr>
<tr>
<td>Republics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United Kingdom of Great</td>
<td>167</td>
<td>13</td>
<td>180</td>
</tr>
<tr>
<td>Britain and Northern Ireland</td>
<td>5</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>United Republic of Tanzania</td>
<td>217</td>
<td>88</td>
<td>305</td>
</tr>
<tr>
<td>United States of America</td>
<td>8</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Uruguay</td>
<td>3</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>Viet-Nam</td>
<td>5</td>
<td>—</td>
<td>5</td>
</tr>
<tr>
<td>Yemen</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>39</td>
<td>—</td>
<td>39</td>
</tr>
<tr>
<td>Zambia</td>
<td>1</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Stateless</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>633</td>
<td>—</td>
<td>633</td>
</tr>
<tr>
<td>International Agency for</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research on Cancer</td>
<td>35</td>
<td>—</td>
<td>35</td>
</tr>
<tr>
<td>Geographically excepted posts</td>
<td>122</td>
<td>—</td>
<td>122</td>
</tr>
<tr>
<td>Staff locally recruited</td>
<td>1884</td>
<td>762</td>
<td>2646</td>
</tr>
<tr>
<td>Staff on secondment to other organizations</td>
<td>2</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>GRAND TOTAL</td>
<td>3813</td>
<td>1190</td>
<td>5003</td>
</tr>
</tbody>
</table>