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UNITED NATIONS

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The following abbreviations are used in the *Official Records of the World Health Organization*:

ACABQ  —  Advisory Committee on Administrative and Budgetary Questions  
ACC  —  Administrative Committee on Co-ordination  
CIOMS  —  Council for International Organizations of Medical Sciences  
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  
IAEA  —  International Atomic Energy Agency  
ICAO  —  International Civil Aviation Organization  
ILO  —  International Labour Organisation (Office)  
IMCO  —  Inter-Governmental Maritime Consultative Organization  
ITU  —  International Telecommunication Union  
PAHO  —  Pan American Health Organization  
PASB  —  Pan American Sanitary Bureau  
UNCTAD  —  United Nations Conference on Trade and Development  
UNDP  —  United Nations Development Programme  
UNESCO  —  United Nations Educational, Scientific and Cultural Organization  
UNICEF  —  United Nations Children’s Fund  
UNRWA  —  United Nations Relief and Works Agency for Palestine Refugees in the Near East  
WFUNA  —  World Federation of United Nations Associations  
WMO  —  World Meteorological Organization

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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

THE supreme challenge in 1966 to all intergovernmental organizations in the United Nations family continued to be the widening gap separating the developing countries from the technologically and economically more developed. This may appear paradoxical in view of the amount of technical assistance provided to developing countries from multilateral and bilateral sources; the reasons for our failure to bridge the gap are complex and have been clearly and repeatedly explained by the Secretary-General of the United Nations.

Most of the factors that hamper the execution of general development programmes also apply to international health work. They include, on the one hand, inability or unwillingness of the economically more fortunate nations to adjust aid, financial and otherwise, to the constantly expanding needs of the developing countries; and, on the other, political instability and unrest in many of the areas concerned, administrative inefficiency and the absence of those well-established and realistic planning processes without which the optimum utilization of all available resources cannot be ensured.

As a result, WHO in 1966 was able to make disappointingly little headway in assisting developing countries to establish and strengthen even basic national health services. Yet, in the final analysis, the success of practically all the Organization's activities depends upon the effectiveness of these very services. This is particularly true of the programmes directed at either the control or the eradication of the communicable diseases. For example, all the activities planned in the 1966 part of the smallpox eradication programme—improved operational methodology, systematic and efficient use of freeze-dried vaccine, intensified and well-organized surveillance and maintenance activities, development of the assessment scheme and co-ordination of national programmes—will be successful only if they can be integrated in the machinery of each country's national health services.

The same applies to the malaria eradication programme, which has now been in progress for over a decade. In many countries, the maintenance phase has had to be delayed, mainly because of a serious lack of public health personnel for vigilance duties. This has been the situation in, for instance, parts of India and Turkey where, in the absence of adequate general health services which could shoulder the responsibility for preventing the re-establishment of malaria, the authorities were compelled to continue, at considerable expense, several of their malaria eradication services. These examples emphasize the high priority that should be given to the strengthening of health services if the gains achieved through mass campaigns are to be consolidated and benefits from the large investments in money and human effort are to be reaped.

The same considerations apply in Africa, where over 270 million people are today exposed to the risk of malaria. The resources of most of the governments alone are extremely limited and massive external assistance is therefore needed to build up the health services required for systematic control and eventual eradication operations.
The shadow of the African situation darkens the otherwise encouraging conclusions of an exhaustive evaluation study undertaken in 1966 by the Expert Committee on Malaria. It is gratifying to read in the Committee's report that, as a result of the work carried out since 1955, malaria has been eradicated from very large parts of the Americas and the European and South-East Asia Regions, and that in the Eastern Mediterranean and Western Pacific Regions programmes with reasonable prospects of success have been established, covering large proportions of the population. After reviewing the forty-two operating malaria eradication programmes assisted by the Organization, the Expert Committee came to the conclusion that, of the 891 million people covered by them, 70 per cent. now live in areas where the programme has progressed satisfactorily and 26 per cent. are covered by programmes which have made progress but where prospects for timely completion would be favourable only if the plans are amended and their implementation improved. Very limited progress had been made in the programmes covering the remaining 4 per cent. of the population in question and there is little prospect of success unless radical changes are made in the implementation of the programme.

Basic health services are also essential if the results achieved by the techniques in tuberculosis control promoted by WHO are to be consolidated. Through some fifty WHO-assisted projects in 1966 several thousand basic health and specialized service staff were trained in the application of realistic control methods. A further thirty-six physicians from developing countries received advanced training in the epidemiology and control of tuberculosis in two inter-regional and one regional course. Continued programmes of BCG vaccination without prior tuberculin test and the simultaneous application of BCG and smallpox vaccines led to a much needed re-emphasis of immunization as a primary tool for control in developing countries. The reduction in cost of the new antibiotic regimens and their acceptability by the population strengthen the case for investing the limited financial resources available in ambulatory programmes, rather than in the provision of a necessarily restricted number of hospital beds.

However, as has been pointed out before, so long as the countries concerned do not have their own qualified personnel capable of accepting responsibility in the various branches of public health, international assistance will not achieve its objectives and even the most carefully planned and effectively carried out projects will not justify the sacrifice of men and material involved. Fortunately, there is a growing awareness of the need to build up national health services, and furthermore there are indications in a number of regions that efforts are being made to integrate specialized campaigns into these services where they exist.

* 

One of the most valuable contributions research has made in 1966 to the advancement of WHO's communicable disease programmes is further elucidation of the ecology, biology and control of Aedes aegypti. Recent epidemics have highlighted the urgency of this work. The outbreak of yellow fever in Senegal late in 1965 was confined mostly to children under the age of ten who had been excluded from systematic vaccination campaigns carried out since 1960 because of a number of unfavourable, and in some cases fatal, reactions to the vaccine. A very wide search has resulted in the isolation and identification of fifteen strains of yellow-fever virus in man and mosquitoes. The epidemic has raised questions concerning the vaccination status of the population, and particularly of children in the West African
countries. But it has also brought up the problem of the urban and rural distribution and density of Aedes aegypti. Both questions were investigated by WHO, and the Organization has also given assistance to the Institut Pasteur in Dakar so that the production of 17-D yellow-fever vaccine can be speeded up for more effective protection of populations at risk in West Africa, especially children. Inter-country co-operation in this area has been made easier through the establishment of a surveillance system for the detection of early cases of yellow fever. The Organization is supporting studies being carried out by the Centre Muraz in Bobo Dioulasso on the current distribution, population and speciation of Aedes aegypti in West Africa.

A second epidemic disease calling for increased research is haemorrhagic dengue fever prevalent in certain parts of South-East Asia and the Western Pacific. The research unit established in Bangkok, in collaboration with the Government of Thailand, has started to investigate different species of Aedes that might be involved in the transmission of the disease. This study should facilitate control in places where haemorrhagic dengue fever represents a serious public health problem.

Two global surveys were initiated in 1966 which have relevance to these diseases; the first is concerned with the distribution and population density of Aedes (Stegomyia) spp. and the second with the susceptibility of Aedes aegypti to insecticides. It is already apparent from the first survey that, while the density of Aedes is high in and around the cities of West and East Africa as well as in the rain forests, the vector is now rare in the Mediterranean basin. Similarly, Aedes aegypti seems to have been eradicated from most of South and Central America, with the exception of the Caribbean area where it was responsible for a recent dengue epidemic.

The first conclusion of the insecticide susceptibility survey as regards Aedes aegypti is that the same gene is responsible for resistance to chlorinated hydrocarbon insecticides in widely separated parts of the world—South-East Asia, the Western Pacific Region and southern areas of the United States of America. In the Caribbean, resistance to the chlorinated hydrocarbon insecticides has spread to all of the sixty-four localities in sixteen countries or territories recently examined.

The ecology and biology of the arboviruses were considered by a scientific group. Effective prophylaxis of most arbovirus diseases awaits the acquisition of further knowledge of the behaviour of the agents and their hosts and vectors. A positive step towards this goal is being made by the extensive programme for the production of laboratory reagents which has been set up in the WHO international and regional reference centres.

Influenza was widespread, but no large epidemics occurred. Virus B was responsible for most of the outbreaks, but some were due to virus A2. The strains of virus A2 differed from the classical 1957 strain to an even greater extent than in previous years. These rapid antigenic changes are similar to those observed with virus A1 in the years immediately before the A2 pandemic strain appeared, and underline the need for a careful watch for the possible appearance of another new strain.

The incidence of poliomyelitis reached record low levels in North America, Europe and Oceania, but in many tropical and sub-tropical countries there has been a continuing increase over several years. This disquieting state of affairs is made more serious by the evidence that the live poliomyelitis vaccine does not always multiply so readily in the alimentary tract of children in the tropics. Studies to determine why this should be so and how the difficulty can be overcome are now in progress.

The WHO virus reference centres and other collaborators have completed a serological survey of serious respiratory diseases in young children in ten tropical and semi-tropical countries, showing that
the viruses responsible in these countries are the same as those in temperate climates—an observation which may be of great practical importance in treatment and prophylaxis.

The preliminary results of a collaborative survey of antibodies to rubella virus in girls and women of child-bearing age in eleven countries indicate that the proportion of women immune to the infection may differ greatly in different countries.

Advances were made in the chemotherapy of bilharziasis through field trials of nitrothiamidazole as well as in the sero-immunology of bilharzial and filarial infections and trypanosomiasis. The latter disease has reached epidemic proportions in Africa, especially in the central States. The United Nations Development Programme, which has given assistance to Kenya in its struggle against the disease, is ready to give similar assistance to other countries in Africa.

*

The pandemic spread of cholera, which in 1966 invaded Iraq, continued to be a difficult public health problem in the countries concerned, causing loss of life and interfering with international trade and traffic. As part of its increased assistance to combat cholera, WHO made available the services of regional and inter-regional teams to countries in the Eastern Mediterranean, South-East Asia and Western Pacific Regions to assist in emergencies. Several training courses and seminars were also organized in countries affected or threatened by cholera to familiarize field workers with proper methods of diagnosis, management and control of cholera. Field and laboratory studies contributed to a better understanding of the disease and drew attention to the role of atypical mild cases and symptomless carriers in its spread. Controlled field trials with different vaccines pointed to the need for better vaccine and several laboratories are now engaged in applying modern biochemical and immunological methods in an attempt to develop new types of vaccine.

The Expert Committee on Cholera, which met in Manila in September, recommended the application of modern rehydration treatment on a large scale to save as many lives as possible, and also the enforcement of sanitation and health education in addition to measures required by the International Sanitary Regulations. It also recommended an intensification of the studies of carriers and vaccines which are already being sponsored by WHO.

In spite of a marked decline in incidence in recent years, plague remains endemic in some areas. That fact and the number of outbreaks of human plague indicate the need for permanent surveillance and control. During the year the disease again became a problem in some countries, which were therefore assisted by the Organization in the development of national plague study and control programmes.

*

In 1966, the two WHO immunology research and training centres established in Ibadan, Nigeria, and São Paulo, Brazil, were in full operation. Work in Ibadan began with a four-month course attended by students from Nigeria, Senegal and Uganda. Although still in its infancy, the centre is already making a significant contribution to the study of the various disease problems in the tropics.
A series of collaborative projects have been organized concerning immunoglobulins and serum proteins in bovine and human trypanosomiasis, immunological aspects of Burkitt's tumours, antigens of hookworm larvae, and the nephrotic syndrome in patients with Plasmodium malariae.

During a one-year course arranged by the São Paulo centre, public health problems of concern to Brazil and to other parts of Latin America were studied, including Pemphigus foliaceus, the immunochemia of snake venoms, and immunological aspects of some parasitic diseases.

Both centres collaborate closely with the WHO International Reference Centre for Immunoglobulins in Lausanne, Switzerland. For the last two years the Lausanne centre has been providing increasing services to research workers in developing countries, for example, with information on the purification of antibodies. It is also serving as a useful source of reagents and in general is helping to promote immunological research and training in developing, as well as in developed, countries. The close ties established between the Lausanne and other research and reference centres augur well for the future of international co-operation in this fundamental branch of biological research, which in recent years has led to spectacular advances in our understanding of diseases and abnormalities occurring on the molecular level. In immunology today, immunity to infection is no longer considered simply in terms of antibody production. It is seen as part of the mechanism by which the body maintains its integrity. By combining its approach, modern immunology is throwing new light on problems which have hitherto been treated separately: protection against infection, allergy, immunopathology, tissue transplantation, cancer, and so on.

*  

A notable event in WHO's cancer programme was the issue of a volume entitled Histological Typing of Lung Tumours together with colour photomicrographs and colour transparencies. This was the result of six years' unremitting labour on the part of the WHO International Reference Centre for the Histological Definition and Classification of Lung Tumours in Oslo under the direction of Professor L. Kreyberg, who was assisted by seventeen pathology departments in fifteen countries. It is the first in the series of the International Histological Classification of Tumours which WHO is planning to issue with the help of its international reference centres — twelve of which are at present in operation — and of 116 collaborating laboratories in some forty countries. In 1967 it is hoped to issue two volumes on the classification of breast tumours and soft tissue tumours, while further volumes on other anatomical tumour sites are planned for future years.

The colour photomicrographs and accompanying colour transparencies, identified according to classification in four languages (English, French, Russian and Spanish), have been made available free of charge to all professors of pathology in medical schools and to national societies of pathology. It is hoped that the classification will facilitate the teaching of the subject and that its increasing use in the teaching programme will lead to better understanding and communication among the medical profession. International agreement on histological criteria for the classification of cancer types and a standardized nomenclature are among the prerequisites for comparative studies of cancer; it is therefore thought that the publication and colour transparencies will be of special assistance to all those engaged in cancer research.
WHO is greatly indebted to the many pathologists who have collaborated and are collaborating in this international undertaking, especially to the heads of the international reference centres and the collaborating laboratories.

During the year, the work on cardiomyopathies was continued in Nigeria and Uganda, Brazil and Venezuela, and extended to India. Studies were carried out on pathology, immunology, clinical signs and epidemiology, and a central case registry was planned.

Since rheumatic fever remains a great problem in many areas, in particular producing severe damage of the heart in children, an expert committee on the prevention of rheumatic fever reviewed the progress made in the past decade. The establishment of pilot centres for preventive programmes of rheumatic fever, as recommended by the committee, should assist in controlling streptococcal infections and their sequelae in the areas most affected.

A summary of methods for conducting population studies of cardiovascular diseases received wide distribution. It was welcomed by cardiovascular epidemiologists as a means of achieving comparable results in different parts of the world.

The problem of cardiovascular diseases received further consideration by the Regional Committee for Europe which, at its sixteenth session, recommended support to national programmes directed against cardiovascular diseases, the foremost cause of death in the Region. It also recommended assistance to studies relating to the prevention of ischaemic heart disease and hypertension.

WHO has always given great emphasis to professional education and training in recognition of the fact that, unless sufficient numbers of qualified personnel of every category are available, national health services can be neither built up nor strengthened.

An outstanding event in 1966 which evoked great interest was the Third World Conference on Medical Education, organized in New Delhi by the World Medical Association and co-sponsored by the World Health Organization and the Pan American Health Organization. This meeting followed upon two previous conferences, one held in London in 1953 and the other in Chicago in 1959. The fact that this third conference was held in a country in Asia and that its theme was "Medical education—factor in socio-economic development" made it of particular interest to WHO with its long-standing concern to stimulate ever stronger interest in educational work in and for developing countries.

Medical education was also the theme of a WHO seminar in the African Region, held in Yaoundé, Cameroon. In South-East Asia, teams of medical educators collaborated with local faculties in expanding the teaching of various disciplines, and working seminars were organized to introduce new teaching concepts.

In the Americas, particular attention was given to teaching methods. Indeed the new educational techniques can help students to take greater advantage of the experience and technical skills of the teachers.
All too frequently there is still a wide gap between what the professor teaches and what the student learns, simply because it is not well understood that the teaching of medicine, as of other subjects, is a process in human relations in which both the giver and the receiver must participate. The working seminars on human relations and medical teaching, organized in the Americas for professors of various medical schools, were designed to help solve this problem, which is of interest not only to Latin America, but also to other parts of the world.

An expert committee made recommendations on the problem of orienting medical education towards the needs of the community by taking full advantage of existing health facilities, other than hospital wards, for teaching.

Following a number of regional meetings of representatives of schools of public health—particularly in the Americas and Europe—and a series of expert committees, an inter-regional conference of directors of schools of public health met in Geneva to review the question of public health training for physicians, a subject of primary importance for building up national health services.

The following figures bear witness to the emphasis WHO is giving to education and training. During the year, as many as 2576 fellowships were awarded for study. In addition, fellowships allowed 547 participants to attend educational meetings organized by WHO, while 168 long-term teaching staff were assigned to various educational institutions at the request of the countries concerned. One of the very serious limiting factors in efforts aimed at increasing public health and medical manpower in most countries is the shortage of teaching staff. It is hoped, therefore, that academic careers, particularly in the basic medical sciences, will be made more attractive to doctors, especially in the developing countries, with possibilities for special advanced studies abroad available through WHO fellowships.

Allied to the central problem of medical manpower is the question of assessment of the equivalence of medical degrees awarded in different countries. Accordingly, the Nineteenth World Health Assembly requested that a study be made of this matter. The co-operation of all Members was immediately sought and a preliminary report is being prepared, based on the replies so far received, for the consideration of the Twentieth World Health Assembly.

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The lack of adequately qualified personnel is also an important reason for the unsatisfactory environmental health conditions still obtaining in all too many countries. Yet it has long been recognized that improved sanitation resulting from the provision of safe and adequate water supplies is the best known measure for controlling a number of communicable diseases. These considerations have led the Organization to assign major importance to the training of sanitary engineers and sanitarians.

Thanks to the financing by the United Nations Development Programme of pre-investment engineering studies, an increasing number of countries are preparing to obtain long-term loans for the construction of waterworks and sewerage systems.

A good example of this type of project promoted and assisted by WHO is the preparation of a master plan for water supply, sewerage and drainage in the Calcutta Metropolitan District, which was completed in 1966. The significance of this project for this great Asian city and for other parts of the...
world is tremendous: with the introduction of safe water supplies and efficient disposal of human and other wastes, health conditions are bound to improve greatly in one of the world's major foci of cholera.

The magnitude of the work planned is considerable since, in the opinion of WHO consultants who surveyed the situation in 1960, the only realistic approach to the problem was to undertake a complete reconstruction of the water supply and waste disposal systems involving a long, arduous and costly effort calling for vision and leadership on the part of the authorities.

Jointly financed by the United Nations Development Programme (Special Fund) and the Government of India ($722,600 and $481,831 respectively) the work carried out during the past three-and-a-half years covered three main areas: the preparation of engineering recommendations for a long-term improvement programme and intermediate and short-term action; establishment of an authority entrusted with powers to operate the water supply and sanitation facilities on a business-like basis; and the initiation of negotiations on financing the actual construction.

The first phase of the water supply, sewerage and drainage improvement plan, with a cost estimated at $40 million, should be completed under the Government's fourth five-year plan. The cost of carrying out the entire master plan was estimated by the WHO consulting engineers at $455 million, and would include works to meet sanitation and other requirements of the area until the year 2000.

Research has its part to play in the execution of projects such as that in Calcutta. This was one of the points stressed by a scientific group which met during the year to review the latest technical developments for dealing with wastes. The group identified research work that is necessary for supporting an effective waste-management programme.

An expert committee meeting in 1966 concerned itself with health protection for man and his family, both today and tomorrow, through the provision of optimum living conditions within available resources. It recommended practical methods which may be readily applied by governments planning large-scale housing construction, urban renewal or slum clearance programmes.

Until a few years ago, the cost of building and operating nuclear plants was prohibitively high. Recently, however, nuclear power has been able to compete in price with power derived from conventional sources, and this trend is expected to continue. Many new and large power reactors have been completed or are under construction, and in addition a considerable increase is taking place in the use of isotopes in industry, medicine and research. At the same time the possibility of using nuclear power for propulsion in general seems closer to realization. These developments inevitably result in the production and release into the environment of radioactive wastes, and hence in the increased exposure of man to radiation. To meet this far-reaching challenge to public health, WHO has held a number of consultations and has formulated a long-term programme to assist health administrations in taking the appropriate counter-measures.

Among the meetings held during the year in the field of radiation, special mention should be made of the International Symposium on Radioecological Concentration Processes. This symposium was devoted to the theme of the health significance of radioactive contamination of the environment, particularly of crops and other parts of man's food chain, and was organized by the Swedish Royal Academy of Sciences in collaboration with FAO, IAEA and WHO.
In view of the limited resources with which WHO has to meet the continually growing requirements of Member States, it is more than ever imperative that all projects in which the Organization is engaged be planned and executed with maximum efficiency and economy. As WHO is expanding its functions, the need for appraising and evaluating its numerous and varied activities has thus become ever greater. However, we still have to work out the proper methodology for the evaluation of health programmes. Complex questions are involved, including the identification of criteria which, based on past performance, will be used in the formulation of new programmes, the establishment of an information retrieval system for feed-back purposes, health econometrics, and the social impact of health activities. Since its inception, WHO has been conscious of the importance of effective evaluation work. Assistance given by WHO is covered by a plan of operations, including baseline information against which it is possible to assess periodically the degree of achievement of set objectives. The appraisal is of course being done in close co-operation with the countries concerned.

During 1966, the Organization was engaged in methodological evaluation studies related to two major activities—maternal and child health programmes, and the education and training of health personnel. It may be helpful to summarize here the major areas covered by the evaluation of WHO's maternal and child health activities.

To assess the technical soundness of the programmes, fifty-nine projects in thirty-two countries were analysed against the standards laid down in the reports of expert committees. Some of the conclusions resulting from this confrontation are the following: priority is being given to the health of the infant and, increasingly, of the pre-school child; there is a clear trend towards blending preventive and curative services; emphasis is laid on the integration of maternal and child health work into the national health services and co-ordination with other international programmes; there is a growing awareness in training of the need for adequate supervision of auxiliaries and the preparation of key personnel for the overall direction of the work.

These fifty-nine projects were carried out in the countries where the need for assistance was greatest. Because of the relative weakness of the statistical services in most of the countries concerned, it was not possible to arrive at precise determination of the impact of the programme on maternal health and infant mortality and morbidity, but the available evidence is definitely encouraging. On the debit side, the exercise has pointed to the limited geographical scope of the programmes which still leave large areas untouched.

The evaluation study of maternal and child health work is being used as a basis for a similar appraisal of education and training activities, and the lessons learned from these two studies will undoubtedly lead to further improvements in the methodology of evaluation in the health field.

* *

WHO reached an auspicious landmark in its history when on 7 May its Headquarters building—its first permanent home—was inaugurated in the presence of delegates of the Nineteenth World Health Assembly and many distinguished guests. This ceremony took place four years after the foundation stone had been laid during the Fifteenth World Health Assembly, and some eleven years after it had become evident that, with the increase in the Organization's responsibilities, the Secretariat was becoming too large to be housed in the Palais des Nations.
Incorporated in and greatly enhancing the beauty of this building—an impressive symbol in concrete, metal and marble of the unity established by the Organization's Members in their common endeavour—are the individual gifts from more than fifty of those Members. To them the Organization is deeply grateful. Particular gratitude is due to the Swiss Confederation and the Republic and Canton of Geneva for their generosity and assistance throughout; to the Executive Board's Standing Committee on Headquarters Accommodation, under the chairmanship of Professor E. Aujaleu, for the dedication and vision with which they carried out their heavy responsibilities; and, finally, to the Secretary-General of the United Nations for the hospitality WHO enjoyed in the Palais des Nations from the days of its Interim Commission until April 1966.

It is pleasing to record that during the year Singapore and Guyana became Members of the World Health Organization, and that the Organization's total membership now stands at 124 Members and three Associate Members.

My Candau

Director-General
PART I

GENERAL REVIEW
CHAPTER 1

MALARIA ERADICATION

Progress in Malaria Eradication

In the effort to eradicate malaria, progress has continued in a number of countries during 1966, but in some others the development of the programme planned has been delayed, mainly because of financial difficulties; in a few areas programmes are actually in abeyance until further external assistance can be provided.

An assessment of the global malaria eradication programme was made in September by the Expert Committee on Malaria, at a session held in Geneva. The Committee examined the main factors affecting progress; it also reviewed the development of pre-eradication programmes and made further recommendations on the approach to malaria in Africa south of the Sahara, in the light of experience over the last ten years.

In assessing the present status of the malaria eradication programme, the Committee concluded that the achievements justified the aspirations expressed by the Organization. Difficulties had been expected and had occurred: many of them could have been prevented or rapidly corrected; a number had been solved and the Organization was making vigorous efforts to solve others. The Committee recognized that, only eleven years from the first acceptance of the principle, malaria had been eradicated from very large parts of the Americas, the South-East Asia and the European Regions, that in the Eastern Mediterranean and Western Pacific Regions programmes with reasonable prospects of success had been established covering large proportions of the population, and that in only one Region, the African, had virtually no progress been made.

After reviewing and assessing the progress made over the past five years in the forty-two operating malaria eradication programmes assisted by WHO, the Committee classified them as follows.

Twelve programmes, covering a population of 626 million, had progressed satisfactorily and had favourable prospects of eradicating malaria within the planned time-limit. Twenty-two programmes, covering a population of 230 million, were making slower progress and were unlikely to meet their stated target dates for eradication, although prospects for timely completion would be favourable if their plans were to be amended and their implementation improved. The remaining eight programmes, covering a population of only 35 million, had made very limited progress. However, in six programmes in this group, with a population of 17 million, plans had already recently been revised and adequate resources were being mobilized.

When considering the approach to malaria eradication in the African Region, the Committee expressed its conviction that malaria was a most important communicable disease in Africa and that a sufficiently vigorous search could provide solutions to any outstanding technical difficulties. It recommended that high priority should be given to this, and that WHO should continue and increase its stimulation, support and co-ordination of relevant research and assist in setting up operational research projects. The Committee emphasized that the eradication of malaria from Africa was a basic need for the benefit and well-being of the people of that continent, and that the elimination of the vast reservoir of malaria infection would lessen the hazard to other countries.

The Committee recommended that pre-eradication programmes should be implemented in such a way as to constitute a valid step towards eventual malaria eradication and that health administrations of African countries should be urged to give high priority to the inclusion of malaria eradication programmes in the health sector of their governments' overall national socio-economic development plans.

Annex 10 contains a list of the countries engaged in malaria eradication programmes at 31 December 1966, and also those undertaking pre-eradication programmes and other antimalaria operations, with assistance from WHO.

In the African Region, the whole of the island of Mauritius reached the consolidation and maintenance phases (see page 99) and there has been some improvement in the programme in the islands of Pemba and Zanzibar (United Republic of Tanzania). Most of the Cape Verde islands are now reported to be covered by antimalaria activities.

1 The successive phases of a malaria eradication programme are: preparatory, attack, consolidation, maintenance (see Terminology of malaria and of malaria eradication, World Health Organization (1963), Geneva, p. 82).
In the Region of the Americas, Dominica in the West Indies has been entered in the WHO official register as having eradicated malaria. In Peru areas with a population totalling over a million were placed in the maintenance phase and in new areas in Bolivia, Brazil, Colombia and Nicaragua the consolidation phase has been reached. On the other hand, the financial difficulties have continued and little or no improvement has been recorded in Mexico and in a number of countries of Central America. However, funds from bilateral sources have recently been provided for the Central American countries and new plans for the further development of the programmes have been prepared. In Panama an outbreak of falciparum malaria was recorded in May 1966 and in British Honduras the focus of infection which occurred in one district in July 1965 has continued and has made it necessary to resume spraying operations in the area. In Paraguay, which is still in the preparatory phase because of shortage of funds, over ten thousand cases of malaria were reported in the first six months of the year. (For work in Haiti, see page 113.)

In the European Region over 90 per cent. of the originally malarious areas, including the whole of continental Europe, have been freed from endemic malaria. Portugal and Yugoslavia were wholly in the maintenance phase in 1966, as were further areas in Greece. In Turkey the epidemiological situation has improved and a further population of over three million has reached the consolidation phase.

In the South-East Asia Region, progress has been most marked in India, where areas with over half the population of the originally malarious areas have now satisfied the epidemiological criteria for entry into the maintenance phase. Less than a sixth of the population, mainly in border areas, is still in the attack phase. In both Afghanistan and Thailand further areas have reached the consolidation phase and in Nepal new areas have been brought under attack.

In the Eastern Mediterranean Region no indigenous case of malaria has been reported in Israel and Lebanon since 1964 and 1963 respectively. In Iraq and Jordan, the measures undertaken against the re-establishment of transmission in areas in the consolidation phase are proving successful and there has been a significant reduction in the number of cases detected, although local difficulties have hindered full spraying coverage in some areas in Iraq. In Syria outbreaks in 1965 made it necessary for areas in the maintenance phase to revert to the consolidation phase and in some attack operations had to be resumed (see page 136). The situation in Libya was similar. In Iran shortage of funds prevented the full coverage of additional areas in the southern part of the country, from which continual reinfection endangers the areas in the north that are in the consolidation phase. Progress was made in Pakistan, where over half the population has been covered by activities in the attack or consolidation phases and more than nine million people are in areas in the latter phase; but, mainly because of financial difficulties, delays have occurred, particularly in West Pakistan, in extending the programme as had been planned. Preparations have been made to start a malaria eradication programme in the United Arab Republic.

In the Western Pacific Region, the pre-eradication programme in Brunei was converted into a malaria eradication programme at the beginning of 1966 and plans were made for an eradication programme to start in West Malaysia in 1967. Advances have been reported in the other two Malaysian projects: in Sabah over half the population of the originally malarious areas has reached the consolidation phase and in Sarawak nearly half are in the maintenance phase. Progress in the programme in the Philippines has been hampered by administrative and financial difficulties, but new legislation during the year may lead to improvement of the situation.

At the end of 1966, twenty-seven pre-eradication programmes and surveys were in operation, twenty of them on the African continent, and a further seven such programmes were in the planning stage. The programme in Guinea became operational but that in Southern Rhodesia was suspended. In Yemen the programme was in abeyance. In Ethiopia attack operations were started in one area with a population of over three million. In the preliminary operations of these programmes emphasis is increasingly being laid on the development and co-ordination of rural health services under effective supervision. Services of this type have been developed in a demonstration area in Togo where staff of the peripheral services that are supporting the malaria campaign have undertaken smallpox, treponematoses and leprosy control work in addition to the antimalaria activities.

As in the past, many of the malaria programmes were assisted by various agencies. UNICEF provided supplies for twenty-five programmes, eighteen of them in the Americas; it also gave assistance for the development of rural health services, thus furthering the progress of malaria pre-eradication programmes. Unfortunately UNICEF was not able to continue its assistance to the eradication programmes in Jordan and Syria. The United States Agency for International Development (USAID) provided assistance to fifteen programmes and to the international malaria eradication training centre in Manila.

Since August 1966 the World Food Programme has made food allocations in connexion with the
malaria eradication programme in Turkey; these may make employment conditions more attractive for the lower paid staff of the malaria service.

A detailed progress report on the malaria eradication programme in 1966 will be presented to the Twentieth World Health Assembly in May 1967.¹

Training in Malaria Eradication

As the malaria eradication programme in the state of São Paulo is so advanced that it offers little scope for the demonstration of techniques, plans have been made to transfer the malaria eradication training centre from São Paulo to a part of Brazil where the situation will be more suitable for field training. The four international malaria eradication training centres at Lagos, Lomé, Manila and Maracay have continued to train both national and international personnel for the malaria eradication and pre-eradication programmes in various parts of the world. In addition to regular courses for professional and technical staff, special courses were held for public health administrators from the Philippines and Thailand and for auxiliaries from the Democratic Republic of the Congo. Seminars and courses on advanced malaria epidemiology were held in Adana (Turkey) for participants from the Eastern Mediterranean and European Regions, and in Lomé, Manila, and Maracay.

The national training centres in Ethiopia, India, Indonesia, Iran, Mexico, Pakistan and Sudan have continued their work in close cooperation with WHO, many of them accepting trainees from other countries. The normal in-service training of technical and auxiliary personnel in national programmes has also continued with the assistance of the WHO malaria advisers.

For a number of the courses, both in the international and national training centres, it has been difficult to obtain suitable candidates, particularly from countries undertaking pre-eradication programmes where the demand for such personnel is very high.

Evaluation

In addition to the special evaluation of the WHO-assisted malaria eradication programmes carried out by the Expert Committee on Malaria in September 1966 (see page 3), regular annual reviews of programmes by experts not closely connected with their implementation have continued. Representatives of international and bilateral agencies and of the governments concerned assessed the programmes in Afghanistan and in countries of Central and South America and the Caribbean area. In India and Pakistan the Governments, with the assistance of WHO, carried out an annual review of the programme, with particular reference to the areas considered ready for transfer from the attack to the consolidation phase and from consolidation to the maintenance phase.

Methods for estimating the response to attack operations early enough in a national programme to permit the timely adoption of any necessary alternative or supplementary measures were described in the tenth report of the Expert Committee on Malaria,² and were further developed in the twelfth report.³ The Committee's recommendations are being followed up in the field.

Certification and Registration of Eradication

Epidemiological criteria for confirmation of malaria eradication were discussed by the Expert Committee on Malaria in July 1960,⁴ and further recommendations were made in the Committee's tenth report,⁵ and also in the twelfth report,⁶ which stressed the necessity for regular epidemiological follow-up in order to ensure the continued maintenance of the malaria-free status after eradication has been certified.

Following a review of the existing mechanism for certifying malaria eradication, it was decided that independent advice on the registration of each country is essential; in future, therefore, the documentation relating to certification will be submitted to the Expert Committee on Malaria, for a recommendation regarding the inclusion of the country in question in the official register of areas from which malaria has been eradicated. Countries already on the official register are being requested to report twice yearly on the maintenance of the eradication status.

The importance of such a periodic reporting system, based on effective vigilance by the public health service in areas from which malaria has been eradicated, is emphasized by the resurgence of malaria in Tobago in 1966, after a malaria-free interval of thirteen years. After initial delays in recognizing the disease, rapid public health action was able to confine its spread.

During the year the island of Dominica was entered in the official register. The malaria eradication status of a number of countries in Europe was reviewed as a preliminary to the procedure for considering whether malaria eradication should be certified.

Research

With a view to improving the techniques employed in malaria eradication and solving the technical difficulties encountered, the Organization has continued to stimulate and co-ordinate malaria research undertaken in numerous institutes and it has also carried out field trials of insecticides (see also page 21), drugs and equipment.

During the first nine months of 1966 thirty-two research agreements were concluded between WHO and institutes in eighteen countries for studies on parasitology, epidemiology, immunology, chemotherapy, and entomology in relation to malaria. These studies included investigations into the longevity of the parasite in the host, particularly of *Plasmodium falciparum* which, in Africa, seems to have a longer life in the semi-immune population than was previously believed; an assessment of the degree of immunity in various age-groups in populations in highly endemic malarious areas in Africa; research on the use of special immunological methods for detecting small quantities of malarial antigen, which may be of considerable assistance in field investigations; and the application of immunological methods for differentiating closely allied species of malaria parasites and possible distinction of their strains with a view to facilitating the detection of asymptomatic infections. Studies have been undertaken on the separate identifiable antigens of rodent malaria parasites so as to assess the type of immunological response they elicit; on the serological responses to experimental infection of simian and rodent hosts with malaria parasites; and on the distribution, parasitology and epidemiology of simian malaria in Brazil, Ceylon and China (Taiwan).

Work has continued on the synthesis of new potential antimalarial compounds and also on the isolation and purification of antibiotics of fungal origin which may have antiprotozoal activity. The chemotherapeutic evaluation and toxicity testing of such compounds is a slow process entailing initial screening with avian malaria parasites, followed by trials against plasmodia of small mammals and eventually against simian malaria, before the compounds can be tried in man.

In order to develop methods that might assist in the screening of antimalarial drugs, work has been undertaken on the cultivation of blood forms of plasmodia *in vitro* and on the isolation of plasmodia of small mammals. Suitable laboratory animals are infected with these plasmodia and a complete transmission cycle through a vector is attempted. Other studies are aimed at the improvement of screening methods using the parasites of avian malaria.

In an attempt to elucidate some of the fundamental facts in the development of drug resistance, work has been undertaken on the metabolic degradation and excretion of 4-aminquinolines.

Studies have continued on the differentiation and mapping of the distribution of the various complexes of vector mosquitoes of Africa, India and Malaysia. Within some of these complexes, whose several members may exhibit differing behaviour patterns and have different vectorial status, no reliable morphological character for differentiating them has been found. Accordingly, this has to be done in a central reference laboratory, by crossing the progeny of wild-caught mosquitoes with laboratory strains representing known members of the group, and dissecting the resulting hybrids to determine whether they are fully fertile or partially sterile. Alternative means of species diagnosis may sometimes be offered by comparison with specific chromosome maps or the application of chromatographic-fluorometric techniques, recent research having yielded advances in both these methods.

In order to provide a method for the representative sampling of vectors at low densities, which is required for the assessment of their vectorial capacity in sprayed areas, studies have been carried out in a number of areas on the utility of various types of light traps. Work has also been started on the methods of measuring the expectation of life of anopheles species in the field and on the dry season biology of *Anopheles gambiae*.

In the field trials of newer insecticides which have passed through the earlier stages of the WHO collaborative programme of evaluation (see page 21) those with OMS-33, a carbamate, in El Salvador are to continue, but the trials with OMS-43, an organophosphorus insecticide, in Nigeria, were terminated. Although the use of OMS-43 reduced new infections, the formulation supplied varied with each shipment and it was not found possible to evaluate its true effectiveness. Work to standardize the formulation is required before further large-scale field trials can be undertaken. The area in Northern Nigeria previously used for field trials of insecticides is a typical savanna zone where, as yet, an effective method of interrupting transmission of malaria has not been developed. A field trial was started in this area at the end of the year to assess the effectiveness of mass drug administration at appropriate time intervals combined with residual spraying. Other field trials in the use of various regimens for radical treatment have been undertaken in Colombia to ascertain whether the length of treatment may be shortened. In Senegal a trial was started of some
4-aminoquinoline derivatives presumed to have a longer duration of action.

The Horton Malaria Reference Laboratory at Epsom, England, was designated during the year as a WHO Regional Malaria Reference Centre.

Meetings and Publications

A co-ordination meeting on international preventive measures against the re-establishment of malaria in areas where the disease has been eradicated was held in Washington D.C. in November.

Other meetings sponsored by the Organization included the fourteenth meeting of directors of national malaria eradication services of Central America, Mexico, Panama and the Caribbean islands, held at San José, Costa Rica; the third meeting of the Co-ordinating Working Group of the Malaria Eradication Programmes of Central America and Panama, held at Guatemala City; the sixth meeting of directors of national malaria eradication services of South America, held in Venezuela; and inter-country co-ordination and border meetings between Brazil and Paraguay; Jordan, Lebanon and Syria; Syria and Turkey; Burma, India and Pakistan; and Algeria, Morocco, Spain and Tunisia.

A map showing the epidemiological assessment of malaria throughout the world was issued in the *Weekly Epidemiological Record*, together with information on the epidemiological status of malaria in areas in the consolidation and maintenance phases, the origin of imported cases, and localities from which reports have been received of cases of falciparum malaria apparently resistant to 4-aminoquinolines. Other information given included the official register of areas where malaria has been eradicated and a supplementary list of malaria-free areas.

An issue of the *Epidemiological and Vital Statistics Report* contained tabulations of the cases and deaths due to malaria for each year in the decade 1955-1964 and the number of cases by sex and age in the latest year for which adequate data were available.

Articles on various aspects of malaria eradication and on the results of malaria research stimulated by the Organization have appeared in the *Bulletin*.

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CHAPTER 2

COMMUNICABLE DISEASES

In addition to work directed to the control of specific communicable diseases and to research on them, described under the relevant headings in this chapter, the Organization has concerned itself with the overall aspects of the epidemiology and of the control and prevention of communicable diseases and with assistance to countries in these fields.

Provision of facilities for training in epidemiological methodology is an important part of this activity. Advanced courses, concentrating on the epidemiology of communicable diseases prevalent in tropical areas and including training in statistics, have been organized for medical officers from developing countries. The course in the academic year 1965-1966 was held in Edinburgh, Prague and Zagreb and was chiefly for participants from the South-East Asia Region; the next, which started in Prague in November 1966 and will finish in New Delhi with three months' practical training in communicable disease prevention and control, was attended also by participants from the Americas and the Eastern Mediterranean Region.

Progress has also been made in the development of epidemiological surveillance of communicable diseases. The first results obtained in collaboration between various WHO programmes and the WHO Serum Reference Banks demonstrated how useful even these preliminary steps of surveillance are for the planning, application and assessment of measures for the control of communicable diseases in individual countries.

In the field, measures against a number of diseases are being taken simultaneously. An example of such a combined operations approach to communicable diseases is the treponematoses project completed during the year in Togo which included leprosy and smallpox control activities. In the course of this project, some 6000 cases of leprosy were diagnosed, and more than 900,000 primary smallpox vaccinations and 200,000 revaccinations undertaken. This is indicative of the potential contribution which combined projects can make to WHO-assisted smallpox eradication programmes are being planned, strengthened, or reorientated.

A guide published in the Monograph Series outlines the general principles on which controlled field trials of prophylactic agents should be based, and ways in which errors can be avoided and sources of bias eliminated.

Epidemiological Surveillance

The first reports of examinations of many thousands of blood sera obtained in five countries (Nigeria, Pakistan, the Philippines, Thailand and Togo) were prepared and distributed to interested workers in institutions and health administrations. The sera from four of these countries were collected by WHO treponematoses epidemiological teams during evaluation surveys following mass anti-yaws campaigns (see page 26). These epidemiological serological investigations have now been further developed into broader immunological investigations and pilot schemes include inter alia malaria, arbovirus and other virus diseases, immunohaematology and human genetics.

Specially designed multipurpose serological surveys were under way during the year in Afghanistan, Iraq, Kenya and Mongolia. This multiple approach, together with the methodological aspects of sampling which are also being studied, is in keeping with the orientation given to the epidemiological research programme by the Nineteenth World Health Assembly.

The results of antibody determinations for yaws, pertussis, diphtheria, poliomyelitis, measles and streptococcal infections and immunological patterns in these diseases have been analysed. The information thus obtained includes evidence of relatively high prevalence rates of diphtheria and streptococcal infections in tropical countries in which data from morbidity reporting are deficient. Information was also obtained on immunological age patterns for poliomyelitis and measles infections. This may influence decisions on the type and extent of vaccination programmes at present under consideration.

The WHO Serological Reference Centre for Treponematoses at the Statens Seruminstitut, Copenhagen, and the Serum Reference Banks at the Institute of Epidemiology

ology and Microbiology, Prague, and at the Department of Epidemiology and Public Health of Yale University School of Medicine have been responsible for storing and examining these sera.

To obtain information as to threatened areas a global survey was initiated during the year of the distribution and density of *Aedes (Stegomyia)* species and a large number of laboratories and individual researchers have agreed to provide or are providing information to the Organization (see page 22). In addition, the Serum Reference Bank at Yale University completed a serological survey on Brazilian volunteers, which has resulted, *inter alia*, in new knowledge on the distribution of arbovirus infections in Brazil.

Mosquito-borne haemorrhagic and dengue-like fevers continued to spread in the South-East Asia and the Western Pacific Regions, and surveillance and research on these diseases were continued.

**International Quarantine**

The reporting of cholera El Tor in Iraq, in August, was followed by the now familiar chain-reaction of excessive sanitary measures by neighbouring countries, as happened when Iran reported an outbreak in 1965.

Prohibition of entry by land, sea and air was applied not only to travellers arriving from Iraq, but also to travellers from other countries where cholera was reported. Airlines, faced with nearly impossible operating conditions owing to the excessive sanitary measures, cancelled some flights and rerouted others. Aircraft were subjected to disinfection and disinsection as a matter of routine. The “Orient Express” train, proceeding westward to Europe from Baghdad with seventy passengers, was stopped at an international frontier. Shipping in the area was partially paralysed. The “infected local area” concept provided for in the International Sanitary Regulations was completely disregarded, and entire countries were considered as infected. Trade and travel in the area were seriously affected.

Repeated and urgent requests by the Organization to States to withdraw measures exceeding the provisions of the Regulations were only partially successful.

Elsewhere, cholera continued to be reported in most of the countries of Asia previously infected (see page 30) but it was not reported in Afghanistan, the Republic of Korea, Iran or the Union of Soviet Socialist Republics, where cases occurred in 1965.

Plague infection was reported in two countries of Africa (the Democratic Republic of the Congo, and Madagascar), four countries of South America (Bolivia, Brazil, Ecuador and Peru), three western states of the United States of America (Arizona, California and New Mexico) and three countries of Asia (Burma, India and the Republic of Viet-Nam).

Yellow fever was not reported in Africa during the year, but cases were reported by six countries in South America (Argentina, Bolivia, Brazil, Colombia, Peru and Venezuela). Addis Ababa and the area in a radius of twenty kilometres from the centre of the city were removed from the yellow-fever endemic zone, being at an altitude of more than 2000 metres (approximately 6600 feet), where *Aedes aegypti* mosquitoes are not found.

Variola minor entered the United Kingdom of Great Britain and Northern Ireland some time before mid-February; the origin was not found. The first recognized cases were discovered early in May. Areas in four counties in England were affected, seventy-one non-fatal cases being reported. The United Kingdom became free of smallpox infection in mid-August. See also page 11.

The Mecca Pilgrimage in 1966 (year 1385 of the Hegira) was again free from quarantinable diseases.

Only minor difficulties were reported in the use of the two vaccination certificates amended by the Eighteenth World Health Assembly. For the International Certificate of Vaccination or Revaccination against Yellow Fever, the maximum period of validity has been extended from six to ten years. The new vaccination certificate against smallpox came into force on 1 January 1966 and was widely used during the year; its use is obligatory for all vaccinations or revaccinations performed after 31 December 1966.

A completely revised geographical index of the WHO Epidemiological Cable Code (CODEPID) was issued and revisions of the CODEPID Map Supplement for the Ivory Coast and Zambia were published in the *Weekly Epidemiological Record.*

A third annotated edition of the International Sanitary Regulations was issued, containing the amended text of the Regulations as in force at 1 January 1966 and interpretations approved by the Health Assemblies on the recommendation of the Committee on International Quarantine. Annexes give details of the position of States under the Regulations, a statement of the obligations of health administrations, recommendations on the disinsection of aircraft and other relevant information.

Co-operation with ICAO, IMCO and the International Air Transport Association continued on matters of common interest concerning the International Sanitary Regulations.

The Organization assisted in the work of a special advisory committee appointed by the Surgeon General to make an independent examination of the foreign...
quarantine activities of the United States Public Health Service.

Smallpox Eradication

New impetus was given to the world-wide smallpox eradication programme by a decision of the Nineteenth World Health Assembly \(^1\) to provide for an intensified and co-ordinated global effort in which the Organization's participation would be financed from its regular budget.

The Assembly at the same time urged countries that were planning to strengthen or initiate smallpox eradication programmes to take steps towards doing so as soon as possible, and requested Member States and multilateral and bilateral agencies to provide material support.

In pursuance of the resolution the Organization undertook a comprehensive review of existing measures for smallpox eradication. Regional plans were developed in the Regions of Africa, the Americas, South-East Asia and the Eastern Mediterranean, and the Organization collaborated closely with endemic countries in drawing up or adapting and co-ordinating plans. Where necessary this phase included estimates of resources and assistance needed and draft plans of operation.

In the planning of activities, emphasis was placed on five important components: an operational methodology adequate to ensure maximum vaccination coverage of the population; an assessment scheme, to evaluate coverage of the population, effectiveness of vaccination and progress of activities; surveillance, to make possible assessment of the epidemiological situation, follow-up action in border and operational areas, and vigilance against recrudescence in smallpox-free areas; an adequate supply of freeze-dried vaccine (including assistance with vaccine production); and maintenance of the vaccination status of the population. The basic health services of a country play an extremely important role through their active participation in the development of these prerequisites for eradication, and especially in maintaining the results achieved. In most countries the smallpox eradication programme is in fact being developed as an integral part of the existing public health services.

With the object of ensuring that the resources of the endemic countries would be supplemented by the international support envisaged in resolution WHA19.16, a copy of that resolution was sent to the governments of a number of non-endemic countries and they were invited to contribute to the programme through WHO or on a bilateral basis. An example of such support is that provided by the Government of the United States of America, which has offered bilateral assistance for combined smallpox and measles vaccination programmes in nineteen countries in West and Central Africa. As another example, the Government of the USSR has provided direct assistance to several countries (including supplies of freeze-dried vaccine to Afghanistan, Burma, India and Zambia) and has undertaken to provide 75 million doses of vaccine to WHO during the years 1967 to 1969.

During 1966 WHO continued to assist and co-ordinate research activities related to the eradication programme. Laboratory testing of various smallpox strains was carried out in the United Kingdom, and in the latter half of the year freeze-dried smallpox vaccine produced in tissue culture was tested in West Africa for stability and effectiveness under tropical field conditions. Small-scale field studies were started to test the effectiveness of certain types of hand-operated jet injectors for mass smallpox vaccination.

Close collaboration has been maintained with other organizations regarding assistance to the eradication programme: they include UNICEF, which jointly with WHO is assisting in the production of freeze-dried smallpox vaccine in several countries; the World Food Programme, which has offered to assist smallpox eradication by providing food commodities if so requested by endemic countries; and the League of Red Cross Societies. At its session in October the League's Executive Committee urged national Red Cross societies in smallpox-free countries to influence public opinion in their countries to provide, in their own interest, substantial help to endemic countries; and recommended national Red Cross societies in smallpox endemic countries to participate in the national smallpox eradication programmes.

In the African Region, where smallpox is endemic in most of the countries south of the Sahara, Dahomey, the Democratic Republic of the Congo, Mali, Niger, Nigeria, Uganda and the United Republic of Tanzania reported large numbers of cases in 1966. The Organization has co-operated closely with the United States Public Health Service in planning and developing programmes in countries in West and Central Africa to which the United States Government is offering considerable assistance. During 1966 WHO directly assisted control or eradication programmes in Liberia, Mali, Nigeria, Sierra Leone and Togo, all of which are now included in the United States bilateral assistance programme. It also provided advice to countries in both West and East Africa and assisted in the co-ordination of activities of individual countries. In the Democratic Republic of the Congo preparations

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\(^1\) Resolution WHA19.16.
were made for the implementation of a WHO-assisted programme early in 1967.

An assessment of the overall situation in the Region of the Americas made by the Organization early in 1966 emphasized the need for intensification of the programmes, with international assistance, in Argentina, Brazil (still the main endemic country in the Region), Colombia, Paraguay, Peru and Uruguay. It also confirmed the need for the continuation or establishment of maintenance programmes and epidemiological surveillance in smallpox-free countries bordering on countries where the disease still exists. The programmes in individual countries are to be synchronized over periods not exceeding five years. During 1966, vaccination programmes were intensified in Paraguay and Peru, where smallpox has again become endemic in certain areas, and the programme in Bolivia was continued. The Organization is providing the necessary equipment for the national programme being prepared in Brazil and gave assistance with two courses on laboratory methods for smallpox diagnosis. Substantial amounts of freeze-dried vaccine are being produced in several countries of the Region.

Almost 70 per cent. of the world incidence of smallpox is reported from the South-East Asia Region, where Afghanistan, Burma, India, Indonesia and Nepal are the main endemic countries. In Burma, where an eradication programme is in progress, substantial reduction in the number of cases has been observed during the past three years. In India the attack phase, as it moved towards completion, took the form of intensive mopping-up operations, and in Afghanistan and Nepal the WHO-assisted programmes were expanded. A regional seminar on smallpox eradication was held in Delhi in December.

In the European Region, which is free from endemic smallpox, the United Kingdom reported seventy-one cases of variola minor between February and August 1966 (see also page 9).

In the Eastern Mediterranean Region, major endemic foci remain in Pakistan, Sudan and Ethiopia. Despite the large number of vaccinations performed throughout Pakistan, where freeze-dried smallpox vaccine is being produced, many cases were reported in 1966, and in East Pakistan the number sharply increased. WHO assisted Pakistan and Sudan with planning eradication programmes for 1967. Ethiopia is expected to start a programme in 1968.

In the Western Pacific Region, which is free from endemic smallpox, maintenance and surveillance activities will have to be intensified in countries which have only recently become smallpox-free or which are adjacent to endemic countries. In October, when seven cases of smallpox were reported in Sarawak, East Malaysia, an intensive mass vaccination campaign was carried out immediately, WHO supplying freeze-dried vaccine donated by the Philippines.

The first regional reference centre for smallpox was established (see page 12).

**Virus Diseases**

Recent advances in virology and the development of the WHO programme in virus diseases over the last five years were reviewed by a scientific group which met in October to advise on the future programme in this field.

The group considered that the programme should in general continue along the lines already established. It made specific recommendations on the further development of the system of WHO virus collaborating laboratories and on means to bring virologists in national laboratories into closer relations with virologists in regional reference centres; on the extension of the reagents programme to include respiratory virus antigens and cell lines; on the continuation of ecological studies on arboviruses and the further development of epidemiological studies on trachoma; and on the promotion of studies of viruses in water. It considered that WHO should continue to develop its unique opportunities for the study of virus vaccines in field conditions and specifically mentioned long-term studies of immunity in populations vaccinated against poliomyelitis; studies on respiratory and arbovirus vaccines; and further studies on measles vaccines.

The network of WHO international and regional virus reference centres now consists of thirty centres, situated in twelve countries: two for influenza viruses, eight for other respiratory viruses, seven for enteroviruses, nine for arboviruses, and one each for smallpox viruses, trachoma agents, rickettsiae and mycoplasmas. They have continued work on the identification of viruses and the provision of prototype virus strains and diagnostic sera, and have also provided advice to national virus laboratories and assisted in the examination of specimens during epidemics and in the training of virologists; they have co-operated with the Organization in the planning and execution of long- and short-term projects on specific problems in association with eight WHO virus collaborating laboratories, situated in six countries, and with interested field and clinical workers.

Towards the end of 1965 the Epidemiological Research Unit at the Fairfield Infectious Diseases Hospital in Melbourne, Australia, was designated a Regional Reference Centre for Respiratory Virus Diseases other than Influenza, and the Regional Reference Centre for Arboviruses in Canberra was transferred to the Queensland Institute of Medical Research, in Brisbane. During 1966 the International
Reference Centre for Respiratory Virus Diseases other than Influenza, at the United States National Institutes of Health, in Bethesda, was also designated as an International Reference Centre for Mycoplasmas. It will have a special interest in human strains of Mycoplasma and, with the collaboration of the regional virus reference centres—most of which are concerned with mycoplasmas, especially those which cause acute respiratory disease—will provide services for national laboratories working on the subject. These centres will collaborate with similar centres for animal strains of Mycoplasma when they are set up by the appropriate bodies. The Research Institute of Virus Preparations in Moscow—which has been contributing to the Organization's smallpox research and eradication programmes—was designated as the first Regional Reference Centre for Smallpox.

Following are examples of the varied work done by the centres and collaborating laboratories in co-operation with the Organization. The World Influenza Centre, in London, received from laboratories in sixteen countries 138 strains of influenza viruses A and B for detailed study, and distributed 257 cultures of influenza viruses, adenoviruses and other viruses to laboratories in twenty-eight countries. The International Influenza Centre for the Americas supplied cultures to over 150 laboratories, antisera to over 200, and antigens to about 170. In addition, kits of reagents for the laboratory diagnosis of influenza were prepared by this centre and issued to the seventy-six national influenza centres recognized by WHO. The two International Reference Centres for Respiratory Virus Diseases other than Influenza (at the United States National Institutes of Health, Bethesda, and the Common Cold Research Unit, Salisbury, England) issued 479 cultures of viruses or mycoplasmas and 1100 specimens of serum. One of the Regional Reference Centres for Respiratory Virus Diseases other than Influenza distributed virus strains and antisera to laboratories in ten countries, and one of the Regional Reference Centres for Enteroviruses distributed 420 cultures of viruses to eleven countries and more than 290 ampoules of antisera to ten countries.

The Regional Reference Centre for Arboviruses at the Institute of Poliomyelitis and Viral Encephalitides in Moscow isolated thirteen strains of virus from cases of haemorrhagic fever with renal syndrome in three endemic areas in the USSR; the centre at the Pasteur Institute in Dakar assisted arbovirus laboratories in other parts of Africa to identify the strains they had isolated; the centre at the Virology Section of the Communicable Disease Center in Atlanta, United States of America, worked on the identification and characterization of 300 viruses obtained by field investigation; and at the centre at the National Institute of Health in Tokyo the studies on Japanese encephalitis and on vaccines against the disease were continued.

Two meetings of directors of WHO virus reference centres were held in Moscow in July, prior to the International Congress for Microbiology. At the meeting of directors of WHO reference centres for enteroviruses and respiratory virus diseases the year's work was reviewed and new collaborative studies were proposed; special attention was given to influenza, and to the diagnosis of smallpox in countries normally free from the disease. At the meeting of directors of arbovirus reference centres, discussions were held on the provision and testing of reagents (including non-infectious antigens which can be freely distributed between countries), research on tissue cultures, the provision of aid in epidemics when requested, the use of serological surveys, special collaborative studies, and the institution of a scheme of reporting similar to that in operation in the other centres. Means of protecting laboratory workers were also discussed.

Several papers on rickettsioses were published in the Bulletin. For work on comparative virology, see page 35.

Quarterly Report on Virus Infections

The scheme for the collection and dissemination of information on virus infections was extended in 1966, when eleven further laboratories—in Argentina (Cordoba), Austria (Vienna), Belgium (Brussels), Bulgaria (Sofia), Indonesia (Bandung), the Netherlands (Leiden), Romania (Bucharest), Switzerland (St Gall), Thailand (Bangkok) and the United States of America (Yale University, New Haven, and New York)—agreed to provide regular information in addition to the reference centres and the national laboratories already taking part in the scheme. In the first half of 1966, 9850 reports of virus infections diagnosed in laboratories were received (compared with 16 086 for the whole of 1965). More national laboratories are to be included in the scheme and the amount of epidemiological information is to be increased. Hitherto the work of arbovirus laboratories has not been included, but it was agreed at the meeting in Moscow of directors of arbovirus reference centres that a similar scheme should be set up for these centres and other arbovirus laboratories willing to co-operate.

Reagents Programme

The provision and testing of reagents (strains, antigens and antisera) continued to occupy a large place in WHO's activities on virus diseases and in the work of the reference centres. In the programme for the provision

of large amounts of equine antisera for enteroviruses, the WHO reference centres and collaborating laboratories continued tests with homologous, homotypic and heterotypic viruses. Tests of equine antisera for sixteen enteroviruses have almost been completed and have shown that titres against homologous and homotypic strains are high and titres of heterotypic antibodies in the few sera in which they are present are very low. These antisera have been distributed to the reference centres for use in the centres and for limited distribution to other competent laboratories. Antisera for seventeen other enteroviruses have now been prepared and are to be submitted to similar tests.

Co-operative studies continued at five virus reference centres for the preparation (in ferrets) and testing of reference antisera for some of the more recently identified respiratory viruses and *Mycoplasma*.

Increasing demands are being made on the arbovirus reference centres to provide reagents for the preliminary identification of arboviruses isolated in national laboratories. Polyvalent hyperimmune mouse ascitic fluids are being produced in increasing quantities by the WHO International Reference Centre for Arboviruses at Yale University School of Medicine, United States of America, and made available to the regional reference centres, and the comprehensive cross-testing necessary to ensure specificity of these sera is now being carried out. Already some of the grouping sera are available for distribution by the centres and some types of specific antisera and ascitic fluids may be provided for research purposes in special circumstances. Inactivated antigens for the group A arboviruses (mostly prepared in Moscow) are available through WHO, and antisera for some of the B group are being prepared.

Further lots of the highly specific monkey enterovirus antisera prepared at the National Institutes of Health, Bethesda, United States of America and the adenovirus antisera prepared in horses at the Communicable Disease Center, Atlanta, United States of America were tested under conditions of long storage and elevated temperature by the WHO Virus Collaborating Laboratory, Standards Laboratory for Serological Reagents, Central Public Health Laboratory, London, and the World Influenza Centre. The results were in general very satisfactory and altogether forty-seven of these antisera were established by the Expert Committee on Biological Standardization as international reference reagents.

**Respiratory Viruses**

In 1966 influenza occurred in many parts of the world but, generally speaking, there were no large epidemics. Laboratory diagnoses showed that both virus A2 and virus B were responsible for cases in Bulgaria, Canada, Denmark, the Federal Republic of Germany, France, Hong Kong, the Netherlands, Norway, Romania, Sweden, the United Kingdom, and the United States of America, but in these countries more cases were due to virus B than to virus A2, except in Norway where most of the cases were due to virus A2. Virus A2 only was reported from Australia, Finland, Indonesia, Switzerland, Thailand and Trinidad, as well as from Scotland and California. Virus B only was reported from Eastern Germany, Hungary, Japan and the Union of Soviet Socialist Republics.

Most of the influenza A2 viruses investigated during the last two years differ significantly from the original 1957 strains. Strains of virus A2 isolated in 1957 show little or no cross-reactions in some tests with strains of virus A2 isolated in 1966, but do react to a variable extent with intermediate strains. Antigenic changes among type B viruses do not show a regular progression and, unlike the A viruses, different antigenic variants of B viruses may circulate concurrently for long periods in the same geographical area.

These facts are being taken into consideration in the choice of strains for the preparation of vaccines and diagnostic reagents. They were discussed at the Moscow meeting of directors of WHO reference centres for enteroviruses and respiratory virus diseases, and it was recommended that an extensive comparative study of the antigenic structure of influenza A and B viruses of human and animal origins should be undertaken. This had been started by the end of the year.

A special effort is being made by the Organization to improve the present system of reporting influenza epidemics and to promote the rapid dissemination of early information on new outbreaks. The success of the effort will be indicated by improvements in the speed with which national influenza centres and health authorities report to WHO. Speed is also very important in sending new isolates from the national to the international influenza centres for final characterization.

The collaborative programme to define by serological methods the etiology of severe respiratory virus diseases in children was completed, and the results are being prepared for publication; 528 paired sera were received from eleven groups of collaborators—in Hong Kong, India, Jamaica, Lebanon, Peru, Portugal, Senegal, Singapore, Trinidad, and the United Arab Republic. At the WHO International Reference Centre for Respiratory Virus Diseases other than Influenza, at the National Institutes of Health, United States of America, Bethesda, the sera were examined for antibodies against para-influenza viruses types 1, 2 and 3, respiratory syncytial (RS) virus, influenza viruses A

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1 See *Off. Rec. Wild Hlth Org.* 147, 17.
and B, adenoviruses, *Mycoplasma pneumoniae*, *Coxiella burnetii* and psittacosis/LGV (lymphogranuloma venereum) agents.

In each of the countries the proportional distributions were similar; the preliminary results given in the Annual Report for 1965 were confirmed, and it can be concluded from these studies that RS virus is the most important respiratory tract pathogen of early life in tropical or semitropical areas, particularly in the first two months of life and in cases of bronchiolitis and pneumonia; the para-influenza viruses were next in importance, particularly in cases of croup, but did not show such clear preference for the young infant; influenza and adenoviruses were of moderate importance, while *M. pneumoniae*, *C. burnetii* and the psittacosis/LGV agents were relatively unimportant. This pattern is similar to that which has been observed in temperate climates.

Rhinoviruses—small, ether-resistant viruses inactivated at pH 3.0—are the commonest causes of colds. More than eighty-five serotypes have now been reported. The two WHO International Reference Centres for Respiratory Virus Diseases other than Influenza, at Salisbury, England, and Bethesda, United States of America, prepared a study—in which regional reference centres and other laboratories collaborated—to determine whether all the reported serotypes were or were not separate types. For each strain a specific antiserum was prepared, and each strain was tested against all the antisera. Of the sixty-eight strains examined in this exhaustive study, twelve were found to be identical with others in the study. The remainder were arranged in chronological order of first publication of their isolation and given serial numbers, and some of the antisera prepared are already being used for epidemiological studies; in the United Kingdom this identification scheme has served to identify most of the strains being currently isolated.

Papers describing various studies on respiratory viruses were published in the *Bulletin.*

**Poliomyelitis**

A review of statistical information on poliomyelitis reveals that in Europe, in sixteen countries with good immunization campaigns, the average annual incidence of the disease in the years 1961 to 1964 was reduced by about 99 per cent. compared with the average annual incidence for the five years before vaccination was introduced; in five countries where the programmes are—or were until recently—less satisfactory, the reduction was only about 90 per cent. In North America, Australia and New Zealand the disease has almost disappeared: only 166 cases were recorded in 1964, compared with an annual average of 44 000 between 1951 and 1955. In Africa, Asia and Latin America some countries showed a steep decline in incidence, but in the majority the incidence showed little change, or an increase.

In tropical and semitropical countries poliomyelitis still attacks mainly children in the first four years of life, and it is clear that the disease in these areas is a potential menace that will have to be faced. Following the use of live vaccine in conventional doses, information has continued to accumulate on unsatisfactory seroconversion rates, and WHO is setting up collaborative studies in several countries, with a view to determining the factors responsible.

Studies are also in progress on new strains of type 3 poliovirus which may be more satisfactory than those in use at present for inclusion in live vaccines.

Two papers describing studies on poliomyelitis vaccines were published in the *Bulletin.*

**Measles**

The last report on the WHO-supported comparative studies of attenuated live measles vaccines which have been completed, as well as the results of comparative studies of measles vaccines in a controlled trial in the USSR, were published in the *Bulletin.* A new study was started to compare the USSR vaccine strain with the Schwarz strain. Other new studies were started to determine whether the intradermal injection of smaller doses of vaccine will give antibody responses equal to those obtained when larger doses are given subcutaneously, and to investigate the intradermal administration of combined measles and smallpox vaccines.

**Rubella**

A collaborative study to determine levels of antibody to rubella virus in different age groups (especially women of child-bearing age) in various countries was set up under the technical guidance of the Organization and of the WHO International Reference Centre for Enteroviruses at Baylor University College of Medicine, Houston, Texas. The first part of the study—the standardization of laboratory methods—was completed, and work was begun on the examination of sera. Laboratories in Australia (Melbourne), Canada (Ottawa), Czechoslovakia (Prague), Denmark (Copenhagen), France (Lyons), Japan (Tokyo), Switzerland (Berne), the United Kingdom (London), and the United States of America (Atlanta) have agreed to take

1 Off. Rec. Wld Hlth Org. 147, 18.
part in the full study, and laboratories in Jamaica (Kingston), Singapore, and Trinidad and Tobago (Port of Spain) will also collaborate to a limited extent.

**Arboviruses**

A scientific group on arboviruses and human disease met in Geneva in September to review present knowledge in this field and promising lines of research.

The group expressed the opinion that the term "arbovirus" designates an ecological grouping of viruses and that, if a taxonomic classification of viruses based on properties of the virion only is adopted, another name should be found for viruses belonging to this group. Antigenic relationship provides a practical basis for serological classification of these viruses; there are at present twenty-four groups of antigenically related viruses, as well as a number of still ungrouped viruses. The physical and chemical properties of viruses which had been sufficiently established were reviewed, and new serological, physico-chemical, biochemical and cell culture techniques were discussed.

The importance of arboviruses as producers of human disease in different parts of the world was considered. These diseases fall roughly into three groups: the most common and generally benign, consisting of relatively undifferentiated fevers; haemorrhagic fevers (including yellow fever, which was included in this group because the incidence of haemorrhagic manifestations was considered to be higher than any other serious manifestations); and the meningoencephalitides and meningo-encephalitides.

With a few important exceptions, prophylactic measures for most arbovirus diseases are at present inadequate, owing largely to lack of sufficient knowledge of their epidemiological cycle. Although new vaccines are being developed in several laboratories, vaccines are available at present for only a few arboviruses, and some of these have only a limited application. Control of arbovirus diseases rests mainly on control of the vector.

The epidemic of yellow fever which occurred in Senegal at the end of 1965—the first time the disease had been reported since 1953, when there were two cases—covered the departments of Bamby, Diourbel, and M'Backe, an area of approximately 3000 square kilometres. The epidemic was first recognized on 12 November 1965, when the diagnosis of yellow fever was confirmed by the histopathological study of the liver of a child who had died in Diourbel. Retrospective studies indicate that cases may have already occurred in mid-October.

Altogether, more than 230 cases with 216 deaths were reported, but there is no doubt that many unrecognized cases also occurred. About 90 per cent. of the deaths were of children below the age of ten years, which is an indication of the small proportion vaccinated in this age group in recent years. *Aedes aegypti* was present in large numbers in the epidemic area and, though no virus was isolated from these mosquitoes, epidemiological evidence pointed to this species as the vector of the virus. The epidemic had the characteristics of the urban type of the disease.

As soon as the first case was confirmed, extensive antimosquito measures and a large vaccination campaign were undertaken, the Organization providing 17D-strain yellow fever vaccine and jet injectors. Children under ten years of age were vaccinated with 17D-strain vaccine and children of over ten years and adults with Dakar-strain vaccine. Since the campaign no more cases have been reported.

The reappearance of yellow fever in Senegal after twelve years calls attention to the importance and potential danger of this disease for West Africa. During March and April 1966 the Organization obtained information on the ecological situation in countries potentially at risk in West Africa, established a system for obtaining early information about occurrence of the disease, estimated vaccine needs, and advised health authorities on measures to be taken in the case of an epidemic.

The Organization supported entomological studies on *A. aegypti* in West Africa during the 1966-1967 dry season; the results of these studies will permit a more accurate assessment of the areas at greatest risk. WHO assisted the Pasteur Institute at Dakar—the WHO Regional Reference Centre for Arboviruses—in increasing production of 17D-strain vaccine; the Institute agreed to supply 250,000 doses annually free of charge, at the request of the Organization.

An increase in the number of yellow fever cases was also observed in South America, where only jungle yellow fever is found. In the first half of 1966 53 cases were reported in Argentina (where there had been no cases in the first half of 1965), 59 in Bolivia (where there had been only 19 in the first half of 1965), and 18 in Brazil (where the corresponding figure the previous year had been 12).

A special number of the *Bulletin* was devoted to mosquito-borne haemorrhagic fevers of the SouthEast Asia and Western Pacific Regions.\(^1\)

**Trachoma**

In August 1966 the WHO International Reference Centre for Trachoma (at the Francis I. Proctor Foundation for Research in Ophthalmology, in San Francisco) and the Harvard School of Public Health jointly sponsored a conference in San Francisco.

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\(^1\) *Bull. Wld Hlth Org.*, 1966, 35, No. 1.
on trachoma and related diseases. The conference considered reports presented by fifty experts from eleven countries on recent studies on microbiology, epidemiology, immunology and therapy. Advances were reported in basic knowledge of the characteristics of the group of organisms and of certain aspects of the natural history of trachoma and related infections. However, there were disappointingly few new developments directly applicable at present to the control of trachoma.

Although the trachoma agent has poor antigenic properties, several groups of workers continued their efforts to develop more effective vaccines, and new clinical trials were started. WHO continued to support basic studies being carried out in a laboratory in Jerusalem on the serology and immunology of trachoma. Selective or mass treatment programmes remain the most effective means of controlling trachoma and its disabling sequelae, but there is a suspicion that in certain areas where the tetracycline antibiotics have been widely used over many years the local strains of the trachoma agent may be acquiring partial resistance. This is being investigated. The Organization continued to support studies in Tunis and, more recently, at the WHO International Reference Centre for Trachoma, on improved methods for screening new therapeutic agents. Papers describing the results of various studies on trachoma were published in the Bulletin.1

Parasitic Diseases

Although some advances were made in 1966 in laboratory research on certain of the parasitic diseases, there is again little progress to record in their control. Many of these diseases—among them bilharziasis, filariasis, ancylostomiasis, ascariasis, Chagas’ disease and African trypanosomiasis—are now recognized as serious impediments to economic development, but the number of control projects in operation has remained small in relation to the extent of morbidity. Insufficient knowledge of the transmission of the disease is often an obstacle, but even where means of control are available, lack of funds and trained staff combine to jeopardize even large-scale projects carried out at great sacrifice to the countries concerned. The Organization has therefore concentrated on the assessment of available epidemiological and control techniques and on facilitating discussion and exchange of experience among national officers responsible for parasitic disease control programmes. Advisory and study teams have started operating, and others are being organized, to assist countries faced with the same problems. In order to facilitate the application in the field of discoveries made in the laboratory, increased support has been given for operational research carried out by well equipped centres and institutes in endemic areas. They are testing newly developed substances and techniques resulting from the WHO collaborative research schemes on the chemotherapy of bilharzial and filarial infections, molluscicides and the sero-immunology of parasitic diseases.

Bilharziasis

Cross-sectional and longitudinal studies of communities afflicted by bilharziasis have been continued in Nigeria and the United Republic of Tanzania. Periodic parasitological, clinical and radiological examinations have confirmed previous findings and indicate that the numbers of ureteric lesions are even greater than previously recorded. Techniques and methods are being developed for the purpose of estimating the requirements for prevention of transmission and treatment in order to develop a regimen which could be applied with complete safety on a mass scale. WHO-assisted studies have been started in order to establish radiological criteria for the measurement of lesions of possible bilharzial origin in the urinary tract and cardiopulmonary system and to draw up specifications for radiological equipment that is practical for bilharziasis investigation under field conditions. Following recommendations made by a WHO scientific group, which met in 1965, on the measurement of the public health importance of bilharziasis, support has been given to post-mortem and histopathological studies aimed at a proper assessment of the morbidity caused by bilharziasis in relation to species of schistosome involved and egg load. Studies on the dynamics of bilharziasis transmission have been undertaken by an epidemiological research team in connexion with the WHO-assisted bilharziasis control project in the United Arab Republic (see page 138).

Experiments have been made in three continents to test the effectiveness of various compounds against different snail species and the effect upon molluscicidal activity of such factors as the presence of vegetation, type of soil, turbidity and rate of flow of the water, amount of sunlight, and mineral content of the water. The harmful effects of molluscicides, for instance on young rice-shoots, and on fish, especially where fish is an important source of protein in the diet of the

inhabitants, have been evaluated in field trials. In one country it was found that one of the two species of indigenous fish most commonly used in fish culture is resistant to the molluscicide tested at concentrations that are fatal to snails.

Evaluation of existing molluscicides continued on such aspects as optimal concentration and treatment time intervals. Studies were also carried out on how to increase the contact between the chemical and the snail or its eggs, and on synergistic action with other chemicals such as herbicides, with the object of finding stronger combinations or increasing residual action. Approximately 100 potential molluscicides, including vegetable extracts, were tested during the year. Studies on cercaricidal agents and cercarial repellents were also assisted.

Comparative trials of antimonial drugs used in urinary bilharziasis were completed at the Bilharziasis Chemotherapy Centre, Tanga, which is sponsored by the Government of the United Republic of Tanzania, the British Medical Research Council and WHO. This work has made possible the development of standards of effectiveness for the antimonials which can also be used as a yardstick for the separate evaluation of other drugs.

A series of field trials with nitrothiamidazole (Ambilhar), also conducted at the Bilharziasis Chemotherapy Centre, Tanga, showed a significant difference in cure rates in patients given twice-daily doses as against comparable patients given the same amount of the drug once daily. It is already clear that this drug is a great advance on the antimonials drugs owing to its acceptability by the patient and its high cure rate. It is important to develop regimens which are sufficiently safe and effective to be used in mass treatment, because there is little prospect of effective management of bilharziasis unless mass treatment is combined with snail control and other environmental measures.

Immunological studies supported by WHO included investigation of the behaviour of several strains of schistosomes in animals of various degrees of susceptibility, and studies on heterologous immunity to determine whether, in areas where man is frequently exposed to infection with a variety of schistosomes of mammals or of birds, he may be partly protected against the more serious complications of infection due to schistosomes of man.

The bilharziasis skin test survey in two countries in Africa showed that on the whole the results were in agreement with the findings of parasitological examinations. Three collaborating laboratories, in London, Maebashi (Japan) and Stockholm, have established that a reference skin test antigen distributed by WHO can be used for the complement fixation test. Consequently a start was made on the evaluation of the skin test antigen, and on the specificity and sensitivity of the complement fixation test, by providing these laboratories with large numbers of serum samples collected in various endemic areas from known cases of bilharziasis.

Antigens as well as freeze-dried schistosome material have been provided by the Organization to various investigators throughout the world. A new protein antigen has been isolated from Schistosoma mansoni and another antigen has been prepared in the two collaborating laboratories, in Maebashi and Stockholm. These antigens are being evaluated.

Further assistance to field and research workers has been given by the WHO Snail Identification Centre at the Danish Bilharziasis Laboratory, in Copenhagen.

The Expert Committee on Bilharziasis in December 1966 reviewed very thoroughly recent advances in the epidemiology and control of the disease. The Committee made a number of important recommendations regarding the Organization's future work on bilharziasis and expressed its conviction that WHO should expand its programme of technical assistance to national control projects, and should arrange for a greatly enlarged training programme for all cadres of workers in this subject.

Several papers on various aspects of bilharziasis were published in the Bulletin.1

Filarial Infections

Rapid urbanization and population movements have greatly aggravated the filariasis problem, particularly in developing countries. Large-scale efforts to control filariasis by mass drug treatment and by antimosquito measures have not everywhere yielded the expected results.

At its meeting in September, the Expert Committee on Filaria due to Wuchereria bancrofti and Brugia malayi recommended a number of techniques and methods and pointed out that detailed investigation was necessary of past and present control projects before any extensive control programme could be started, and therefore several years might have to be spent in assembling base-line information. The Committee recommended the extension of research activities, especially studies for the adaptation of Brugia species or W. bancroftii to small laboratory animals in order to facilitate general biological research and the screening of new drugs, and studies in the field of vector ecology, on resistance problems and genetic control methods, and on the development of new insecticides. It pointed to the need for the establishment of

reference laboratories for the identification of parasitological material, for pilot control projects to assess the effectiveness of chemotherapeutic and vector control methods under different epidemiological conditions, and for the development of new formulations of antifilarial compounds. It also stated that more information should be collected on the effects of malaria control activities on the prevalence of filariasis.

In 1966 the Organization provided assistance for a number of long-term investigations, in particular an epidemiological study of *W. bancrofti* in West Africa, of which little is known so far. There are signs that Bancroftian filariasis may also soon become an urban disease in those areas where *Culex pipiens fatigans* has spread in recent years.

Sero-immunological studies have been extended. A newly characterized filarial skin test antigen, prepared by a collaborating laboratory in Maebashi, Japan, is being distributed for evaluation to field and laboratory workers engaged in epidemiological surveys of filariasis. A new filarial protein antigen isolated from *Dirofilaria immitis* has been satisfactorily tried for use with the complement fixation test. Arrangements have been made for the provision of large numbers of serum samples from known cases of filariasis to collaborating laboratories which are evaluating this new antigen.

The problem of onchocerciasis is aggravated by the many projects of water development that are being undertaken, especially in Africa. Information on the distribution and importance of onchocerciasis and its vectors in African countries is incomplete. A survey carried out in one country revealed a high incidence: in eighty out of 230 villages visited in the basin of the Niger and its tributaries, over 80 per cent. of the population were infected and in some villages as many as 16 per cent. of the people were blind.

A regional ophthalmological advisory team was established during the year to assist the countries of the African Region in assessing more accurately the epidemiological situation of onchocerciasis and its local importance. This team made an assessment of the onchocerciasis control scheme which was started in 1954 in Northern Nigeria and discontinued in 1960 after a reduction of the vector population by 83 to 96 per cent. had been achieved.

An epidemiological advisory team on onchocerciasis has begun operating in the inter-country pilot control project in the Volta River basin. The object is to assess the effects of entomological, chemotherapeutic and combined methods of control on the endemcity of onchocerciasis in a defined area in which the disease is seriously endemic, and the information obtained should be applicable to onchocerciasis control in other endemic areas.

In relation to this project, the Organization has assisted new studies on the adaptation of tagging, tracing and trapping methods to the African vectors of onchocerciasis, with the aim of elucidating the flight range and longevity of *Simulium damnosum*.

Investigations into the different *Onchocerca volvulus*/*Simulium damnosum* complexes in West Africa were continued. It appears that over the whole of West Africa there exist two such main complexes, one extending from the forest into the Guinea savanna zone where eye lesions are rare, the other confined to the Sudan savanna and associated with a high incidence of blindness. These findings imply that there are at least two main strains of *O. volvulus* in West Africa, and it is quite possible that these may vary in regard to the length of life of various stages of the parasite and their distribution in the body, pathogenicity and susceptibility to chemotherapeutic agents. There are also marked differences in the transmission of the African and Guatemalan parasites.

WHO-assisted studies which included experimental transmission of *O. gutturosa* to cattle showed that, irrespective of the method of inoculation, the microfilariae accumulated in the ears and noses of the infected animals. *Onchocerca microfilariae* have a preferential distribution in the skin which is not necessarily determined by the position of adult worms.

Support has also been given to experimental studies on onchocerciasis in chimpanzees and on culture methods of *Simulidae*. A collaborating laboratory in Rennes, France, succeeded in maintaining young *Simulium* larvae at low temperatures for several months—a technique which will enable laboratories to stock larvae for experimental work at any season.

Disappearance and alteration of nodules are one of the criteria used for determining the effectiveness of chemotherapeutic treatment; hence it is important to know whether spontaneous regression of nodules does take place, and histopathological studies are therefore being pursued in this connexion.

**Other Helminthic Infections**

In 1966 a WHO travelling seminar on helminthic diseases for English- and Russian-speaking participants was held in the Union of Soviet Socialist Republics, its purpose being to consider the epidemiology and control of helminthic diseases based upon recent Soviet experiences in this field. The principal subjects discussed were soil-transmitted helminthiasis,
with emphasis upon ascariasis and hookworm control, and zoonotic helminthiases associated with domestic animals (hydatid disease, taeniases, and trichinosis) and fish (diphylllobothriasis and opisthorchiasis).

Progress made in the WHO-assisted trials of ascariasis control in Ceylon and China (Taiwan) was assessed. In Ceylon piperazine treatment given to children between the ages of six months and eleven years at monthly intervals for a period of five months had essentially freed them from all laying worms. Whether significant reinfection will continue beyond this period will be determined by faecal examinations scheduled for future months. In China (Taiwan), a survey of sample villages indicated that the people are exposed to heavy infection with ascarides and other soil-transmitted helminths, and that transmission probably occurs at all seasons of the year. Studies are under way on the effects of piperazine treatment on the nutritional status of the people.

A first revision of a register of living helminth species was issued to selected workers. Data are included on 352 strains or sub-strains of ninety-eight species of parasitic helminths being maintained by 167 laboratories in forty-one countries.

**Trypanosomiasis**

In the field of trypanosomiasis, WHO has maintained close contact with countries reporting a recrudescence of cases, and provided technical assistance for projects either already started (as in Botswana and the Democratic Republic of the Congo) or being planned (as in Kenya). Much of the work involves close co-operation with FAO. Both organizations, for instance, participated in a joint trypanosomiasis survey and in the mission of the United Nations Development Programme (Special Fund) which visited Kenya in connexion with the Government's request for assistance in operational research on the eradication of human and animal trypanosomiasis in the western provinces of the country.

The WHO inter-regional trypanosomiasis study team worked chiefly in East Africa during the year. Visits were made to the Burundi refugee camps where ad hoc measures were recommended to reduce the tsetse population to a level compatible with the keeping of cattle, which is of paramount importance for the permanent settlement of the refugees and the full use of the land, and to the north-western part of the United Republic of Tanzania, where the situation is intimately connected with that in Burundi. The team also visited Uganda where sleeping sickness *Trypanosoma rhodesiense* occurs in the south-eastern districts, possibly spreading as far north as the Murchison Falls, and *T. gambiense* is endemic in the north-west.

In the Democratic Republic of the Congo trypanosomiasis is reaching epidemic proportions in many areas. In surveys in villages in which previously the disease was non-existent or of very low prevalence, up to 18 per cent. of the population were found to be infected. There may be from 50 000 to 250 000 trypanosomiasis cases, but it is difficult to make any reasonably accurate estimate with the present limited methods of diagnosis. WHO is co-operating in arrangements for an operation to be carried out with bilateral aid to follow up the survey and control activities. Among other tasks, the inter-regional trypanosomiasis team will make a careful assessment of the relative value of parasitological examinations and new immunological techniques, primarily immunoglobulin M (IgM) level determination (this in collaboration with the WHO International Reference Centre for Trypanosomiasis, at the East African Trypanosomiasis Research Organization, Tororo, Uganda).

The Organization has also maintained close contact with many laboratories doing research on trypanosomiasis. Assistance was continued for the laboratory maintenance of *Glossina*, a difficult problem which needs to be solved before such new methods of control as the sterile male technique can be considered, and for studies on the clinical manifestations of sleeping sickness. A programme of immunological studies was also started, particularly to determine the value of IgM determinations in the mass diagnosis of trypanosomiasis. The WHO international reference centres for trypanosomiasis, at Tororo (Uganda), and for immunoglobulins, at Lausanne (Switzerland), together with the Pasteur Institute in Dakar (Senegal), take a leading part in this collaborative scheme.

Contact has also been established with a group of workers in Czechoslovakia and a collaborating laboratory in Edinburgh, Scotland, for a study of heterophile antibodies in trypanosomiasis infections and for the development of the haemagglutination and latex flocculation tests to differentiate between *T. rhodesiense* and *T. gambiense* cases.

Studies carried out with WHO's assistance in a laboratory in Kaduna, Nigeria, on the immune response of *T. brucei* group infections have shown that serological methods and knowledge of the antigens of the *T. brucei* group trypanosomes may be sufficiently advanced to be used to trace strains in human and animal epidemiological studies.

WHO-assisted studies undertaken in a laboratory in Edinburgh show that in mice protective immunity can be rapidly produced against single variants of African trypanosomes, and that with the aid of adjuvants this immunity can be made to last for a long time. However, the fundamental problem posed
by the antigenic variation of trypanosomes still remains.

A joint FAO/WHO seminar on African trypanosomiasis was held in Nairobi, Kenya, for physicians, veterinarians and other specialists concerned with the control of trypanosomiasis in fifteen countries of the African and Eastern Mediterranean Regions.

Leishmaniasis

Reports received during the year on a WHO-assisted study indicate an increase in the incidence of visceral leishmaniasis in Brazil and in certain countries of East Africa. Muco-cutaneous leishmaniasis is also spreading. In the Eastern Mediterranean Region, an outbreak of the urban (dry) type of cutaneous leishmaniasis in the Damascus area showed how suddenly the number of cases may increase in an area where this condition had almost disappeared. Epidemics have also developed around Baghdad and in some parts of Iran, where the urban (dry) type of cutaneous leishmaniasis is endemic. With a view to ascertaining the causes of these outbreaks, visits were made to several countries in that region to study the effects of antimalaria operations, urbanization and other factors on the epidemiology of leishmaniasis. The ensuing report indicated that the spraying of houses with residual insecticides under the malaria eradication programme was effective against the urban (dry) type of cutaneous leishmaniasis, but it had little or no effect on the rural (wet) type, since only the wild part of the Phlebotomus vector population is likely to become infective. In 1966, this survey was extended to Ethiopia and the United Arab Republic.

The Organization has continued to support studies on the immunological and serological characteristics of various Leishmania species and strains, and the maintenance and supply of such material by the WHO International Reference Centre for Leishmaniasis, at the Hadassah Medical School, Jerusalem, and by a laboratory in Belo Horizonte, Brazil.

Vector Biology and Control

The year has been characterized by expansion of many aspects of the Organization’s programme in vector biology and control: the amount of field testing of new insecticides was more than doubled, and large-scale evaluation programmes were established in two areas; the systematic world-wide collection of ecological data on vectors and a new programme of research on Ixodidae (tick vectors) were started; work on Simulium (blackfly) was extended; and the basis of the research programme on the safe use of pesticides in public health was widened (see also page 24).

A number of promising, relatively non-toxic larvicides are now reaching an advanced stage of testing, and could have an important influence on Aedes aegypti eradication and the control of Culex fatigans and Anopheles. With a view to furthering work on the genetic aspects of vector control a number of reference centres have been established, facilitating the distribution of reference strains of insects and the expansion of preliminary investigations on genetic control.

Resistance to Insecticides

The problem of resistance to insecticides has grown steadily during recent years. The number of resistant species of public health importance now totals more than eighty-three, as compared with twenty-six in 1959, and the extent of the area where the resistant species have been found has increased also.

The number of resistant anopheline species rose from fourteen in 1959 to thirty-two in 1965. Of the latter, twelve show resistance to DDT and twenty to dieldrin. Perhaps the most disturbing development is the increasing number of species showing double or treble resistance to DDT and to the cyclodene group of insecticides and organophosphorus compounds. Three of the more serious developments during recent years have been double resistance in Anopheles stephensi in Iran, DDT resistance in the vector Xenopsylla cheopis in India, Thailand and Burma, and resistance in tick vectors to all the three groups of insecticides in Australia. In addition, larvae of Simulium have been reported to be resistant to DDT in some areas in Japan where this insecticide has been used for their control. This species belongs to one of the only three genera of public health importance (Glossina, Simulium and Phlebotomus) that have until now remained susceptible to insecticides.

A number of WHO collaborating laboratories are carrying out investigations to determine the resistance spectrum of vector species to a series of insecticides and selection experiments to determine the speed of development of resistance to different groups of insecticides. A concept is being developed that, for satisfactory control of a particular species, a series of alternative insecticides should be available for use in a predetermined manner. Studies on lice have demonstrated that effective control of these insects can thus be obtained for a long time without resistance developing. Similar studies are being performed on C. fatigans.

Papers on the development of resistance to various insecticides were published in the Bulletin.¹

A high degree of resistance to insecticides is identical in the Caribbean, the south of the United States of America, South-East Asia and the countries in the Pacific. A laboratory in Paris has been designated as a centre to which desiccated eggs of *Aedes aegypti* from different parts of the world are sent for susceptibility testing.

The Organization has developed an electronic data-processing programme to handle the data it receives. An output data sheet will be printed by the computer every two months, containing all the information received by the Organization in that period. In addition, the computer will store all the information received and it will be possible to retrieve information on resistance in relation to species, insecticides and countries as desired, so that it should be possible to analyse this information to forecast the development of resistance in different species.

### Evaluation of New Insecticides

Twelve laboratories and field testing units are assessing insecticides in six stages, and since the programme of testing and evaluation began in 1960 almost 1300 compounds, supplied by over forty university and pesticide manufacturers' laboratories, have been examined in the initial laboratory tests at Stage I.

Evaluation was made during the year of thirteen new compounds (eight carbamates, four organophosphorus compounds and one synthetic pyrethroid) on adult anopheline mosquitoes in the United Republic of Tanzania and in Upper Volta. Advanced laboratory and limited field tests at Stages III and IV were made on twelve organophosphorus compounds in different types of formulations as larvicides for culicine larvae in Rangoon, Burma. Stage IV tests were carried out with OMS-2 (fenithion), OMS-466 (methoxychlor) and OMS-786 (Abate) on *Simulium* larvae in the United States of America; with OMS-33 and two organophosphorus compounds, OMS-658 and OMS-716, on the oriental rat flea in India; with OMS-43 (fenitrothian) and OMS-94 (dimethoate) on houseflies in farms in Italy and in Denmark respectively.

The WHO insecticide testing unit at Lagos, Nigeria, carried out village-scale Stage V tests on adult anopheline mosquitoes at two different locations in Nigeria with an organophosphorus compound, OMS-214, and with two carbamates, OMS-33 and OMS-716, which have a very rapid knock-down effect on the mosquitoes. Concomitantly, extensive investigation has been made of the chemistry of analysis and formulations of these new insecticides and procedures have been developed for analysing blood cholinesterase to detect anticholinesterase activity of these two types of insecticides in workers and villagers. These investigations have provided a basis, and the problems of developing suitable formulations of these compounds are being studied. Laboratory investigations of the cholinesterase levels in the blood of the spraymen and other workers using these compounds in the village-scale Stage V tests showed no significant absorption of the insecticides, and no ill effects were observed in these workers or in the villagers. Toxicological studies are described below (see page 24).

In El Salvador PAHO continued to support Stage VI trials with the carbamate OMS-33, but the trials with the organophosphorus compound OMS-43 in the dry savanna region of Northern Nigeria have been terminated (see page 6).

During the past six years the insecticide evaluation programme has resulted in the recommendation of several new compounds for use in controlling vectors, and has provided information on the activity of and proper application procedures for these new compounds.

WHO-supported tests of blackfly larvicides were described in the *Bulletin.*

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1. These are: Stage I — initial laboratory screening; Stage II — preliminary laboratory evaluation, toxicity and residual effectiveness; Stage III — advanced laboratory and preliminary field evaluation; Stage IV — advanced field evaluation (including formulation properties and experimental hut trials); Stage V — small-scale field trials (including protective measures and storage stability); and Stage VI — pilot field trials, which are designed to provide a large-scale evaluation of the insecticide so that the procedure and protocol for operational use may be obtained.

Specifications for Pesticides

In view of the fact that there has been increasing evidence during the past few years that DDT powders bought for use in malaria eradication projects were showing loss of suspensibility, thus jeopardizing the efficiency of the spraying programme, the Organization, in collaboration with several laboratories, undertook research with a view to improving specifications. The results of this collaborative research were reviewed by the Expert Committee on Insecticides (Chemistry and Specifications) at its meeting in October 1965. The Committee's recommendations will serve as the basis for a completely revised edition of the manual Specifications for Pesticides.

In the past year the Organization has increased collaboration with FAO and the European Collaborative Pesticides Analytical Committee with a view to achieving common analytical and test methods and uniform requirements in specifications.

Ecology and Biology

Control of the responsible vector appears at present to be the only feasible method of interrupting the transmission of dengue and dengue-like diseases which are continuing to spread in South-East Asia and the Western Pacific. In collaboration with the Government of Thailand, WHO has established an Aedes research unit in Bangkok with a view to carrying out research on the bionomics of Aedes aegypti and A. albopictus in relation to these diseases, studying their susceptibility to insecticides and developing methods for their control. A preliminary survey carried out in Bangkok between May and August 1966 has shown that the Aedes (Stegomyia) population consists essentially of A. aegypti, only one adult A. albopictus having been found, in contrast to the situation in other cities of the area, such as Kuala Lumpur and Singapore, where the Aedes population is almost evenly divided between these two species, or Hong Kong, where A. aegypti is absent.

Studies of marked A. aegypti have already provided important data on the flight range, movements and longevity of the species.

The WHO filariasis research unit in Rangoon, Burma, has initiated an experimental field trial for the larvicidal control of the main urban vector of filariasis, Culex pipiens fatigans. Entomological, parasitological and cost evaluations are being made of the experiments as a guide to national health administrations. The choice of larvicide for the initial control programme —fenthion—was the result of screening a wide series of compounds from the collaborative scheme and different larvicidal formulations in various types of polluted water habitats. In case resistance should develop to fenthion, screening of alternative compounds is being undertaken, and one organophosphorus compound has already been shown to have a remarkable degree of persistence and effectiveness in highly polluted water habitats.

During the year the Organization initiated a global survey of the distribution and density of Aedes and a large number of laboratories and individual researchers are providing information to the Organization. It is already apparent that Aedes vector densities are high in and around the cities of West and East Africa as well as in forests and in the rain belt; on the other hand, A. aegypti is now a rare species in the Mediterranean countries despite its previously high density in the area. While eradication measures have already succeeded in eliminating A. aegypti from much of South America, Mexico and other countries of Central America, it is still present in sufficient density in the Caribbean to have served as a vector in the recent serious outbreak of dengue in that area.

In collaboration with FAO, studies are also being made on tick vectors of human disease in an effort to determine to what extent these species are still present at a density that would suffice for the transmission of human disease.

Although the recent increases in Aedes- and Culex-borne diseases may largely be attributed to activities of man which have favoured increases in the population of these vector mosquitos, the methods whereby these population changes have been measured have not always proved to be satisfactory. In this connexion, a Scientific Group on Mosquito Ecology met in Geneva at the end of October to review problems in the study of mosquito ecology, advise on studies at present under way and establish guidelines for the methodology to be employed in future investigations.

Genetic Control

Genetic control—the use of any condition or treatment that can reduce the reproductive potential of noxious forms of insects by altering or replacing the hereditary material—has so far been limited to the release of insects that have been sterilized with ionized irradiations or chemosterilants. However, a great many other possibilities exist for the manipulation of genetic factors already present in natural populations, such as cytoplasmic incompatibility, hybrid sterility, sex distorter factors, etc. Following are examples of work done during the year on various promising methods.

The possibility of carrying out in Ceylon a pilot project on the genetic control of C. fatigans by
irradiation has been explored jointly with IAEA. Although facilities for carrying out experiments with gamma irradiations are available in Ceylon, insufficient information on the biology, ecology and behaviour of *C. fatigans* is available at present, and additional investigations will have to be made before the pilot project is started.

Progress has been made with regard to the use of chemosterilants for inducing sterility in mosquitoes, and in India, following surveys carried out by WHO in a number of areas, two sites were considered appropriate for the use of chemosterilants in controlling *C. fatigans*. This is being followed up.

Cytoplasmic incompatibility between certain strains of the *Culex* complex has been observed. For example, the *C. fatigans* strain from Fresno, California, is incompatible with the normal *C. fatigans* population in some tropical areas, and during the year a pilot experiment was developed at the WHO filariasis research unit in Rangoon for the control of *C. fatigans* by this method.

Members of the *Anopheles gambiae* complex form the principal vectors of malaria throughout most of the continent of Africa. Crosses between various species in the complex result in a generation with fertile females but sterile males. Sterile males thus produced have been introduced into the laboratory cages to compete with normal males; the result was a reduction in the number of fertile eggs proportional to the number of sterile males introduced. A scheme for a pilot experiment on the control of *A. gambiae* by this method was prepared during 1966 and efforts have been made to find a suitable isolated area where the experiment can be conducted.

Natural populations of insects carry a large load of deleterious genes including lethal factors which can be isolated by inbreeding in the laboratory. In *Aedes aegypti* a strain with male-producing factor was discovered in a collaborating laboratory at Notre Dame, Indiana, in the United States of America. The sex ratio is distorted, producing a gross predominance of male offspring. Releasing males with the translocation may be a means of reducing this species. A preliminary study was made in Bangkok during the year to determine the feasibility of using this technique.

With regard to studies of formal and basic genetics of insect vectors of disease, WHO has initiated a global programme on the mapping of chromosomes of anopheline species.

WHO-assisted studies on formal genetics and cytogenetics of mosquitoes were carried out in a number of collaborating institutions—for example, in India at the Universities of Punjab and Bangalore, in London, and in Cairo.

**Biological Control**

In 1966 the Organization distributed some 600 pocket kits to research collaborators in more than two-thirds of the Member countries, for the collection and shipment of pathogens and parasites of diseased vectors. This has led to increased interest in the possibilities of biological control in public health entomology, and to a much greater flow of material to the International Reference Centre for the Diagnosis of Diseases of Vectors (Ohio State University, United States of America), which has reported on its first year of operation. Consignments of parasitized arthropods are reaching the centre from many parts of the world. The material is rapidly processed and diagnostic reports dispatched to collaborating scientists. The evaluation procedure gives valuable training to graduate students in invertebrate pathology.

Small-scale field trials of biological control agents against *Culex pipiens fatigans* and *Aedes* species are being planned and the Organization has undertaken an evaluation of the isolated Pacific island of Nauru as a possible site. A study was also begun of the feasibility of adapting the insecticidal briquette technique to the long-term dispersal of "microbial insecticides" in container habitats. Assistance was given to laboratory studies of several pathogens and other natural enemies of vectors including viruses specific to houseflies and other Diptera. Advice on the planning of ecological studies was given to scientists in several countries, including the British Solomon Islands Protectorate, India and Zambia, in connexion with the experimental introduction of larvivorous "annual fish".

In May 1966 WHO participated in the FAO World Symposium on Warm-Water Pond Fish Culture. Recognizing the possible danger to public health of fish ponds of this type, if they are not well managed, the symposium recommended that there should be close consultation between fish culturists and local health authorities, particularly if large-scale development of fish ponds is envisaged; and that FAO and WHO should co-operate in the preparation and dissemination of literature on the possible health hazards and their prevention, and in the international co-ordination of relevant studies.

**Standardized Strains of Insects of Public Health Importance**

It has become apparent that laboratory strains of insects are variable; if the genetic constitution of such strains of insects were stable, a more valid comparison could be made of the results obtained in the various laboratories. Under the auspices of WHO, a number
of stable strains with genetically uniform backgrounds have already been developed, such as *Musca domestica*, *Culex pipiens*, *Aedes aegypti*, and some of the anopheline species.

During the year, three WHO international reference centres were established for the maintenance and distribution of standardized strains of insects: at the Institute of Zoology, Pavia University, Italy, for *Musca domestica*; at the Institute of Genetics, Johannes Gutenberg University, Mainz, Federal Republic of Germany, for the *Culex pipiens* complex; and at the London School of Hygiene and Tropical Medicine, for *Anopheles*.

**The Safe Use of Pesticides in Public Health**

With the increased use of organophosphorus and carbamate insecticides, the scope of work on the toxicology of pesticides has been greatly increased. In further development of this work a collaborating institute in Zagreb, Yugoslavia, investigated the mechanism of cholinesterase inhibition by carbamates, in order to evaluate and improve methods for measuring human exposure to insecticides of this group.

Observations were made in the field by WHO in collaboration with governments on the effects of a number of new compounds undergoing entomological evaluation. In all cases the compounds were proved to be safe for use with normal protective measures.

The results of this work and of collaborative studies in different parts of the world were reviewed by the Expert Committee on Insecticides (Safe Use of Pesticides in Public Health) in September.

**Rodents and Rodenticides**

One of the problems associated with widespread, unplanned and rapid urbanization has been a large increase in the number of commensal rodents, and their control has become even more difficult with the development of resistance in the common brown rat to the anticoagulant rodenticides; such resistance has been verified in several parts of the United Kingdom and Denmark and, in addition, it has been reported in the cane field rat in Guyana.

The Organization is therefore carrying out a number of field trials of a new rodenticide and is encouraging research on new compounds and on the ecology and biology of the different species involved. With a view to stimulating further work on rodent control, and providing an opportunity for exchange of recent information, a seminar on rodents and rodent ectoparasites was held in Geneva in October. Consideration was given to the need for a standard test method for the early recognition of rodent resistance to anticoagulant rodenticides and to the subjects on which research is urgently needed. It is clear that control campaigns could be far more effective than they are at present if sufficient advantage were taken of the studies on rodent ecology that have been carried out in many parts of the world.

**Services to Research**

The Organization has continued to stock small samples of carbon-14 labelled materials which are supplied to laboratories for investigations on the mechanism of resistance and on the biochemistry and toxicology of these compounds. At present four insecticides (DDT, dieldrin, malathion, and OMS-33—a carbamate) and one substrate (acetylcholine) are available, and samples were supplied to laboratories in Australia, Canada, Chile and the United States of America during the year. The Organization also supplied to a number of laboratories suitable chemicals to assist research on resistance and toxicology.

Services to collaborating laboratories also included the provision of standard reference strains, strains of mutants of a number of important species, and the provision or loan of equipment.

**Aircraft Disinsection**

Following the development of the "blocks away" method of aircraft disinsection, the Organization has assisted in establishing a still more efficient method of aircraft disinsection—the dichlorvos vapour automatic "in-flight" disinsection system. This has already been tested in aircraft in temperate regions. The Organization has given advice to several airlines which have agreed to the installation of the system in their large jet aircraft and to the carrying out of "in-flight" trials between various airports in tropical areas in Africa and Asia.

**Endemic Treponematoses and Venereal Infections**

WHO assisted twenty-three countries in the control and surveillance of endemic treponematoses and in the training of national personnel. Only a few requests were received for assistance in the strengthening of national venereal disease control services. The Organization also continued to support co-operating institutions in basic and applied research projects, including multipurpose epidemiological and immunological studies.
SMALLPOX IN SOUTH-EAST ASIA

The Nineteenth World Health Assembly requested the Director-General, in co-operation with all Members, to initiate action to carry out a world-wide smallpox eradication programme. Almost 70 per cent. of the world incidence of smallpox is reported from the South-East Asia Region.

1. A mother brings her child to the WHO project centre at Bariki Rajan, Afghanistan.

2. A health education poster encouraging smallpox vaccination in New Delhi. The attack phase of the programme in India has been moving towards completion.

3. A young smallpox patient at the Infectious Diseases Hospital in Madras.

4. A stage in the preparation of freeze-dried smallpox vaccine—the most stable vaccine under tropical conditions—at the King Institute of Preventive Medicine, Madras, which has received equipment from UNICEF and technical advice from WHO.
The Federal Government of Nigeria, with the assistance of WHO, is engaged in the consolidation phase of a ten-year yaws control campaign. In Northern Nigeria, the WHO treponematoses epidemiological team has been carrying out an epidemiological serological survey in order to evaluate the previous mass penicillin campaign against yaws and to obtain, at the same time, information on arbovirus infections, malaria and certain other communicable diseases. Some of the equipment used was provided by the Canadian Students’ War against Yaws (SWAY).

1. Setting up the mobile laboratory. The WHO team—medical officer, laboratory technician and field administrator—travelled from village to village in caravans.

2. Villagers selected by random sample methods line up for blood tests.

3 and 4. Taking blood samples which will be tested in the mobile laboratory, to reveal the presence of infection in apparently healthy individuals. Tests for malaria and arbovirus infections are also made.

5 and 6. Tubes containing serum obtained from the blood samples are prepared for dispatch to WHO reference centres in Europe and the United States of America for use in broader investigations in the WHO epidemiological surveillance programme.

7. The tubes of serum are placed in a portable liquid nitrogen deep freezing unit at −200°C for dispatch by air freight to the reference centres.
BILHARZIASIS CONTROL
IN THE UNITED ARAB REPUBLIC

In regions of endemic bilharziasis, irrigation improves the economic condition of the people, but helps to spread the debilitating disease which, in the United Arab Republic alone, affects 14 million people—mostly children under 15. In the irrigation area in the north-western part of the Nile delta, the Government, with assistance from UNICEF and WHO, is carrying out a pilot programme in which field research is an important factor.

1. Work in rice fields. The inhabitants of the project area are in constant danger of infection because of their daily contact with polluted water.

2. Engineers measure the speed of flow and the temperature of the water in the canals and ditches.

3. Promising molluscicides that kill the snails, but are harmless to other living organisms, are tested under controlled conditions.

4. A direct association has been found between the snail hosts and certain aquatic plants. Selective herbicides are a useful adjunct in snail control.
Endemic Treponematoses

In some instances where mass campaigns were carried out in the past there has been little or no surveillance in subsequent years. Thus in Haiti, where yaws was highly prevalent and where the mass campaign was launched in 1949, unfavourable environmental conditions in recent years, together with delay in the development of basic health services, have favoured the treponeme rather than the host. Infectious yaws foci developed in several parts of the country following the mass campaign, and during 1966 anti-yaws measures were intensified in Haiti with assistance from PAHO and WHO.

This situation contrasts with that of the endemic childhood treponematoses in Bosnia, Yugoslavia, where a WHO-assisted mass penicillin campaign commenced simultaneously with that in Haiti in 1949 but where local health facilities, surveillance, and improvement of environmental and social and economic conditions came to favour the host rather than the treponeme. Epidemiological investigations carried out in Bosnia in 1965 and 1966 with assistance from WHO showed that more than ten years after the completion of the mass campaign no new foci had developed and the children showed little or no serological evidence of treponemal infection.

These two examples illustrate the importance of a network of health services to carry out surveillance activities. The need is great, since the mass campaigns for yaws control extended to 150 million people, with some 40 million treated with long-acting penicillin preparations during the last sixteen years, and the disease lost its conspicuousness, having been reduced to less than 1 per cent. in many areas.

With declining clinical prevalence of endemic treponematoses, laboratory information is increasingly required for appraisal of latent infection; study of the epidemiology of these infections; assessment of the level and extent of continued yaws transmission; study of the potential for recrudescence of the disease; and as a basis for advice on further local vigilance and surveillance by the health administration. Thus, the WHO inter-regional treponematoses epidemiological team conducted an epidemiological serological survey comprising fifty-six sampling points and 5000 random sera in Northern Nigeria, and a similar number of sera in Eastern Nigeria. Some of the equipment and supplies used in Northern Nigeria had been obtained through the efforts of the Canadian Students' War against Yaws (SWAY). A regional WHO advisory team, trained by the inter-regional team, started a random evaluation survey in Western and Midwest Nigeria. In addition, an epidemiological serological investigation of 8275 random samples of sera was completed in Togo, where a patterned sampling survey was built into the project.

These surveys indicate that low-level transmission of yaws continues to take place in children several years after the yaws campaigns; that sporadic focal outbreak of clinical disease is not uncommon; and that continued active surveillance of yaws will be needed for many years in order to prevent wider recrudescence of the disease.

The projects in Nigeria and Togo included extensive local training and strengthening of laboratory facilities. The Togo yaws project is, furthermore, an example of a combined communicable disease activity, leprosy control and smallpox vaccination being part of the project in addition to yaws (see also pages 8 and 158).

Venereal Infections

The world-wide study of syphilis and gonorrhoea, undertaken by WHO following the adoption of resolution EB34.R25 by the Executive Board, was completed during 1966. The findings, some of which were mentioned in the Annual Report for 1965,1 were included in the Third Report on the World Health Situation,2 which was discussed by the Nineteenth World Health Assembly in May 1966. A considerable body of information was made available by health administrations and other sources, and approximately half the 147 countries and areas presenting reviews in that report expressed disquietude at the significant and consistent upward trend of venereal diseases in recent years, often especially marked in the younger age-groups. This trend, and the concern expressed, are world-wide and were noted in all WHO regions.

Notwithstanding these trends, only a few health administrations are intensifying their efforts in planning venereal disease control programmes based on epidemiological principles. In the United States of America, for example, a plan to eradicate syphilis by 1972 includes new techniques in case-finding and health education. The International Union against the Venereal Diseases and the Treponematoses, recalling the usefulness of the work of the WHO Syphilis Study Commission to the United States of America in 1949,3 has proposed that a WHO commission study this programme, its implementation, techniques and results, in view of its potential wider importance.

1 Off. Rev. Wid Hlth Org. 147, 9.
Research

Epidemiological research, based on random investigations, to define immunological patterns in rural tropical populations following penicillin campaigns was continued, and confirmed the occurrence of a high proportion of "false" seroreactors to standard cardiolipin antigen tests (for example, VDRL) used in treponemotases. The results show the need for specific treponemal tests, notably immunofluorescent techniques (FTA), to be introduced in tropical laboratories. The findings also illustrate that current diagnostic and screening methods useful in developed countries may have considerable limitations in the different ecological conditions of developing tropical areas, since they may exaggerate the problem. More accurate epidemiological serological research can thus be of direct value to health administrations. The investigations were undertaken with the collaboration of health administrations (in Nigeria, Togo and Western Samoa), WHO and laboratories in Paris, Copenhagen and London. The sera collections obtained in these and other epidemiological serological surveys of yaws are also tested for other infections (arboviruses, poliomyelitis, measles, etc.) in the WHO epidemiological surveillance programme and for the serum reference bank programmes. The broader investigations that have developed from this work are dealt with under Epidemiological Surveillance (see page 8).

Some progress on basic problems was made by the thirteen laboratories participating in the WHO collaborative treponematoses research programme. The search continued for new approaches to longer survival and possible growth in vitro of Treponema pallidum, aiming at the provision of an adequate quantity of antigen for vaccine studies. A laboratory in Wroclaw, Poland, reported conservation of motility and pathogenicity of treponemes in artificial media for more than sixteen days, another in Copenhagen explored the role of commensal cells in treponeme multiplication by chamber implants in animal organs. A laboratory in Los Angeles, United States of America, continued studies of protection against treponeme infection in rabbits, by attenuated vaccine obtained through gamma irradiation of tissue-grown pathogenic T. pallidum.

On the immunochemical side, comparative investigations into the nature of treponemal antibodies in man and experimental animals indicate that reagins develop in early infectious disease as a result of host tissue reactions and are located in a certain fraction of the globulins while the specific immobilizing antibody (TPI) production is caused by treponemal antigen stimulation and located in another fraction. At two co-operating laboratories, in Paris and Stockholm, studies on antibody decay from freezing and thawing procedures continued; changed protein structures were found to be referable to altered antibody reactivity. These precise investigations of time-temperature exposures are of importance for the definition of the requirements of inert long-term storage of serum collections at the temperatures of liquid nitrogen, carbon dioxide ice and "normal" refrigeration and for equipment needed for tropical and long-distance transport of specimens.

In 1966 international reference strains of gonococci were distributed to many national health laboratories from the newly established WHO International Reference Centre for Gonococci in Copenhagen. The surveillance programme of changing susceptibility of gonococci to antibodies continued at that centre and at the Communicable Disease Center of the United States Public Health Service, at Atlanta. In all WHO regions gonococcus strains show a wide range of susceptibility, and the resistance found in certain strains to penicillin and some other antibiotics may have some epidemiological importance. However, a great number of antibiotics remain available and are effective in individual treatment of male and female gonorrhoea. Studies in the United States of America show that, contrary to previous belief, there are definite immunological responses in gonococcal infections. These responses can be followed by one or more laboratory procedures, although they are as yet too little understood to project research on protective immunity.

Several papers were published in the Bulletin during the year on various aspects of laboratory and epidemiological research. A bibliographical review of taxonomic and other aspects of T. pallidum was also published, as a supplement to the Bulletin.

Tuberculosis

The recommendations in the eighth report of the Expert Committee on Tuberculosis were studied during two regional technical meetings, one organized in Copenhagen for the European Region, the other

in Huaras, Peru, for participants from Latin American countries. As in previous similar meetings in other regions, the Expert Committee’s recommendations were discussed in relation to their practical application, particularly as regards the use of reliable epidemiological indices and the adjustment of public health practice to recent findings in the field of tuberculosis.

Many national tuberculosis programmes are being influenced by the principles advocated in the Expert Committee’s report. For example, combined smallpox and BCG vaccination, originally given full-scale application in China (Taiwan), is being adopted in national programmes of several countries in the African and South-East Asia Regions. Bacteriological diagnosis is increasingly being recognized as the method of choice for large-scale use, and consequently the laboratory is being re-established as the mainstay of case-finding. A wider use of relatively low-cost regimens in ambulatory chemotherapy (isoniazid plus thioacetazone administered daily, and isoniazid plus streptomycin twice weekly) followed closely upon the trials (see page 28), which gave conclusive demonstration of their clinical efficacy and acceptability. Standard recording and reporting procedures have been introduced in many programmes, with a view to making available internationally comparable data on case-finding and treatment in addition to the statistical information on the effectiveness of BCG vaccination already being collected by WHO on an international scale.

An important feature of the Requirements for Dried BCG Vaccine published by WHO in 1966 is the introduction of the seed-lot system, under which BCG strains are permanently maintained in freeze-dried form so that laboratories in several countries can share one strain, thus making possible an international comparison of promising strains. In this connexion a WHO international reference centre for BCG seed-lots and control of BCG products has been established in Copenhagen, at the BCG Department of the Statens Seruminstitut, which has continued to coordinate work on the quality control of BCG vaccine.

Assistance in training the staff needed for the developing national tuberculosis control programmes has again been an important aspect of the programme. As in previous years, WHO helped to organize two inter-regional courses on the epidemiology and control of tuberculosis: one, in English, in Prague and the other, in French, in Rome. The courses included a month’s visit to national programmes in India and Tunisia respectively. A WHO-assisted regional course with a similar curriculum was held in Singapore for medical officers from the Western Pacific Region.

Training of key personnel has again formed part of WHO’s direct assistance to forty-five individual countries in the development of national programmes of tuberculosis control.

Operational Studies

Close co-operation between the Statens Skjern-bildefotografering, Oslo, and WHO has resulted in the formulation of a computer-programmed model of the epidemiology of tuberculosis which can be used to test epidemiological hypotheses and to simulate control programmes. This will make it possible to forecast the trend of the tuberculosis problem under the impact of various types and intensities of tuberculosis programmes.

Several of the developed countries with very low levels of transmission of tubercle bacilli are seriously concerned about the type of surveillance that will be required in the next decades. The Tuberculosis Associations of Canada and the Netherlands, together with the Central Tuberculosis Organizations in Czechoslovakia and Norway, have established in the Hague a Tuberculosis Surveillance Research Unit under the joint auspices of the International Union against Tuberculosis and WHO. The first study of existing information in the four countries showed similar downward trends in tuberculosis over the last twenty years in spite of widely varying control programmes. The next stage is to collect uniform epidemiological and operational input data for the computer-programmed model referred to above. It will thereby be possible to give quantified answers to such a question as: what would be the long-term epidemiological consequences of discontinuing mass BCG vaccination?

Since specific antituberculosis drugs became available, regimens that are almost 100 per cent. effective theoretically have proved much less so in practice, because of the numbers of defaulters during the period prescribed for the taking of the drugs. WHO-assisted field projects have tried to find remedies for this problem through sociological studies on such questions as the relative effectiveness of interviews with physicians and with other health personnel. Similar studies are being undertaken in Malaysia in co-operation with the Government and the International Union against Tuberculosis, which has provided increased support in a number of other ways, including the dissemination of literature and the organization of international conferences.

The Tuberculosis Chemotherapy Centre, Madras—organized by the Indian Council of Medical Research with the assistance of the British Medical Research Council and WHO—reported on studies relating to patients undergoing ambulatory chemotherapy and their contacts. The reports were published during the year in a special issue of the Bulletin on research at the Madras Centre and at the WHO-assisted National Tuberculosis Institute in Bangalore.

A comparative trial of three dual-drug regimens in ambulatory treatment showed that the relatively inexpensive regimen of isoniazid plus thiacetazone is therapeutically as effective as the standard regimen of isoniazid plus sodium PAS, although its use results in a slightly higher incidence of minor side-effects. These findings are therefore encouraging for the large-scale use of this regimen in developing countries.

In a four-year follow-up study by the Madras Centre of patients who had become sputum-negative after one year’s chemotherapy, and who lived in adverse environmental conditions (with poor diet, over-crowding, long hours of strenuous work) it was found that the living conditions of the few whose disease had relapsed were no worse than those of the others. This suggests that the relapse rate does not depend on environmental circumstances to the extent previously believed.

A bacteriological study indicated that sputum smear examination carefully carried out was nearly as useful as culture examination in assessing the progress of patients on ambulatory chemotherapy.

A five-year follow-up study was made of close family contacts of patients who initially had received chemotherapy for one year, half of them in a sanatorium and the other half at home. It confirmed previous findings that the attack rate of tuberculosis in the contacts of home-treated patients is no higher than in those of sanatorium patients, provided that the patients receive effective chemotherapy. In fact, the greatest risk to contacts is exposure to the tubercle bacilli before diagnosis of the index case.

Tuberculosis is commonly believed to be a family disease; however, the results of a longitudinal study of the populations of fifty South Indian villages, carried out by the WHO-assisted National Tuberculosis Institute in Bangalore, showed that cases usually occurred singly in households. Furthermore, although the examination of contacts has been considered to be a necessary part of case-finding programmes, the results showed this measure would have revealed only a small proportion of the cases in the community studied. It was also found that, even in homes with a bacteriologically confirmed case, about 88 per cent. of the children under five years of age showed no evidence of infection.

In a related study in the same community, using the tuberculin test, it was found that some of the methods of estimating new infections are inaccurate, making available figures unreliable. A new statistical approach suggests that 98 per cent. of the newly infected show an increase in reaction size of 16 mm or more, but non-infected persons may, on re-test, show similarly large increases; the number of such persons rises with age and is likely to be greater in areas with a high prevalence of non-specific allergy.

Laboratory Studies on Mycobacteria

Symposia on the isolation, classification and distribution of mycobacteria have been organized by the WHO Tuberculosis Diagnostic Reference Laboratory in Prague. The report of the 1965 symposium, on mycobacteriophages and their use in the identification and classification of mycobacteria, was issued during the year. At the third symposium, held in 1966, the theme was the immunogenic and allergenic properties of mycobacteria.

As a follow-up of the meeting, in 1964, of advisers on immunogenic agents in tuberculosis, WHO provided assistance to laboratories in Bucharest, Göteborg (Sweden), Osaka (Japan), Paris, Prague, Washington and State College, Miss. (United States), for studies on the antigenic and immunogenic properties of mycobacteria. This work may lead to the development of better diagnostic tools, such as more specific products for skin testing, serological tests and typing techniques, and non-allergizing immunogenic agents. The studies in Osaka, for instance, have revealed that two major extracellular protein products of Mycobacterium tuberculosis, the α and β antigens, play a significant role in serological typing. In a recent study, antigenic analyses were made of strains of M. leprae murium by an immunodiffusion technique using these antigens and their specific antisera as indicators. The M. leprae murium and M. avium α antigens may possibly be identical. In the WHO-assisted studies in Göteborg, new reference precipitation systems have been obtained by the immunization of sheep with reference antigens from different mycobacteria, and these reference systems have been successfully applied to serological analysis of various atypical mycobacteria. Precipitatingens from certain mycobacterial strains are being separated and purified; and the presence of anti-precipitins in the sera of patients with tuberculosis, as well as in those of healthy blood donors with and without specific and non-specific tuberculin sensitivity, is being investi-

1 Bull. Wld Hlth Org., 1966, 34, No. 4.
gated with a view to clarifying the significance of the widespread non-specific tuberculin sensitivity in the tropics.

Leprosy

A WHO survey of leprosy in the world ¹ showed that in all there are over 2.8 million registered patients and some 11 million estimated cases. The number of treated patients is over 1.9 million, representing some 68 per cent. of the registered cases. In areas with estimated prevalence rates of 0.5 per thousand or higher, about one million new cases of leprosy may be expected within the next five years. The estimated number of disabled patients is almost four million, about half of these being in the higher grades of disability (excluding anaesthesia to pain).

WHO has continued to give Member States technical advice and assistance in the control of leprosy through a number of field activities at country, regional and inter-regional level. During 1966 it continued to provide technical advice for UNICEF-assisted projects in thirty-seven countries. A report concerning these leprosy control projects was presented at the meeting of the UNICEF Executive Board in Addis Ababa in May 1966.

Steps have been taken to reorientate work on leprosy control as recommended by the Expert Committee on Leprosy ² at its meeting in July 1965; plans of operation are accordingly being redesigned to give priority to the treatment of infectious cases and the surveillance of contacts. Concentration of efforts on the open cases should be more effective in decreasing the infectiousness of the disease, and the surveillance of contacts will be facilitated.

The Expert Committee also suggested that, in order to obtain a significant reduction in incidence, at least 75 per cent. of the estimated infectious cases in each operational area should be detected and treated regularly within about five years. Data obtained by the Organization’s leprosy advisory team in Argentina, Burma, Cameroon, Nigeria, Philippines and Thailand showed that between 71.6 per cent. and 100 per cent. of lepromatous cases were already registered and had been treated.

The limited development of health services in many countries where leprosy is endemic and the characteristic long incubation period and extreme chronicity of the disease, together with limited knowledge and the shortcomings of sulfone therapy, make leprosy control a difficult and complex problem. In its programme WHO emphasizes assistance to research, with priority for investigations that can most rapidly bring improvement to leprosy control: cultivation of *Mycobacterium leprae* and other microbiological investigations, experimental transmission of *M. leprae*, epidemiology, immunology and study of immunizing agents (for example, BCG), drug trials and chemoprophylaxis.

Local multiplication of *Mycobacterium leprae* in the footpads of mice has now been achieved, and this may further epidemiological studies and the screening of antileprosy drugs and vaccines. In one laboratory studies were made of the growth of *M. leprae* in cultures of mouse peritoneal macrophages. Growth of acid-fast organisms was observed in cultures inoculated with eleven biopsy specimens obtained from patients of different geographical origins. Further studies are being made to establish whether or not these organisms are related to *M. leprae*. The preliminary results of a chemoprophylaxis trial in India are encouraging: administration of DDS (diaphenylsulfone) to child contacts of leprosy patients seems to have a protective value against the disease.

Studies made at a collaborating laboratory in Baltimore, United States of America, indicated that “standardized” batches of lepromin have lower antigenicity after storage, and that this loss is accentuated after the lepromin has been transferred to small vials or sent through the post. Further experiments are being made to establish whether the best preventive is dehydration or the more adequate use of wetting agents in liquid supplies.

In a collaborating laboratory at Campinas, in Brazil, it was demonstrated that the lepromin reaction presents a familial distribution; this suggests the existence of a genetic mechanism responsible for the observed distribution. Studies have also been undertaken on the behaviour of macrophages in the tuberculoid and lepromatous types of the disease. The “in vitro” dimorphism of macrophages of leprosy patients for *M. leprae* was also demonstrated: those of tuberculoid patients lyse leprosy bacilli completely, while the macrophages of lepromatous patients transform themselves into typical lepra-cells containing numerous bacilli.

Favourable results were reported at Caracas, Venezuela, in the treatment of leprosy reaction with thalidomide; more extensive research is required on this aspect.

Field research was carried out by two WHO inter-regional teams—a leprosy/BCG trial team and a leprosy epidemiological team. The former continued the trial in a hyperendemic area in Burma to ascertain the value of BCG vaccination for the prevention of

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¹ *Bull. Wld Hlth Org.*, 1966, 34, 811-826.
leprosy in children. At the end of September 1966 (after twenty-five months of operation) 31,874 inhabitants had been examined and 1,086 cases detected; 12,590 children were included in the trial. The first re-examination of the 5,406 children included in the trial up to August 1965, as well as 478 leprosy patients and 681 household contacts, was finished in May 1966. The epidemiological survey and other investigations started by the leprosy epidemiological team in Agua de Dios, Colombia, in April 1965, were continued until September 1966.

WHO provided various forms of assistance in connexion with training and, in particular, towards the end of the year it organized in Thailand a regional course in leprosy control for countries of the South-East Asia Region.

During the year, a guide to leprosy control was prepared on the basis of present knowledge and experience and conclusions derived from WHO advisory and other meetings.

A review made by an epidemiologist of current theories regarding the prevention and control of leprosy was published in the *Bulletin.*

**Bacterial Diseases**

In 1966, as in the previous year, cholera constituted one of the most urgent problems, and was accorded high priority by the Organization in both immediate and longer-term measures of assistance to the countries affected. Enteric infections and diarrhoeal diseases were next in importance among the bacterial diseases, in view of their high incidence in many parts of the world.

There were no major epidemics of cerebrospinal meningitis in Africa, but vigilance was maintained against this and other bacterial diseases. The Organization's assistance was again directed in large part to the development, testing and production of improved vaccines, as well as to epidemiological assessment and studies.

**Cholera**

The spread of cholera into new territories in the Eastern Mediterranean Region, notably Iraq, continued in 1966, and the disease persisted in vast areas of Asia (see also page 9). WHO's assistance included advice from inter-regional and regional cholera control teams, the organization of seminars and courses and the provision of vaccine (see also page 90). The WHO International Reference Centre for Vibrio Phage Typing, at the Indian Institute of Experimental Medicine in Calcutta, examined many strains isolated during the epidemics.

With a view to preparing countries against a possible spread of cholera, WHO distributed informative material and organized several inter-regional and regional courses and seminars. Two inter-regional courses on cholera control were organized—one, in English, held in Calcutta in March and April, the other, in French, held in Beirut in November. In addition, an inter-regional seminar on cholera control was organized in Alexandria in April for countries affected or threatened by cholera in the Eastern Mediterranean and European Regions.

Regional activities included a course on cholera control for countries of South-East Asia, organized in Hyderabad in July; a seminar on cholera control for countries of the Western Pacific Region, held in Manila in August and September; and, in the Eastern Mediterranean Region, a course on the clinical aspects, epidemiology and control of cholera, held in Dacca in December, and a course to train qualified laboratory personnel in recent techniques of cholera bacteriology, organized in Beirut in March.

A film on cholera control, in English and French, demonstrating the nature of the disease and methods of treatment and control, was produced by the Organization and distributed to the Regional Offices, cholera teams, and interested universities and national health services.

In India and the Philippines the inter-regional teams continued to participate in studies on cholera vaccines, on the carrier state, and on methods of treatment and control of cholera, and the team located in the Philippines also co-operated in the joint Philippines/Japan/WHO cholera study project.

At its second meeting, held in Manila in September, the Expert Committee on Cholera recommended that the control of cholera at national and international level be based on long-term programmes for the strengthening of public health services and the enforcement of sanitary measures concerning food, water, waste disposal, etc., supported by health education. It was emphasized that the application of modern methods of treatment can save most lives, but cannot prevent the spread of the disease, and that vaccination with vaccines available at present cannot alone effectively prevent cholera epidemics.

WHO continued to promote research for the development of more effective cholera vaccines. Further support was given to animal studies in order to assess the antibacterial and antitoxic immune response to various new types of cholera vaccine. A study of new types of adjuvant vaccine was carried out in Japan in an endeavour to achieve a new product.
giving longer-lasting immunity without undue side-reactions. A field trial of cholera El Tor vaccine on a population of over 300,000 was carried out in the Philippines as part of the joint Philippines/Japan/WHO cholera study project, to compare the effectiveness of two doses of vaccine with that of one dose of the same type of vaccine at double strength. The Organization continued to support studies on genetics of vibrios with a view to preparing ultimately live vaccine. With the aim of improving potency tests, production methods, control and standardization of these vaccines, WHO also assessed the results obtained in the international studies of potency tests for cholera vaccines being carried out by collaborating laboratories (in Bethesda and Chicago, United States of America; Ichikawa City, Japan; Kasauli and Bombay, India; Budapest, and Paris).

WHO also assisted studies in India and the Philippines on the incidence of cholera carriers in the inter-epidemic period and their role in the transmission of cholera. Serological tests for cholera were studied in India, Japan and the United States of America in order to assess their value in epidemiological investigations and possibly in the evaluation of vaccines.

Papers describing various aspects of cholera research were published in the *Bulletin*.

### Enteric Infections

The five WHO International Reference Centres for Enterobacteriaceae (at the Institut Pasteur, Paris, for Salmonella; at the Statens Serum Institut, Copenhagen, for Escherichia; at the United States Public Health Service Communicable Disease Center, Atlanta, for Shigella; and at the Central Public Health Laboratory, London, for Shigella and for Enteric Phage Typing) continued to provide assistance to a number of national centres in order to facilitate epidemiological studies of these infections.

On the occasion of the International Congress for Microbiology in Moscow, in July, several participants—experts on typhoid—met with a view to clarifying the value of present laboratory tests for the assessment of typhoid vaccines. They considered that work in this direction should continue, and that the results obtained so far should be analysed in more detail by a group of experts in order that future studies of typhoid vaccine may be properly planned.

On the same occasion several experts on Salmonella met to discuss a programme for the development of surveillance of salmonellosis. A preliminary study, consisting of the collection of incidence data through the use of questionnaires, is to be organized with the co-operation of national reference centres in order to elaborate the system of surveillance.

A field trial was carried out in Tonga to evaluate the effectiveness of a single dose, as against two doses, of monovalent acetone-dried typhoid vaccine produced in a collaborating laboratory in Washington, D.C. A similar acetone-dried typhoid vaccine produced in Zagreb, Yugoslavia, was supplied by WHO to the USSR for field trials, and compared in a single-dose regimen with other vaccines prepared in the USSR.

Reports on studies on typhoid vaccines in Poland and the USSR were published in the *Bulletin*.

As a part of the programme for the study of enteric infections and diarrhoeal diseases, a field laboratory was established in Tonga with assistance from WHO, and a study was started on various methods of shipping specimens over long distances, including transport in liquid nitrogen containers, for examination by cooperating laboratories in Leiden, Netherlands, and Atlanta, United States of America. The successful results indicate that in future it will be possible for studies to be made on enteric and diarrhoeal diseases occurring in places remote from adequate laboratory facilities.

### Diphtheria, Pertussis and Tetanus

WHO continued to assist several countries in the South-East Asia and Western Pacific Regions in developing and improving their production of diphtheria, pertussis and tetanus vaccines and in developing mass campaigns for the immunization of children. A mass vaccination campaign using combined diphtheria/pertussis/tetanus vaccine was started in Mongolia.

A review, published in the *Bulletin*, of the available data on the geographical distribution of tetanus in the world, shows that tetanus causes more than 30,000 deaths a year, and remains an unsolved problem in many developing countries in tropical areas; the review suggests that the existing zones of infection may be due to environmental conditions as well as to social, economic and cultural factors.

WHO co-operated with the Swiss Academy of Medical Sciences in the organization of an international conference on tetanus in Berne in July.

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**Coccal Infections**

Through the WHO International Reference Centre for Meningococci (at Marseilles, France) an assessment was made of the epidemiological situation in Africa in May, during the cerebrospinal meningitis epidemic season, and the possibilities for further epidemiological studies of cerebrospinal meningitis, resistance of strains, immunity, and response to immunization, were examined. A study of general reactions and serological response to cerebrospinal meningitis vaccines was carried out on a small number of people in Africa, and further laboratory studies of experimental vaccines were made.

The Streptococcus Reference Laboratory of the Institute of Epidemiology and Microbiology, in Prague, was established as the WHO International Reference Centre for Streptococcus Typing. In addition to carrying out reference activities, this laboratory continued to examine sera from tropical countries for the presence of streptolysin O antibodies.

**Zoonoses**

In 1966 the Organization, as part of the veterinary public health programme, continued to provide, in collaboration with FAO, assistance and advice on the control of zoonoses of public health importance and to sponsor research, especially on epidemiology and control measures. Reference centres and collaborating laboratories have again played an important part in this work.

The major zoonoses, such as brucellosis, rabies, hydatidosis and leptospirosis, are of importance in many areas of the world, and may constitute serious problems in locations favourable to their development. Their control involves a multidisciplinary approach, the collaboration of veterinary services with public health services being essential. In comparative medicine, studies have been further developed in virology.

Other work undertaken as part of the veterinary public health programme, and mentioned elsewhere in this report, included comparative studies on cardiovascular and cerebrovascular diseases (see page 39), comparative research on neoplastic diseases (see page 37), and collaboration with FAO on hygiene and standards of food of animal origin (see page 43).

The Joint WHO/FAO Expert Committee on Zoonoses reviewed, in December 1966, the epidemiology and methods of control of several of these diseases including salmonellosis, leptospirosis, tuberculosis, viral encephalitides, Q fever, hydatidosis, taeniasis, trichinosis and some other zoonotic infections. The Committee made recommendations on field control, therapy, diagnosis and other aspects of these infections with special reference to the conditions prevalent in warm climates. It also reviewed the special epidemiological features of certain zoonoses, such as trypanosomiasis, bilharziasis and other trematode infections and their connexion with large irrigation and other development projects.

**Brucellosis**

As the slaughter of infected animals is not a realistic control measure in many areas where Brucella melitensis infection is transmitted to man from sheep and goats, vaccination has to be resorted to as a means of checking the infection. In the continuing studies being co-ordinated by FAO and WHO on animal vaccines, Rev. 1 vaccine has been shown to be effective in immunizing lambs and kids against B. melitensis infection, and additional experiments have been undertaken by a collaborating laboratory in Teheran to determine the duration of immunity following vaccination of adult sheep. Two groups of sheep were vaccinated at fifteen months and thirty-two months of age and one group at four months for comparison. The animals resisted contact infection for thirty-three, twenty-six and eighteen months respectively after vaccination.

In the experimental studies of the Rev. 1 vaccine strain in pregnant goats the sixth consecutive passage has been completed, without any evidence of change in virulence. In pregnant sheep four consecutive passages of this vaccine strain have been completed and here again no increase in virulence has been observed. Further passages are planned to ascertain whether the vaccine can protect normal pregnant sheep in contact with infected pregnant animals.

Other WHO-assisted experiments with reduced doses of Rev. 1 vaccine are in progress in order to see if lower doses would be effective in immunizing pregnant goats without causing abortion; to test the persistence of Rev. 1 strain at different dose levels in female and castrated male kids; and to obtain information on the persistence of virulent B. melitensis organisms in lambs born and kept for one month in an infected environment.

Joint FAO/WHO assistance was provided for a controlled field vaccination trial by a collaborating laboratory in Iran in an infected flock of merino sheep using the Rev. 1 vaccine. Several abortions occurred among the sheep, but the infection cleared from the flock following vaccination of the lambs for two consecutive years and the slaughter of reacting sheep. Up to the end of 1965 over 200 000 sheep and goats had been vaccinated with the Rev. 1 vaccine in Iran, particularly in the heavily infected area around
Isfahan. Reduction in the incidence of abortions has been observed.

The WHO Brucellosis Centre at the Gamaleja Institute of Epidemiology and Microbiology, Moscow, has continued research on diagnostic tests and reported that the immunofluorescent method using the indirect test with sera from man and animals showed the same levels of antibody as are found with the agglutination test and also had other advantages over the conventional agglutination methods.

The FAO/WHO Brucellosis Centre in Mexico City has reported on a simplified method of detecting metabolic differences between B. abortus, B. suis and B. melitensis. This method is based on the metabolic changes in the medium produced by Brucella in culture and on the oxidative effect of Brucella cells on alanine.

Two papers on brucellosis were published in the Bulletin.1

Rabies

WHO-assisted research on rabies continued on a number of practical problems in this widespread and feared infection; they included the treatment of exposed persons, biological prophylaxis and treatment of bite-wounds, immunization of domestic animals and ecological studies in wild animals.

To assist in this co-ordinated research programme two laboratories—the Institut Pasteur in Paris and the Pasteur Institute of Southern India, Coonoor—were designated during the year as WHO International Reference Centres for Rabies. Two others being considered for designation at the end of the year were the Wistar Institute of Biology and Anatomy, Philadelphia, United States of America, and the Institute of Poliomyelitis and Viral Encephalitides, Moscow. These centres will provide training facilities, reference material and other reference services to rabies laboratories in their own and other countries.

The sixth annual world survey of rabies, issued during the year, deals particularly with the spread of the disease in the areas where it is endemic. Compiled from information provided by national authorities, the survey lists the countries where rabies exists, those that are free from it, national control measures and significant facts or changes in this field. At the suggestion of the Expert Committee on Rabies 2 which met in 1965 the scope of these surveys is being increased as part of a surveillance programme which is being developed in order to provide a quicker reporting system.

A second edition of Laboratory Techniques in Rabies,3 published during the year, reflects the numerous advances that have taken place since the first edition appeared in 1954. Nearly all the new diagnostic procedures and methods of vaccine production described are suitable for use in rabies laboratories with limited equipment and staff. In the new edition, a chapter on “The laboratory in the diagnosis and prevention of rabies” gives guidance on the relative advantages and difficulties of the different procedures described for the diagnosis of rabies, and on the production and potency testing of biological products. In another new chapter, the recently developed and successful application of the fluorescent antibody technique to the diagnosis of rabies is described.

WHO-assisted studies were continued with a view to improving the immunogenicity of antirabies vaccines. Further work on both living and inactivated vaccines prepared from virus produced in various tissue culture systems confirmed their superiority as antigens over similar vaccines prepared from virus produced in chick embryos and animal nervous tissue. A limited trial in volunteers at a collaborating laboratory in Moscow showed that an inactivated vaccine prepared from tissue culture virus is immunogenic in man. Further studies on the safety of tissue culture vaccines are in progress as a preliminary to an extended trial in man in which it is planned to test various inoculation schedules for pre-exposure and post-exposure immunization.

The success with tissue culture vaccines has focused attention on the behaviour and basic characteristics of rabies virus produced in various cell culture systems, upon which work had been carried out at a collaborating laboratory in Philadelphia, United States of America. Electronmicrographic studies showed clearly that from a morphological point of view the rabies virus does not belong to the myxoviruses as was formerly believed, but belongs to another morphologically similar group which includes the vesicular stomatitis virus, the sigma virus of Drosophila, the Cocal virus, and the Egtved virus. The infection and growth characteristics of rabies virus were also clarified in studies at this laboratory. These showed that the first complete new virus particles were produced within twelve hours, and that rabies virus penetrates cells within a few minutes of infection.

Other studies at the laboratory in Philadelphia have defined certain biophysical characteristics of the rabies virus, and the interrelationships of double infections

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with lymphocytic choriomeningitis virus. The latter virus has shown an enhancement effect on rabies growth in selected tissue culture systems. Work by this laboratory, in collaboration with a laboratory in Stockholm, has resulted in the development of a haemadsorption test that may prove useful for the detection of rabies antibodies. By this means, as well as with the complement fixation test, rabies antibodies were detected within a few days of infection in dogs experimentally exposed to virulent virus. These studies and others now under way should considerably increase the knowledge of growth requirements, an important factor in improving vaccines and diagnostic procedures.

The laboratory in Philadelphia has also developed an intracerebral assay technique in mice for testing chemical disinfectants acting on the rabies virus.1 By this test, several substances usually available for local treatment of animal bite wounds were found to be effective in inactivating the virus in from one to two-and-a-half minutes. These included various dilutions of soap, alcohol, quaternary ammonium compounds, iodine, acetone and ether.

In the WHO-assisted studies by collaborating laboratories in Prague, Toulouse and Paris on the ecology of rabies in wildlife, no infection was found in either area in insectivorous bats of several species tested. In Czechoslovakia, it was noticed that the disease appeared in three- to four-year cycles in the same localities—which are considered to be very suitable as habitats for the common fox. The Near East Animal Health Institute, Cairo, which was established with assistance from FAO and the Special Fund component of the United Nations Development Programme, reported the isolation of rabies virus from several cases of a disease clinically diagnosed as “equine encephalomyelitis” and known to be common in the area. A suspected wildlife reservoir is being looked for.

Leptospirosis

Further collaborative studies at the WHO/FAO leptospirosis reference laboratories have resulted in a radical revision of the taxonomy of leptospires and the list of recognized serotypes.

The serological tests used in diagnosis and serotyping have been studied further in order to enhance their specificity and simplicity. The fluorescent antibody test, both direct and indirect, has been found to be valuable in detecting infection, particularly in the urine, when the usual culture methods are not applicable. But the test is of little value for the identification of serotypes.

Further progress reported in studies on the use of free-living leptospires (Patoc I and São Paulo strains of biflexa) as antigens in the complement-fixation test for the diagnosis of human leptospirosis suggests that these antigens have a potential value in serological screening in spite of certain limitations.

A report from a collaborating laboratory in Budapest pointed to the sexual transmission of leptospires among wild and laboratory rodents. This would explain the frequently observed apparent host “specificity” of certain serotypes and the low degree of infection in very young rodents, without, of course, precluding other modes of transmission (contact by water, for example) known to exist in nature.

Workers from several WHO/FAO leptospirosis reference laboratories and other collaborating laboratories met in Moscow on the occasion of the International Congress for Microbiology to review the co-ordinated research studies in leptospirosis, with regard to epidemiology, diagnosis, therapy, pathogenesis and classification. A revised list of serotypes of Leptospira was prepared and a world list of serotypes and host distribution was reviewed.

Parasitic Zoonoses

In work on hydatidosis, the search continues for an efficient method of clearing the infection in dogs—the main reservoir of Echinococcus granulosus. An institute in Dunedin, New Zealand, which is collaborating in the WHO programme, has reported on a long-term field control programme of anthelmintic medication of dogs with arecoline and other measures to cut the cycle of Echinococcus granulosus. The programme was carried out in a restricted area over a period of twenty-one years. In spite of the excellent co-operation of the farmers in the area these measures have resulted only in reducing the infection and not in eliminating it. This well-conducted experiment underlines the necessity of further research on the biology of the causal cestode and improved therapeutic agents and also of immunological studies. In order to enable some of these basic studies to be carried out under controlled conditions, the institute in Dunedin and a collaborating laboratory in Canberra, Australia, are developing a technique of in vitro cultivation of the adult parasite as well as its scolecites. These two centres are also studying, with WHO assistance, the intestinal histological reaction of dogs to the parasite before and after inoculation with tapeworm antigens apparently inducing resistance.

Research workers on hydatid disease met in Geneva in November and December and reviewed the biology, taxonomy and physiology of the genus Echinococcus

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and the epidemiology, therapy and control of echinococcosis (hydatidosis). They recommended further studies for co-ordination by WHO.

An agglutination test has been developed in a laboratory in Washington, D.C. for the rapid diagnosis of trichinosis, and is being studied at several collaborating laboratories. The results so far indicate that this method, for which plastic cards are used instead of test-tubes, could provide a useful screening procedure.

A laboratory in London has reported a diagnostic agglutination test for toxoplasmosis employing a formol inactivated purified antigen. This test promises to be more reliable than the dye test which employs a living antigen. Collaborative studies on the new test are being arranged.

**Animal Influenzas**

WHO-assisted investigations into the existence of possible animal reservoirs of human influenza have continued in a network of collaborating laboratories in different parts of the world and have included attempts at isolation, analysis of strains and serological surveys of several new strains of influenza A in different animal groups; some of them, constituting new sub-types, have been isolated from birds.

Collaborating laboratories in Leiden, Netherlands, Sheffield, England, and at the University of Michigan, United States of America, have reported that virus neutralizing substances, presumably specific antibody, to the newly isolated influenza virus A/Equi 2 have been found in humans over seventy years of age. This finding suggests that infection with a virus resembling A/Equi 2 1963 strain may have been the cause of the 1889-1890 pandemic. Following an experimental infection of human volunteers with high doses of A/Equi 2 most of the individuals concerned showed serological evidence of infection and some became ill.

**Comparative Virology**

Further stages in the work of characterization and classification of viruses isolated from non-primate animals were discussed during a meeting in Geneva of representatives of the Eastern and Western Hemisphere Committees on Non-Primate Animal Virus Characterization. The preparation of specific sera to clarify the relationship of some of the viruses and to provide a more accurate diagnosis, and the selection of typical strains for the preparation of those sera, were among the main subjects discussed.

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CHAPTER 3

HEALTH PROTECTION AND PROMOTION

Under the general heading of health protection and promotion is reported the work done in cancer, cardiovascular diseases, dental health, mental health, nutrition, radiation health, and social and occupational health.

Cancer

In 1966 WHO's work on cancer was particularly directed towards assistance to studies on epidemiology, pathology and control, as well as research and training.

The first part of the WHO-assisted study on cancer of the oropharyngeal cavity, carried out in the district of Mainpuri, Uttar Pradesh, India, was terminated, and confirmed a relationship between cancer of the buccal mucosa and betel- and tobacco-chewing. A similar study was continued in the district of Chimkent, Kazakhstan, USSR, where this form of chewing is less prevalent, and a new study was initiated in the southern part of India, where it is highly prevalent. The results of a preliminary study in Central and South-East Asia were published in the *Bulletin*.

The study on lymphomas in children in Africa has been revised in the light of the comments and suggestions made at a meeting held in September at the WHO International Reference Centre for the Histopathology of Leukaemias and other Neoplastic Conditions of the Haematopoietic Cells, in Paris.

The international study on the relation of cancer of the breast to breast-feeding in various population groups was continued in eight countries having high, medium and very low incidence. Parity and lactation are the main factors being studied. The investigators concerned met in Boston, United States of America, in July to review the results so far obtained.

Experimental work on animals has indicated that cancer of the oesophagus can be induced by exogenous chemical carcinogens, and preliminary epidemiological studies on man have suggested that specific factors can be incriminated. In co-operation with the newly established International Agency for Research on Cancer, the Organization has initiated a study on cancer of the oesophagus, and investigations are to be carried out in Central Asia, Africa and Europe, in places known to have a very high incidence of this tumour. These studies might lead to logical preventive measures and provide a more effective approach to the whole problem of cancer of the alimentary tract.

The first of the classifications (for lung cancer, prepared by the WHO International Reference Centre for the Histopathology of Lung Tumours, in Oslo) was published, and the second—a classification of breast tumours by the International Reference Centre for the Histopathology of Mammary Tumours, in London—was prepared for publication.

The WHO International Reference Centre for the Histopathology of Salivary Gland Tumours, in London, made an analysis of the material already circulated, and it was decided to expand the terms of reference to include lacrimal gland tumours; the International Reference Centre for the Histopathology of Leukaemias and other Neoplastic Conditions of the Haematopoietic Cells, in Paris, produced a new classification for a second trial; the International Reference Centre for the Histopathology of Oro-pharyngeal Tumours, in Agra, had a revision meeting before sending out the selected set of slides covering the final classification to be tested; and in Washington the International Reference Centre for the Histopathology of Soft Tissue Tumours prepared the final classification which was reviewed at a meeting in Tokyo in November; preliminary work was done for the publication of the results.

Similar work on histopathological classification was done at the international reference centres for ovarian tumours (in Leningrad), bone tumours (in Buenos Aires), thyroid gland tumours (in Zurich), skin tumours (in Perth, Australia), and genito-urinary tract tumours (in Washington). An International Reference Centre for the Histopathology of Odontogenic Tumours was established during the year at the Royal Dental College Department of Oral Pathology, in Copenhagen.

When the Expert Committee on Cancer Treatment, at its meeting in March 1965, reviewed recent advances in surgery, radiotherapy and chemotherapy, particular attention was given to the evaluation of cancer treatment. Following this, a questionnaire was sent to the members of the Expert Advisory Board.

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2 International reference centres and the institutions where they are located are listed in Annex 14.
Panel on Cancer for suggestions on a collaborative evaluation of methods of cancer treatment.

A review of present trends in cancer research was published by WHO during the year. It is based on material gathered by the Organization through questionnaires and, although the information provided was incomplete, the material is believed to represent a fair sample of the research in progress in the field of cancer, and may therefore be useful in outlining the major aspects of some of the problems involved.

Trends indicated by the review include the increasing application of epidemiological methods in the study of cancer; attempts to rationalize cancer therapy by the judicious combination of methods and by comparison of the effects of various methods on specific tumour types; increased emphasis on the mechanism of carcinogenesis; greater interest on the part of the experimental oncologist in human cancer as an object of study; and increasing co-operation between the clinician and the laboratory worker.

The Organization has maintained close collaboration with the International Union against Cancer, and was represented at the Ninth International Cancer Congress, held in Tokyo in October. Future co-operation between the International Agency for Research on Cancer, the International Union against Cancer and WHO was the subject of a panel discussion organized during the Congress. WHO was also represented at the Second Assembly of the International Council of Societies of Pathology and the Sixth International Congress of the International Academy of Pathology, both held in Kyoto in October.

For work on cancer immunology, see page 51, and on leukaemia, see below and page 44.

Comparative Oncology

Under the Organization's veterinary public health programme work was continued on comparative oncology. A WHO International Reference Centre for Comparative Oncology was designated at Washington D. C. and further collaborating centres were established for comparative studies on neoplasms of domestic animals. Investigators from the centres and the collaborating laboratories met in Geneva to plan details of this programme and to ensure its co-ordination with the WHO programme on cancer, and with the work of the International Agency for Research on Cancer (see below). Material for histopathological studies is being collected from many countries. Epidemiological studies are being pursued in several collaborating institutes, and as a basis for extended work in this field WHO has provided assistance to a number of veterinary schools to enable them to introduce a modern system for recording data on animal disease.

In the continuing research on the etiology of leukaemia in animals, evidence is accumulating that the disease in cats, and possibly in dogs, is caused by a virus, as is known to be the case in chickens and certain rodents. The etiology of the condition in cattle is proving difficult to elucidate and there is as yet no good evidence of a virus etiology in this species, despite some suggestive indications. In one country it is thought that there is an association between the occurrence of leukaemia in cattle and in man.

International Agency for Research on Cancer

A new approach to the co-ordination of research was the establishment, in accordance with resolution WHA18.44 of the Eighteenth World Health Assembly, of the International Agency for Research on Cancer. The Director was appointed on 1 July 1966 and the Agency started its operations in offices temporarily assigned to it at the Headquarters of the World Health Organization in Geneva, pending its removal to Lyons, France. For administrative developments regarding the Agency, see page 86. Initial efforts have been largely concerned with the recruitment of personnel to implement the Agency’s programme as approved by the Governing Council. In the interim, however, a limited number of staff appointments have been made to implement certain immediate activities. These activities are largely directed to obtaining an identification, as complete as possible, of cancer incidence on a global basis, in order to draw attention to specific needs and problems in cancer prevention and control, including those related to populations of high and unusual cancer risk. This should also form the initial step for a continuing programme for collecting and disseminating up-to-date incidence data. These activities include collaboration with established cancer registries and the support of cancer registries in the associate regional centres to be set up in different continents.

Further studies are being implemented relative to the identification of biological and clinical factors of significance in human carcinogenesis. Such studies include the investigation, on a global basis, of the distribution of aflatoxin and its relationship to liver carcinoma and other cancers. Other studies include investigations on the possible role of the reticuloendothelial system in influencing the overall incidence of cancer, as well as cancer of specific sites; a study on the relationship of cancer to asbestos; exploratory investigations on the building-up of col-

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laborative research studies on gastro-intestinal cancer; and a study on cancer in immigrant populations. The possibility of carrying out investigations on the epidemiology of cancer in domesticated animals is being explored.

An education and training programme has been started and forty-one fellowships were awarded in 1966.

**Cardiovascular Diseases**

The future orientation of the Organization’s cardiovascular diseases programme was discussed by the Advisory Committee on Medical Research at its meeting in Geneva in June, when it reviewed the first five years of WHO research in cardiovascular diseases. In the previous month, the Nineteenth World Health Assembly had requested the Director-General to study the modalities for further expansion of the programme in cardiovascular diseases.¹

In addition to the Organization’s functions in planning, co-ordinating and stimulating research and the training of research workers, the Committee recommended the development of a chain of collaborating research centres, mainly supported by the countries concerned and working with full WHO recognition and backing.

Priority should be given to long-term epidemiological studies in populations undergoing rapid changes with regard to culture, industrial development, distribution and social conditions. Other studies should be devoted to tensions associated with industrialized urban life and their correlation with ischaemic heart disease; individual and mass preventive trials; and dietary factors. Further animal studies should follow the lines of promising work already initiated in this field. WHO should continue to improve standard nomenclature and classification for international use.

During the period under review the Organization continued to assist several studies on cardiovascular diseases in various population groups. An analysis of records of arterial blood pressure of subjects born in lowlands but living for several years at high altitudes in Peru revealed that pressures do not show the usual increase with age; on the contrary, the values are in general lower than at the time of arrival. Assessment was begun of the blood pressure in populations born and living at high altitudes. WHO also continued to support the longitudinal study of blood pressure and factors associated with the development of arterial hypertension in Norway.

In WHO-assisted studies in Wellington, New Zealand, progress was made in the analysis of the results of a survey of Maoris in New Zealand and the inhabitants of the South Pacific islands of Rarotonga and Pukapuka. The environment in which these groups live is very different from that of populations living in modern surroundings, where coronary heart disease is rife, and some aspects—diet, for example—are easier to assess. The results indicate that hyperuricaemia is very similar in all three groups, but that blood pressure and cholesterol levels are lower in the Pukapuka group. A survey of the total population of the Tokelau Islands has now been prepared. In Jamaica a survey was made of a rural and an urban population, the examinations including retinal photographs and automatically-recorded blood pressure measurements; the results of the survey were compared with findings in the United Kingdom in a population group in Wales. In Scotland a WHO-assisted pilot study was started to investigate the effect of lowering blood lipids in healthy men on the development of coronary heart disease; it is intended to extend these studies to other countries.

In Kampala, Uganda, at the WHO Research and Training Centre for Cardiovascular Diseases at Makerere University College Medical School, several studies are in progress. They include investigations on arterial blood pressure and hypertension in relation to cultural and socio-economic changes; on vascular complications in diabetic Africans; on changes of fibrinolytic activity with age, and differences between the African and the Indian population; and on the pathogenesis of endomyocardial fibrosis and its relation to rheumatic fever.

As part of an inquiry into the importance of cardiomyopathy due to Chagas’ disease, a cross-sectional examination was carried out and a longitudinal follow-up study prepared in an area in Brazil where the disease is endemic.

WHO-supported co-operative studies on cardiomyopathies continued at Bahia and Ribeirão Preto, in Brazil, at Ibadan, Nigeria, at Kampala, Uganda, and at Caracas, Venezuela. Techniques for clinical diagnosis and for examination of the heart at autopsy were tested, cardiac registries were established, and research was started on the causes of cardiomyopathies and the mechanisms through which they develop. The progress of this collaborative work was reviewed and plans were made for its extension in other spheres, including investigations on the etiology and pathogenesis of the initial damage to the heart and the development of cardiac hypertrophy under a variety of naturally occurring, experimental conditions in man such as denervated heart (due to Chagas’ disease), various metabolic disturbances or hyperergic reactions to infection.

¹ Resolution WHA19.38.
The third year of the study of atherosclerosis at autopsy was completed; material from about 17,000 subjects in five communities has been examined. In this population-related study the material selected for examination is representative of all the deaths occurring in the community. Analyses have shown that myocardial infarction (both acute and chronic) is much under-diagnosed during life. Coronary stenosis or myocardial infarction at autopsy was found to be relatable to factors which could be ascertained during life: age, heart weight (from heart volume), and degree of calcification in one or other coronary artery; obesity was not related to coronary stenosis or myocardial infarction. One community was found to have less severe lesions in the aorta, coronary arteries and the myocardium than the others, but the relevant factors are not yet clear.

Studies have been designed with the aim of improving early diagnosis of ischaemic heart disease, investigating etiology and providing means of testing preventive measures. Representative samples of populations in several communities in Europe are examined, and re-examinations are made at the onset of illness and at autopsy. Techniques have been developed so that data from several communities can be compared and pooled, and studies have been made to achieve more objective assessment of electrocardiograms and of signs in the fundus oculi. Detailed autopsy examinations of the heart and its vessels have been worked out and tested. Linked clinical-morphological studies have been started at three laboratories in Europe in areas where the autopsy studies are carried out.

WHO continued to assist follow-up studies on cerebrovascular diseases in two areas in Japan. One of these studies is very similar to the linked clinical-morphological studies on ischaemic heart disease in Europe, and efforts are being made to extend the studies in Japan and Europe to cover both cerebrovascular and ischaemic heart diseases.

With the co-operation of the International Society of Cardiology, WHO started a systematic collection of information on cardiovascular research institutes, laboratories and departments, their professional personnel and programmes of work.

Also in co-operation with the International Society of Cardiology, WHO collected information on the long-term prognosis of subjects operated on for congenital and acquired cardiovascular diseases, and preliminary results were presented to the Fifth World Congress of Cardiology, held at New Delhi in November. The same society, as well as national societies of cardiology, collaborated with the Organization in continuing the studies on internationally acceptable nomenclature and criteria for anatomical, etiological and functional diagnosis of cardiovascular diseases.

The Expert Committee on the Prevention of Rheumatic Fever, which met at the end of April, recommended the establishment of pilot centres to carry out preventive programmes against rheumatic fever—one of the sequelae of group A streptococcal infection—and the expansion of such services as rapidly as possible; the validation by scientific methods of the Jones' criteria for the diagnosis of rheumatic fever in developing and economically developed countries; and the establishment of a network of WHO reference laboratories for bacteriological and serological diagnosis of group A streptococcal infections.

Investigators co-operating in research on cardiomyopathies met in New Delhi in December 1966 to evaluate techniques for co-operative clinical and anatomical studies and draw up plans for future research on immunological mechanisms and for the exchange of biological material.

The first WHO-sponsored advanced training course in cardiology for physicians from developing countries began in November in Copenhagen. The Government of Denmark provided financial support for this eight-month course on the diagnosis, treatment and prevention of the major cardiovascular diseases.

**Comparative Studies on Cardiovascular and Cerebrovascular Diseases**

Under its veterinary public health programme, WHO has continued to co-ordinate and provide assistance for comparative studies on cardiovascular diseases in animals with a view to improving the knowledge of similar conditions in man. The workers concerned met in London in June to discuss the progress made and the future programme.

Investigations on the possible influence of hard or soft drinking-water on the development of atherosclerosis were continued with pigs and chickens in collaborating laboratories in Cambridge (England), Munich (Federal Republic of Germany) and Vienna, but were still inconclusive. Atherosclerosis is more common and severe in men under 50 than in women before the menopause, and differences associated with sex have been observed in some animals; but in a pilot experiment female pigs did not show any greater tendency to atherosclerosis after ovariectomy. Although atherosclerosis occurs not uncommonly in

several species of animals, intravascular thrombosis is rare. Therefore clotting mechanisms in many species of animals are being studied.

Following the investigations in chickens on the effect of social stress on cardiovascular disease, similar studies have been undertaken with pigs, and further studies with monkeys have been planned.

Studies were made at a collaborating laboratory in Glasgow, Scotland, on spontaneous hypertension associated with interstitial nephritis in dogs, which may prove a useful model for the study of hypertension in man.

In several species of animals it is not uncommon for the small intramural coronary arteries to be diseased, and there may be associated myocardial infarction. Such lesions have rarely been described in man, but they may have been overlooked owing to preoccupation with the more obvious lesions of the large coronary arteries. Investigations are now under way in the United Kingdom and the United States of America to find out to what extent this condition occurs in man.

The discovery that extensive cerebrovascular disease is common in old swine, mentioned in the Annual Report for 1965, has been confirmed by further studies. Arrangements have been made to study at the University of Pennsylvania brains and blood vessels of old swine from different parts of the world. Degenerative changes in the arteries of the brain of dogs associated with the aging process are also proving of interest for comparison with similar processes in man.

Investigations have been undertaken at two centres—one in the United Kingdom (in Edinburgh) and the other in the United States of America (in Philadelphia)—on cardiovascular defects in dogs and pigs in an attempt to elucidate genetic and environmental factors.

Dental Health

The WHO dental research programme has been mainly directed to the development of a standard methodology for field surveys of dental caries and periodontal diseases and for the compilation of comparable statistics using morbidity records. Dental epidemiologists in various countries have contributed to this work, which follows recommendations made by a scientific group on dental research and the Advisory Committee on Medical Research in 1965. Manuals describing proposed standard methods have been drafted and are to be distributed to the co-operating research institutions for experimental use in the first instance.

The results of a survey of dental manpower in six African countries were analysed, and reflect an acute need for education and training facilities in various areas of the continent. Following the survey, assistance was provided to Nigeria in the planning of a dental school in Lagos, which it is hoped will serve various English-speaking countries in Africa.

In dental education, the assistance provided by WHO has been mostly in the overall organization of dental schools and in the teaching of preventive and social dentistry. An example of the first type is assistance for the reorganization of the Government Dental College in Bangalore, India. For this long-term programme, which began in 1966, WHO is providing advice, fellowships to teaching staff, and supplies and equipment. Assistance in the establishment or strengthening of departments of preventive and social dentistry has been provided to various dental schools in Latin America, including those at the University of Concepcion, Chile, and the University of Antioquia, Colombia. See also page 104.

As part of a programme for improving the teaching and practice of dentistry for children, an advanced three-month course was held in Copenhagen for teachers of pedodontics and administrators of children's dental health services from eleven countries in the six regions. A similar course was held in 1965.

Serious problems are confronting several countries in Europe as a result of the increase in dental disease, particularly among children, and the shortage of qualified personnel. Advise on the organization of dental health services was given to Malta and the Netherlands, and the needs of some other countries were studied and facilities explored with a view to the provision of inter-country training in public health dentistry in 1967.

In several countries of the Western Pacific Region dental epidemiological surveys are being undertaken by the participants in two courses on survey techniques which were organized by WHO in 1964 and 1965. The surveys are a necessary step to the planning and development of sound dental health services in the area. In 1966, in follow-up visits to some of the countries concerned, advice was given on difficulties encountered in the planning or conduct of the surveys.

Close co-operation was maintained with the International Dental Federation, which designated a special committee for liaison with WHO. At a meeting in Copenhagen representatives of the committee and of WHO reviewed fields of activity in dental health of common interest to WHO and the Federation and agreed on co-ordination of the work.

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Mental Health

The ten-year programme of research in social psychiatry and the epidemiology of mental disorders, which was started in 1965 on the recommendation of a scientific group on mental health research, is now well under way. The programme is designed to obtain comparable information on the prevalence and distribution of mental disorders, the factors affecting their onset and evolution in different social and cultural settings, and the effects of therapeutic intervention.

In the first part of the programme annual seminars are being held to examine the standardization of psychiatric diagnosis, classification and statistics in relation to different categories of mental disorders. The seminar in 1966, the second in the series, was held in Oslo with the participation of the twelve experts from different countries who are collaborating in the whole programme and also experts from the Scandinavian countries. The main topic was borderline psychoses, with emphasis on the psychogenic type. Reports were presented on exercises in the diagnosis of schizophrenia undertaken as a follow-up of the 1965 seminar on this subject.

A draft guide to the collection and analysis of psychiatric statistics that had been revised with the help of a number of experts was also discussed at the seminar. As a basis for the preparation of the guide, information had been collected during surveys of the relevant programmes in many countries, Poland and the Union of Soviet Socialist Republics having been visited for that purpose earlier in 1966. The guide is intended to assist individual countries in setting up and using a reporting system, and also to facilitate the collection of internationally comparable data for research purposes.

Eight field research centres (in China (Taiwan), Colombia, Denmark, India, Nigeria, the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America) were selected in 1965 to participate in an international pilot study of schizophrenia. Investigators from each centre held a second meeting in Geneva in July 1966 to review and amend the research schedules, which will include standardized diagnostic method and case-finding procedures. Subsequently the investigators had the schedules translated for use in their own countries and later in the year they exchanged visits to discuss further modifications required in the schedules.

Programmes for research in biological psychiatry are developing. The Advisory Committee on Medical Research, at its eighth session in June, discussed the report of the Scientific Group on Research on Genetics in Psychiatry which met in November 1965, and endorsed the group's proposals.

A scientific group on research in psychopharmacology met in December 1966 in Geneva. Subjects discussed included the classification of psychotropic drugs, their mode of action and clinical effects, and the methodology of clinical studies. Proposals were made on the role of WHO in further psychopharmacological research, including evaluation of drugs in current use and provision of up-to-date information about psychotropic drugs to developing countries.

A glossary in terminology on epilepsy was circulated to experts in eighteen countries for comment.

A major objective of the Organization's programme in mental health continues to be assistance to countries in the development of their mental health services, including the training of personnel. Long-term programmes are being pursued in Ceylon, China (Taiwan), India, Iran, Malta, and the Philippines. It has been found valuable for the psychiatrist who assisted initially with the programme to return at intervals to advise on its development. In 1966, for example, a follow-up visit of this kind was paid to Iran in connection with the project for the development of mental health services assisted by WHO from 1959 to 1964. In Burma, Thailand, the United Arab Republic and Venezuela, psychiatric nursing tutor advisers are assisting in the implementation of parts of the mental health programmes. In India, visiting professors provided by WHO helped to develop further the teaching of psychiatry at the Baroda Medical College in conjunction with other teaching units. One of the aims is to keep the importance of mental health before the students throughout their clinical training. During visits to public health demonstration areas information was collected which will be used in the preparation of an outline on training rural health personnel for some mental health work.

Problems of dependence on alcohol and of dependence on other drugs have been the subject of considerable international discussion in recent years and a combined approach has been gradually developing. An expert committee met in October to discuss services for the prevention and treatment of dependence on alcohol and other drugs. The members agreed that, despite existing differences, there are many significant similarities in the causation and treatment of these conditions, which create major public health problems. The Committee, composed of psychiatrists, public health officers and a sociologist, considered that a multidisciplinary approach was necessary. The professions involved should include general physicians, psychiatrists, internists, social workers, sociologists,
clinical psychologists, nurses and occupational therapists. Close co-operation of the police and courts with the medical services was required. Alcohol and other drugs are often used in combination, and transfer from one drug of abuse to another frequently occurs: the need for alertness to the changing patterns of drug dependence and emerging problems of dependence on newer drugs was therefore stressed. The Committee outlined the services required for prevention, treatment and rehabilitation. It recommended the establishment of small pilot centres in developing areas, and also of hospital units and other facilities, preferably in association with universities, for advanced training and research on alcoholism. Topics were suggested for research under various headings: epidemiological, sociological, clinical, pharmacological studies and studies related to education and training. The Committee stressed the importance of the Organization's leadership in developing co-ordinated multidisciplinary international research and in stimulating international co-operation.

In many countries suicide is among the ten leading causes of death, and in some the establishment of suicide-prevention services has been followed by a lowering of the suicide rate. In preparation for further work on this problem, consultations were held with a number of experts who have carried out research on suicide or who have organized suicide-prevention services.

Nutrition

The activities of FAO and WHO in the field of nutrition were reviewed by the Joint FAO/WHO Expert Committee on Nutrition which met in December. The Committee discussed nutrient requirements; the use of food additives in infant foods; the food and nutrition personnel required by developing countries and facilities for their training (high priority having been given to the development of training programmes); the factors influencing food utilization in the home, with special reference to infants and young children; nutrition in adolescence and for the aging, and its influence on mental development, working performance and non-infectious diseases; and rickets.

During the past ten years applied nutrition programmes have been implemented in sixty developing countries with the assistance of FAO, UNICEF and WHO. These programmes are intended to demonstrate how nutritional standards, particularly in rural areas, can be raised through the co-ordinated action of the authorities for education, agriculture and health. The programmes should be evaluated periodically and in this connexion visits were paid to projects in Colom-
by aflatoxin, was another important subject considered by the Group, which recommended the maximum levels permissible in protein-rich food mixtures for human consumption.

Research is being undertaken to increase knowledge of nutritional diseases and to improve methods for their control. A report is in preparation on the epidemiological survey in Jordan of xerophthalmia, commonly found where calorie malnutrition is prevalent. Trials were conducted to explore the possibility of preventing xerophthalmia by the administration of massive doses of vitamin A in areas where the condition is very prevalent and where there are few possibilities of increasing the dietary intake of vitamin A or carotenoids from natural sources.

A paper describing in detail the ocular signs of vitamin A deficiency was published in the Bulletin.1

Institutions in various parts of the world are co-operating with WHO to evaluate the prevalence and elucidate the etiology of iron deficiency and megaloblastic anemias. A meeting planned for early 1967 is to consolidate the information so far obtained and to decide on the orientation of research in future years.

The adoption of a uniform method of taking body measurements would allow the systematic collection of data necessary to assess the present nutritional status of different populations. WHO therefore continued, in co-operation with the International Biological Programme and the International Children's Centre, to explore, through different institutions in the world, the possibility of adopting a uniform methodology for this purpose. As recommended by the WHO Expert Committee on Medical Assessment of Nutritional Status,2 a monograph was prepared on the assessment of the nutritional status of the community.3

Work on food additives is described on page 54.

Food Standards and Food Hygiene

WHO participation in the joint FAO/WHO food standards programme continued to increase. WHO took part in meetings of the Codex Committees on Food Hygiene, Meat and Meat Products, Fish and Fishery Products, the Committee of Government Experts on the Code of Principles concerning Milk and Milk Products and the joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick Frozen Foods. Much of this work was done under WHO's veterinary public health programme. The Committee on Food Hygiene dealt with general aspects of hygiene in relation to food standards and with specific questions referred to it by other Codex Committees. In the other meetings, WHO participation was concerned mainly with the health aspects of the standards under consideration.

The Joint FAO/WHO Codex Alimentarius Commission held its fourth session in Rome, in November 1966. The Commission received reports from the Co-ordinating Committee for Europe, the two joint ECE/Codex Alimentarius Groups of Experts, the Working Party on Standardization of Perishable Foodstuffs of the Economic Commission for Europe and the various Codex Committees. The Commission made a study of the progress made in the elaboration of world-wide standards for foods such as cocoa, cocoa products, chocolate, fats, oils, fish, fishery products, meat, meat products, poultry meat, fresh fruit, fresh vegetables, sugars, milk, milk products, fruit juices, quick frozen foods, processed fruit, processed vegetables, and regional standards for natural mineral waters, dietetic foods, honey and edible ices. The progress made by the Codex Committees on Food Additives, Analysis and Sampling, General Principles, Hygiene, Labelling and Pesticide Residues was also reviewed. The Commission made recommendations on the work to be undertaken in 1967.

Two training courses relating to meat hygiene were organized jointly by FAO and by WHO (under its veterinary public health programme). A three-month course for meat inspectors from countries of the African and Eastern Mediterranean Regions was held in Nairobi, Kenya, from mid-January with lectures, demonstrations, and practical work on meat inspection and meat hygiene. The second was a six-week course on abattoir management, held in Denmark from the end of May, with participants from twenty countries; it included demonstrations in slaughterhouses, packing plants and other related institutions.

Radiation Health

The value and dangers of ionizing radiation in the field of health are increasingly recognized by health administrations. On the one hand are its applications in modern science which are leading to new knowledge ranging from subcellular molecular biology to man's relationship with his chemical, biological and physical environment and, on the other, the potential large-scale ill effects on living organisms of ionizing radiation.

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A realistic appreciation of the nature and magnitude of the existing and potential hazards is essential for public health planning and radiation protection. Full advantage must be taken of the rare opportunities of obtaining reliable information on the effects of radiation on human beings. Although experimental radio-biology in animals and lower forms of life has received attention in recent years, information directly applicable to humans is inadequate. Following a meeting on epidemiological studies in human radiobiology convened by WHO at the end of 1965, a report on the situation and on the most promising avenues for progress was completed early in 1966.

The quantitative evaluation of the health hazards of different radioactive nuclides with which man comes into contact is a complex and important basic question in radiation health. At present the evaluation must be done on the basis of extrapolation from animal data and very limited information on persons who have ingested, or been injected with, radium preparations. Persons who have in the past been given radioactive thorium dioxide preparations for medical purposes still exist in a number of countries as significant although diminishing groups, and these are, potentially, an invaluable source of information. As a continuation of work done in recent years, a study was made of the number of thorotrast patients in various countries, the types of records available, and other factors. The study pointed to the need for, and confirmed the feasibility of, a full-scale international collaborative epidemiological investigation.

To review the international collaborative investigation on the incidence of leukaemia in patients treated with radiation for cancer of the cervix uteri, a meeting of investigators was held in Geneva in September. Since the study began in 1960, 60,000 patient-years at risk have been observed by thirty-one clinics in nine countries. Under a research agreement between WHO and the Harvard University School of Public Health, the information continues to be collected and analysed. The study has not so far demonstrated a high incidence of leukaemia in this particular group of irradiated individuals—a finding which is at variance with studies of other groups, and which consequently re-opens for further evaluation one of the main questions of human radiobiology. The meeting of investigators recommended that the study should be continued, in order to allow collection of a larger number of observations on patients between four and eight years after exposure to radiation.

Because of its far-reaching significance to human health and welfare, the question of radiation effects on the genetic structure of man has been of concern to WHO for many years. Of particular importance in this connexion has been the possibility of studies on persons living in areas of high natural radiation—for example, in Brazil, Ceylon and India. The most favourable area for such studies lies along the south coast of India, in Kerala and Madras states. Under a research agreement drawn up in 1965 with the Atomic Energy Establishment, Trombay, India, work has begun on detailed measurements of external radiation doses received by individuals and population groups in the area, together with evaluation of internal radiation doses, and on chromosome studies on hundreds of persons from exposed groups and from suitable control groups to assess the effects of continuing chronic low-level radiation exposure on human cells.

Details of the Organization's work in connexion with the environmental health aspects of ionizing radiation, including problems associated with the disposal of radioactive waste and the safe operation of nuclear power plants, as well as an account of the International Symposium on Radioecological Concentration Processes, organized in Stockholm, are given on pages 66 and 67.

The Organization has advised and assisted a number of countries in the organization of radiation protection programmes within the framework of public health services. For example, assistance is being given to the Government of Nigeria in the development of a national programme of radiation protection, including health legislation, to control the uses of ionizing radiation, and in the preparation of codes of practice suitable to Nigerian conditions. WHO gave further assistance in the development of radiation health protection services within the Ministry of Health in Thailand, and a WHO radiographer tutor continues to assist the School for Radiological Technology in Bangkok. Two radiation protection courses, with emphasis on safety in the medical uses of ionizing radiation, were organized by WHO in Colombo, Ceylon, in November and December, and attended by doctors, radiologists, radiographers and radiotherapists. In India, WHO has provided assistance and fellowships at the Radiation Medicine Centre, Bombay.

In November an international training course on radiological health inspections was organized jointly in Rockville, Maryland, by the United States Public Health Service and WHO. WHO provided fellowships to enable participants, from all six regions, to attend the course which was concerned with the principles and standard techniques of radiation safety inspection of radiological installations, and included much practical work and the actual carrying out of surveys.
WHO completed a world-wide study of needs and opportunities for postgraduate training in the medical uses of radioisotopes, following a joint IAEA/WHO meeting in 1965 on the possibility of establishing an international training centre. The available facilities at centres in five regions were appraised, and their possible expansion considered.

Social and Occupational Health

The protection of the health of workers in developing countries was discussed by the Joint ILO/WHO Committee on Occupational Health in Geneva in August. The Committee made a series of practical recommendations on the organization of occupational health services with special reference to the role of paramedical and auxiliary personnel. The Committee recommended the establishment of official committees and occupational health institutes; the provision of effective health services within large industries; the enactment of legislation to apply ILO Occupational Health Services Recommendation, 1959; the provision of first-aid posts and the training of first-aid personnel; and the development of training facilities for the many different members of the occupational health team. The Committee also stressed that there should be participation by the workers in any health programme, and that employers should be made aware of their responsibilities towards their employees.

WHO has assisted research into respiratory diseases in textile workers, carried out by the London School of Hygiene and Tropical Medicine in England, where 505 women in two factories were examined, and in the United Arab Republic, where 457 women in five factories were examined. The frequency of byssinosis was investigated, and incidental studies were made of haemoglobin levels and of the frequency of varicose veins, uterine prolapse and dysmenorrhoea, together with the factors, such as age and parity, influencing these conditions. In one of the two factories studied in England, byssinosis was found among winding-room operators; one in five of the women examined had symptoms of the disease. The results of the studies in the United Arab Republic are not yet available.

A study on the subject of noise as an occupational hazard and public nuisance was published in the Public Health Papers series.\(^1\) It points out that in the contemporary scene noise has increased to a level where it has become a danger to mental and physical health. The study gives a brief account of the effects of noise on hearing, communication and behaviour and reviews the extent of hearing impairment in the general population. Methods of noise control are discussed and the importance of audiometry and the need for establishing uniform threshold reference levels are emphasized. Other subjects considered include the assessment of disability and the establishment of damage-risk criteria—the maximum sound pressure levels of noise to which persons may be exposed if the risk of significant hearing loss is to be avoided. Legislation with regard to noise control and compensation for noise-induced loss of hearing is shown to be varied and, in most cases, inadequate. With regard to the related problem of community noise, the role of town planning and zoning is stressed. Suggestions are made for future international action and for research.

Health Services for Seafarers

At the request of the Nineteenth World Health Assembly, which considered that additional efforts should be made to improve health services for seafarers in large ports, the possibilities are being explored of establishing at least two pilot health centres for seafarers in different regions. In addition, WHO has invited Member States to make available to seafarers in each port services where the necessary specialized medical care can be provided.

Accident Prevention

The Nineteenth World Health Assembly discussed the need for international research on the role of human and medical factors in road traffic accidents. WHO has analysed the comments received from governments on an earlier WHO document entitled "Guiding Principles in the Medical Examination of Applicants for Motor Vehicle Driving Permits", and the resulting study will be used at the next session of the Economic Commission for Europe's Working Party on Road Traffic Safety early in 1967.

Rheumatic Diseases

Research on rheumatic diseases has many aspects—immunologic, bacteriological, and epidemiological. In the field of epidemiology it has been hampered especially by the lack of internationally agreed diagnostic criteria for the different disease entities. A scientific group that met in June attempted to establish such criteria for the diffuse connective tissue diseases (systemic lupus erythematosus, periarteritis, dermatomyositis and xeroderma) for epidemiological and

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clinical purposes. The group recommended that, to assist in the validation of the proposed criteria, a group of investigators should meet to prepare a protocol and that suitable collaborating centres should be selected. The group also stressed the desirability of the standardization of diagnostic procedures; the provision of pooled serum reference samples; genetic surveys; the compilation of further data on drug schedules producing syndromes of the systemic lupus erythematosus type, and/or myopathy; the development of facilities for the maintenance, distribution and exchange of strains of animals used as experimental models in this field; and attention to the problem of nomenclature.
CHAPTER 4

BIOMEDICAL SCIENCES

This chapter brings together for the first time four subjects—biological standardization, human genetics, human reproduction and immunology—which technically have many points in common, but which previously were dealt with in different parts of the Report.

Biological Standardization

The establishment of international biological standards and reference preparations continues under the supervision of the Expert Committee on Biological Standardization. Further, international requirements for a number of biological substances continue to be formulated and published. International standards are established for the purpose of serving as reference materials in biological assay and for use in the calibration of national standards for substances of prophylactic and therapeutic importance in human and veterinary medicine. Recently a new category of "international reference reagents" was designated for substances used for the diagnosis and identification of microorganisms. International requirements are published to provide guidance to those responsible for the production and control of biological substances used clinically, to secure uniformity of quality throughout the world, and to facilitate the exchange of biological substances between countries.

International standards enable criteria for the potency (efficacy) of biological substances to be specified in national requirements in comparable terms (international units). The requirements, however, cover a wider field and include specifications for safety as well as efficacy. With the additions made this year, there are at present over 160 international standards, reference preparations, and reference reagents in existence, but over 50 other substances are under consideration for establishment. Fifteen sets of requirements for biological substances have already been adopted and, of these, five published some years ago have been revised.

The Expert Committee on Biological Standardization met in November 1966. The Committee's decisions on international standards, reference preparations and reagents were the following:

| Established | | Replaced |
|-------------|----------------|
| Gramicidin  | Anti-Newcastle disease | Dihydrostreptomycin |
| Hygromycin B | serum | Serum gonadotrophin |
| Tylosin      | Anti-Rh\textsubscript{0} (Anti-D) blood typing serum |
| Colistin methane sulfate | Enterovirus antisera |
| Clostridium oedematiens (Alpha) toxoid | Adenovirus antisera |
| Rubella antiserum | Leptospira antisera |
| | |

Replacements such as the above are necessary for several reasons; the commonest is the exhaustion of stocks. Other reasons include the need for using purer materials more representative of preparations used clinically, or for more suitable material for advanced assay methods developed since the standard was originally established.

Papers on the International Standard for Novobiocin and the second International Standard for Dihydrostreptomycin were published in the Bulletin.\textsuperscript{1}

The Committee also considered the possible need for standards for a number of other substances, work on some of which had already been undertaken. These include a number of antibiotics, hormones and enzymes. Studies had been made, for possible international use, on mucosal heparins, human insulin, human thyrotrophin, calcitonin, angiotensin and renin, urokinase, plasminogen and plasmin, thrombin and other blood-coagulation and fibrinolytic enzymes. Amongst the immunological substances considered were anthrax vaccine, Newcastle disease vaccine (live) and a number of antibodies including anti-brucella abortus serum, tetanus antitoxin for flocculation test, long-acting thyroid stimulator, anti-trichinella human serum and anti-toxoplasma serum, as well as two veterinary antisera, against canine distemper and canine hepatitis.

Further standards for blood typing sera have long been of interest and are under consideration. Studies on the international standard for anti-smallpox serum, with a view to characterizing the potency of smallpox serum preparations and anti-smallpox immunoglobulins in terms of the international standard were reported. In the standardization of snake antivenins, materials to serve for reference purposes in the control of antivenins of several snake species were studied.

Amongst the international biological reference reagents, the Committee considered a number of other materials including adenovirus antisera and respiratory virus antisera. The reference reagents already established (a number of enterovirus and adenovirus antisera) have been tested in appropriate WHO international virus reference centres throughout the world, and preparations equivalent to the reference reagents are in routine use in those centres for the identification of enteroviruses and adenoviruses. (See also pages 12-13.)

Since the stability of international standards is an important consideration, the Committee considered the results of certain stability studies on the International Standard for Nystatin and on other nystatin preparations.

Besides establishing international standards, reference preparations and reference reagents, the Expert Committee on Biological Standardization adopted Requirements for Human Immunoglobulin and for Anthrax Spore Vaccine (Live—for Veterinary Use) and also certain specifications for Typhoid Vaccine that could form the basis of national requirements. The International Reference Preparation of Procaine Benzylpenicillin in oil with Aluminium Monostearate is issued to countries for routine laboratory use in the evaluation of blood level properties of manufactured products. Its replacement also necessitated suitable amendments to the Requirements for this preparation.

A meeting on Requirements for Biological Substances was held in March 1966 in which a number of experts in the field of tuberculins participated. Information was collected on the use of International Standards for Tuberculins and the possible need for defining further international units. The meeting also formulated certain Requirements for Tuberculins which could be used for the technical control of these substances.

To promote closer liaison between WHO and national control laboratories for biological substances, the dissemination of information on international standards and requirements to national control laboratories was accelerated and a system for collecting regular information on difficulties and problems encountered by those laboratories in the control of biological substances was planned.

**Human Genetics**

In the field of genetics WHO’s attention has again been focused on the haemoglobinopathies, the thalassaemia group of diseases and the glucose-6-phosphate dehydrogenase (G-6-PD) deficiency diseases, which result from inherited abnormalities affecting the function of the red blood cells.

These types of abnormality are responsible for wide-spread clinical disorders. Sickle-cell anaemia affects about 1 per cent. of all children born in tropical Africa and is responsible for about 80,000 infant deaths a year. There are about 100,000 children with thalassaemia major in the world, all of whom will die young despite repeated blood transfusions. Each year hundreds of children in Mediterranean countries suffer attacks of favism often severe enough to cause death if untreated. Throughout the world there are millions of people suffering from G-6-PD deficiency for whom the haemolytic effects of certain drugs or environmental chemicals present a constant hazard. The diagnosis of the clinically important haemoglobinopathies is relatively simple, but the precise diagnosis of each abnormal state may require specialized biochemical or genetic investigations.

The haemolytic effects of DDS (diaphenylsulphone) on persons suffering from G-6-PD deficiency are described in a paper published in the *Bulletin*. ¹

Following the recommendations of the Scientific Group on Haemoglobinopathies and Allied Disorders, which met in Geneva in December 1965,² a series of studies was started. A survey was made in fifteen countries in Africa on the adequacy of diagnostic and treatment facilities for patients with sickle-cell disease, and support was given to control studies undertaken in Accra on the effect of phenothiazines in the treatment of this disease. Surveys were also carried out of diagnostic and treatment facilities for thalassaemia in countries bordering the Mediterranean and in South-East Asia. In addition, WHO gave assistance to a laboratory in Athens for work in a mass screening programme for thalassaemia, sickle-cell haemoglobin and G-6-PD deficiency, undertaken in two areas of Greece.

Further consideration has been given to problems associated with deficiency of the red cell enzyme G-6-PD. An increasing number of enzyme variants is being reported and has resulted in confusion about the type of deficiency present in some areas. A scientific group met in Geneva in December 1966 and recommended a standardized methodology for detecting G-6-PD enzyme variants; it also proposed a standard nomenclature and reviewed the need for further studies on

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the distribution and medical significance of this enzyme deficiency.

WHO has continued its support for a study, in Ibadan, Nigeria, of the structure of the G-6-PD molecule, and has provided assistance for a new investigation on the distribution of G-6-PD deficiency among the population of São Paulo, Brazil, and also among primates living in malarious parts in the same area. This investigation is designed to test the hypothesis that the high incidence of G-6-PD deficiency in certain areas may be due to the fact that it confers certain selective advantages such as resistance to malaria infection.

A paper describing studies in Sardinia on the possible interrelationship among G-6-PD deficiency, thalassaemia and malaria was published in the Bulletin.¹

WHO has also provided assistance for studies to determine whether the different distribution of blood groups in different parts of the world may be due, at least partially, to variations of different genotypes in susceptibility to infection. A study carried out in West Bengal during smallpox epidemics has provided evidence to support this theory.

Research into population groups of particular interest has continued to receive WHO support. Previous work in this field yielded valuable information on the way in which cultural anthropological factors, disease trends and the ecology of such groups affect their demographic pattern. The most recent study is being carried out in a group of villages inhabited by Babinga pygmies on the borders of Cameroon, the Central African Republic, and the Congo (Brazzaville).

To facilitate studies in genetics a network of international reference centres is being set up. The Zoology Department in the University of Texas which is engaged in the identification of certain inherited variants in human serum, and in determining the differences in chemical structure between these variants, has been designated as the WHO International Reference Centre for Serum Protein Groups. In this capacity, it will, in addition to its present activities, acquire and maintain reference standards for known and newly discovered variants, supply information to investigators, develop new techniques when necessary, and train technical personnel. Other centres engaged in work on genetics are the International Reference Centre for Abnormal Haemoglobins in Cambridge, England, and the International Blood Group Reference Laboratory in London.

An advanced course on the use of computers in human genetics was organized in August by WHO in collaboration with the University of Michigan and the United States National Institutes of Health. The course was held in Ann Arbor, Michigan, and attended by statisticians and geneticists from fifteen countries in the six regions. The object was to enable the participants to develop computer programmes in their own countries for genetic studies.

A three-month course on human genetics for teachers in medical schools was held at the end of the year in Copenhagen. Its aims were to improve the planning of teaching in human genetics and to stimulate the integration of this subject into the medical curriculum (see also page 128).

Although it is difficult to determine precisely the number of pregnancies that terminate in spontaneous abortion, several reports in recent years suggest that a considerable proportion of these are associated with chromosomal anomalies. A scientific group on the standardization of procedures for chromosome studies in abortion met in Geneva in February, and reviewed published and unpublished material on the subject. Chromosomal anomalies are found in approximately 20 per cent. of all cases of spontaneous abortion, with a much higher rate in abortions that occur early in pregnancy. The group drew up a protocol for large-scale surveys and for studies in depth with respect to anamnestic data and laboratory procedures for sex-chromatin and chromosome analysis and karyotyping. Techniques for blood and tissue preservation were outlined, and criteria for the reporting of data were proposed. A memorandum by the members of the group outlining the recommended procedures was published in the Bulletin.²

Human Reproduction

The Nineteenth World Health Assembly reviewed and approved a report outlining the Organization's present and proposed future programme of work regarding human reproduction.³ During 1966, particular attention was paid to the development and expansion of reference services (including the collection of data on the various aspects of human reproduction), to supporting, stimulating and co-ordinating laboratory research, and to providing advisory services, at the request of governments, on questions of sterility, fertility and fertility control.

At its eighth session, held in Geneva in June 1966, the Advisory Committee on Medical Research considered the reports of the scientific groups that had met in the latter part of 1965 to discuss the chemistry and physiology of the gametes,⁴ the immunological

aspects of human reproduction,¹ and the clinical aspects of oral gestogens.² It also considered a report of a scientific group on the basic and clinical aspects of intra-uterine devices which met in Geneva in February 1966.³ Two further scientific groups met during the year, to discuss the standardization of procedures for studies on chromosome anomalies associated with spontaneous abortions (see page 49), and present knowledge of the ovulatory cycle in relation to fertility control by periodic abstinence.

The compilation of a bibliography of the world literature of the past twenty-five years dealing with geographic, ethnic and secular variations of certain indices of human reproductive function was completed, and a critical appraisal undertaken. Work was begun on an inventory of research institutes and research scientists working in the field of human reproduction.

The Governments of India, Poland and Yugoslavia indicated their intentions of participating in the WHO-sponsored programme of collection of human pituitary glands for the preparation and free distribution of certain pituitary hormones to research workers.

WHO assisted laboratory research on the anticipation and detection of ovulation; the immunological aspects of human reproduction; and anti-fertility properties of certain plants. It also assisted research on the duration of lactational amenorrhoea and post-partum infertility and clinical studies of the mechanisms of post-partum infertility and of the effects on the mother and infant of administering certain gestogens in the post-partum period. Other WHO-assisted research included studies carried out by the Zoological Society of London on certain animal species that display unusual aspects of reproductive physiology, in order to determine their suitability for experiments, and an epidemiological research project on abortions.

The Organization also provided assistance to individual scientists for training in clinical and laboratory aspects of human reproduction.

Immunology

Immunology is no longer simply a branch of medical microbiology dealing with infectious diseases, but has become a multidisciplinary science related to many other biomedical sciences. In spite of current interest in the subject, however, the teaching of immunology is still neglected in most medical schools. In order to draw attention to this, and to contribute to improvements, an Expert Committee on Teaching of Immunology in the Medical Curriculum was convened in Geneva in October.

The Expert Committee recommended that an obligatory minimum basic course in immunology should be given towards the end of the pre-clinical studies, and that further teaching in immunology should be given during the clinical years. Teaching to a greater depth should be available in elective courses. The Committee recommended that basic teaching of immunology should be the responsibility of immunologists, preferably in a distinct unit within the medical school or university. No country could at present, however, meet the Committee's teaching requirements in all its medical schools; even in the few countries relatively well provided with immunologists, at least half the medical schools are inadequately staffed in this field. The Committee made a number of suggestions for remedying the immediate shortage, and for meeting future requirements. The Committee urged that short intensive courses should be available on a regular basis both for beginners and for more experienced scientists. Specific examples of the possible structure of courses for students at various levels are given in tables and appendices to the Committee's report.

WHO's work in immunology during the year has included the organization of training programmes and meetings, the establishment of reference centres, and assistance to research, particularly with regard to the development of uniform techniques and standard substances.

The newsletter and calendar of meetings and courses circulated by the Joint WHO/CIOMS International Liaison Committee for Immunology, established in 1965, appeared in 1966 and served as a communication link for WHO collaborating immunology research laboratories.

Immunology Research and Training Centres in Developing Countries

The WHO immunology research and training centre at the University of Ibadan, Nigeria, has completed its second year. Its programme included a four-month course in immunology, attended by students from Nigeria, Senegal and Uganda. The centre has stimulated work on the immunology of tropical diseases through collaborative research with several university departments on immunological problems (immunoglobulins and serum proteins in cattle and other animals with trypanosomiasis; some immunological aspects of Burkitt's tumours; antigens of hookworm larvae; and nephrotic syndrome in patients infected with *Plasmodium malariae*). Graduates from the first course, held in 1965, have received help from the centre in developing research projects.

A second WHO immunology research and training centre was established in São Paulo, Brazil, where a one-year full-time postgraduate course in immunology was organized with WHO assistance. The participants were from different parts of Brazil, mostly staff from teaching and research institutions. The research programme of the students was directed towards the immunological aspects of the local health problems with which they will be dealing in their home institutions, such as Brazilian Pemphigus foliaceus, the immunochemistry of snake venoms, and immunological aspects of parasitic diseases.

A survey was made in the South-East Asia and Western Pacific Regions with a view to developing collaborative research in immunology in those regions.

**Immunopathology**

WHO has secured the co-operation of the Medical Research Council, London, in the development of research reference reagents for the rheumatoid factor and for several classes of auto-antibodies (antinuclear antibodies, thyroid antibodies, gastric antibodies, adrenal antibody, muscle antibodies, antibodies to sperm antigens, antibodies associated with haemolytic anaemia, and non-organ specific antibodies in primary biliary cirrhosis). Collaboration is being developed among a number of other laboratories in Europe in order to obtain the necessary plasma containing these reactivities.

Certain services to collaborating laboratories are being provided through the International Reference Centre for Immunoglobulins, Lausanne, with the aid of a grant to WHO from the United States National Institutes of Health. Purified immunoglobulins have been made available to the two WHO immunology research and training centres in Ibadan and in São Paulo. A technician from the centre in Lausanne worked in the São Paulo centre during the first six months of its existence, helping to set up methodology for the immunology course referred to above and for the research projects. Material originating from the International Reference Centre in Lausanne has contributed to the promotion of collaboration with immunology research laboratories in many countries.

At the International Reference Laboratory for the Serology of Autoimmune Disorders, at the Middlesex Hospital, London, a short laboratory course in these serological techniques, combined with lectures in immunopathology, was organized in September. It was attended by students from twelve countries, from most of the regions. In connexion with the course, a loose-leaf manual of information on the laboratory techniques used in immunopathology is being prepared, and will be made available to interested workers.

**Immunchemistry**

Following the establishment in 1965 of an International Reference Centre for Genetic Factors of Human Immunoglobulins at the Centre départemental de Transfusion sanguine et de Génétique humaine in Rouen, France, and a regional reference centre at the Department of Medical Microbiology, University of Lund, Sweden, a second regional reference centre was established during the year at the Department of Biology, Western Reserve University, Cleveland, United States of America.

In accordance with the Notation of Genetic Factors of Human Immunoglobulins seven more numbers for new genetic factors were allotted. The notation, which has been published in the *Bulletin*, was recommended by the Scientific Group on Genes, Genotypes and Allotypes of Immunoglobulins which met in 1965. Its report was one of those considered by the Advisory Committee on Medical Research at its eighth session in June 1966 (see page 78).

A practical meeting of investigators ("workshop") on techniques for the isolation of the IgA class of immunoglobulins and the purification of antibodies was organized by WHO at the WHO International Reference Centre for Immunoglobulins in Lausanne, with support from the United States National Institutes of Health. It brought together representatives of a number of the immunochemical centres in the world.

**Tissue Antigens: Transplantation and Cancer Immunology**

Following the demonstration of the usefulness and value of tissue-typing (leukocyte-typing) for organ transplantation, major difficulties arose in applying this work clinically. These include the limited quantities available of human sera containing high titres of antibodies to tissue antigens, the problem of methods of storage and the difficulties in formulating criteria for monospecificity of the antibodies and the measurement of antibody content. WHO has continued to support organized research in this field by assistance to studies being carried out in Leiden, Netherlands, and through the work of the International Reference Centre for Immunoglobulins.

A scientific group on the immunotherapy of cancer met in Geneva in May to review animal and human studies in this field. It drew up guidelines for future research and warned of the hazards of clinical trials not based on adequate previous animal experiments. The group noted that, although there is a firm basis in animal experimentation for immunotherapy of cancer, and the relevant clinical studies are under way, no dramatic breakthroughs are evident in clinical work, and the evaluation of results in this field will require a long time.

WHO provided assistance for studies being undertaken in Moscow with the aim of preparing tumour-specific antigens for reference purposes in research. A serum protein of embryonic origin has been isolated in experimental animals with hepatoma; it can be distinguished antigenically from the other serum proteins normally present in healthy individuals. Studies are being made on a similar protein found in certain cases of human hepatoma.

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CHAPTER 5

PHARMACOLOGY AND TOXICOLOGY

The Organization's programme in the field of pharmacology and toxicology has several functions: the work on drug abuse as a result of drug dependence, including certain responsibilities assigned to the Organization under a number of treaties for the control of narcotic drugs; the promotion of the safety of drugs administered for therapeutic purposes as well as measures for quality control of pharmaceutical preparations; the furtherance of research on antibiotics; and finally, the development of criteria for the safety of food additives.

Drug Dependence and Drug Abuse

The Expert Committee on Dependence-Producing Drugs,1 at its meeting in July, recommended the appropriate status of international narcotics control for a number of additional drugs of the morphine type, and the Secretary-General of the United Nations was notified accordingly. The Committee reviewed new concepts and methods of treating drug dependence; it was of the opinion that some of them appeared to be promising, but needed further exploration. It emphasized the need for elucidation of the sociological implications of drug dependence and abuse in order to bring about a community-oriented approach.

With regard to the increasing abuse of drugs of depressant, stimulant and hallucinogenic types, the Committee stressed that control could not and should not be instituted on the broad basis of any classification, and that in each specific instance the recognized risk to public health should be the paramount consideration. Recalling resolution WHA18.47 of the Eighteenth World Health Assembly, the Committee emphasized that control within a country, however satisfactory, may not afford adequate protection for that country or others without international co-ordination of control measures. In this connexion, WHO participated in the work of a committee established by the United Nations Commission on Narcotic Drugs to study the question of dependence-producing psychotropic substances not under international control.

For the Expert Committee on Mental Health, which was devoted to discussion of the prevention and treatment of dependence on alcohol and other drugs, and the Scientific Group on Research in Psychopharmacology, see page 41.

Drug Safety and Monitoring

The programme for the promotion of the safety of drugs in general was further developed in compliance with relevant resolutions of the World Health Assembly. It includes a communication service by which Member States record, through the Organization, decisions they have taken to limit the availability of therapeutic substances on account of adverse reactions observed during their clinical use.

One aim of the programme is to draw up internationally acceptable basic principles for the experimental and clinical evaluation of the safety and efficacy of drugs. In this connexion, a scientific group on principles for the pre-clinical testing of drug safety met in Geneva in March.2 The group discussed, inter alia, biochemical studies of absorption, distribution and metabolism of drugs, and emphasized the importance of relating them at the earliest possible stage to clinical studies. Another scientific group met in Geneva in November to discuss the principles for the testing of drugs for teratogenicity.

In accordance with resolution WHA19.35 adopted by the Nineteenth World Health Assembly, preparations were continued for the implementation of a pilot research project for the international monitoring of adverse reactions to drugs.

Antibiotics

The WHO-supported International Centre of Information on Antibiotics, in Liège, continued its work on the establishment of a catalogue of antibiotic-producing micro-organisms and the collection of information on new developments regarding antibiotics. Facilities have been arranged for rapid identification and the pilot plant of the centre is at the disposal of individual research workers.


The international collaborative study on methodology for testing the sensitivity of bacteria to antibiotics was continued, and included such aspects as the choice of a suitable culture medium, the standardization of strains of known and stable sensitivity, and the influence of the type of paper used for the preparation of culture discs to test antibiotics.

Food Additives

In many parts of the world there has been an increase in the amounts and kinds of additives in food. They are in general valuable, but their indiscriminate use may be hazardous. In order to provide a scientific basis for legislative control by the authorities concerned, WHO and FAO have convened various meetings of experts to evaluate the toxicity of these substances and to recommend safety levels.

In 1966 a scientific group was convened to review, in the light of recent significant advances in toxicology and related fields, the criteria used in establishing acceptable daily intakes.

It reviewed toxicological procedures for the evaluation of intentional and unintentional food additives in order to establish their safety to the consumer and made recommendations on the interpretation of the test results and on the establishment of safety margins.

The new criteria recommended by the scientific group were used by the FAO Working Party and the WHO Expert Committee on Pesticide Residues at their joint meeting in November, when they evaluated eighteen important agricultural pesticides and proposed tolerance levels for the residues of thirteen of them in certain foodstuffs.

The Joint FAO/WHO Expert Committee on Food Additives, at its meeting in October, drew up specifications for the identity and purity of a further group of emulsifiers and certain other food additives. It recommended the amount considered acceptable from the safety point of view of some trace elements commonly present in food and re-evaluated a number of antimicrobials in the light of recent data.

WHO's participation in the Joint FAO/WHO Food Standards Programme is increasing as the programme develops. In drafting the standards for various foodstuffs, especially those concerning food additives, pesticide residues, and other contaminants, the Codex Alimentarius committees have taken into consideration the toxicological evaluation made by the expert committees mentioned above. In turn, the Codex committees have referred to the expert committees for further advice a number of problems relating to health that have arisen in the elaboration of standards. For the work of the fourth session of the joint FAO/WHO Codex Alimentarius Commission in November, see page 43.

Data were collected on health problems that may arise from the use of irradiation as a means of preserving food, and on the necessary control measures.

Pharmaceuticals

Work was completed on the specifications for the second edition of the International Pharmacopoeia, which contains specifications for over 500 preparations, most of them basic pharmaceutical chemicals. These specifications for quality control are of direct use to national and other laboratories (including those of pharmaceutical manufacturers) engaged in the control of pharmaceutical preparations, whether imported or manufactured locally. They are the result of many years of collaboration and testing by these laboratories, by experts, and by medical and pharmaceutical institutes, and were discussed at expert committee and other meetings during the period 1958-1966. A more detailed description of the contents of the second edition of the International Pharmacopoeia was given in the Annual Report for 1965.1

Some of the new analytical methods used in pharmaceutical quality control and outlined in the second edition of the International Pharmacopoeia require the use of chemical reference substances. A number of these have been established on the advice of the Expert Committee on Specifications for Pharmaceutical Preparations, and their characteristics determined by the WHO International Reference Centre for Chemical Reference Substances in Stockholm, in collaboration with specialists designated by the Organization and with national reference centres. An appendix has also been included in the new edition of the International Pharmacopoeia on identification of substances based on the determination of melting-point, eutectic temperature and refractive index using micro-melting-point microscope and hot bar. A set of thirteen international melting-point reference substances is available from the centre.

The formulation of certain specifications for important new pharmaceutical substances has required collaborative research, undertaken in different laboratories on behalf of the Organization, on general

1 Off. Rec. Wld Hlth Org. 147, 73.
assay methods such as the assay of morphine in opium, and on the quality control of groups of substances (tuberculostatics, for example) and their stability.

Assistance was continued in providing information on equipment, staff and premises for national quality control laboratories. A round-table discussion on "Specifications for the quality control of pharmaceutical and biological preparations" was organized by WHO at the Third International Pharmacological Congress in São Paulo.

The need to subject pharmaceutical preparations, whether imported or manufactured locally, to adequate quality control was again emphasized by the Nineteenth World Health Assembly. The difficulty sometimes encountered in obtaining suitable information as to the level of quality achieved by the pharmaceutical manufacturer, and the absence of national services for pharmaceutical quality control in the exporting country, create a need for machinery for quality control. The Nineteenth World Health Assembly requested that assistance to Member States be continued for the improvement of the quality control of pharmaceutical preparations and for the establishment of quality control laboratories for national or regional purposes.

A study is being undertaken on guiding principles for the quality control of pharmaceutical preparations in manufacturing establishments, with a view to ensuring that the control is adequate at all stages, from the quality of the raw materials, through production, to the final pharmaceutical form.

A sixteenth list of 181 proposed international non-proprietary names for new pharmaceutical substances was published in the *WHO Chronicle*. In September, the Sub-Committee on Non-Proprietary Names of the Expert Committee on Specifications for Pharmaceutical Preparations drew up a seventeenth list of preparations. A list of recommended names, including those published in the *WHO Chronicle* in 1964 and 1965 to which no objections have been received, or in respect of which objections were withdrawn, was also published.

Wide use of these names is made in various countries for the labelling of pharmaceutical preparations and for regulatory purposes. They are valuable in preventing difficulties that arise when the same pharmaceutical substance is known by a number of different names. Their use has also in some cases considerably facilitated the recognition and prompt withdrawal of drugs with dangerous side-effects.

The revised General Principles for Guidance in Devising International Non-Proprietary Names for Pharmaceutical Preparations were approved by the Executive Board at its thirty-seventh session in January 1966 (resolution EB37.R9). The Board also authorized the Director-General to make future revisions of the General Principles as may seem desirable in the light of advances in science and of experience.

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CHAPTER 6

PUBLIC HEALTH SERVICES

Public Health Administration

WHO has continued to assist governments in organizing and developing their national health administrations, especially in order to enable them to furnish the necessary technical guidance and administrative support for their peripheral and local health services, particularly in the rural areas.

Assistance has mainly been in the form of public health advisory services on the planning and operation of health services, the development of provincial or district health services and the improvement and extension of those already established.

These activities are exemplified in projects in Colombia, the Congo (Brazzaville) and India. A government planning committee has been set up in the Congo which, with WHO advisory assistance, has drawn up a programme for the development of basic health services, emphasizing the training of technical and auxiliary personnel. In Colombia, advice is being given on the reorganization of the Ministry of Public Health and its subdivisions throughout the country. Under the programme for the strengthening of district health services in Gujarat state, India, district health centres are assuming greater administrative responsibility for integrated public health activities.

In Algeria, a team provided by WHO is helping the Government in a co-ordinated programme for the development of public health services. Training of professional and auxiliary health personnel has been an important part of the majority of these programmes, and many projects include the establishment of demonstration areas in which comprehensive health services are developed and theoretical training, combined with practical field work, is carried out. For example, such areas have been set up in Kenya, the Republic of Korea (see page 144), Togo and Yemen.

In a number of instances the development of comprehensive health services has been based on the organization of and the public interest generated by single purpose communicable disease campaigns and other specialized activities. For instance, malaria eradication campaigns can pave the way for the expansion of a health service that will reach the entire population, as may be seen from rural health service development in, for example, Venezuela and India. In the former country, the malaria eradication service, which in most areas had successfully achieved its objective, has been entrusted with responsibility for rural housing, water supply and sanitation as well as control of other communicable diseases. In India, large numbers of malaria eradication personnel, from areas with a population of almost 250 million now freed from malaria, are being retrained and absorbed into general health services to augment and expand rural health services. This rate of development of the rural health services would not have been possible if India had not embarked on a country-wide malaria eradication programme. In other countries, including Afghanistan and Nepal, the future development of peripheral health services will depend on the utilization of their malaria eradication personnel. In several countries in Africa basic health services are being developed within the framework of malaria pre-eradication programmes (see page 93).

Similar integration is being carried out in Thailand, where treponematoses teams are being trained for multipurpose health work.

Often projects for the improvement of maternal and child health care serve as useful nuclei for the further development of comprehensive basic health services. This is the case in Laos, where maternal and child care is being combined with more general health activities; in Nigeria, in the WHO-assisted project for the development of rural health services; and in India in projects for the strengthening of health services in community development areas. There has been extensive UNICEF assistance to over ninety projects for the development of basic health services.

Other countries receiving WHO assistance for public health administration programmes include Bolivia, Greece, Madagascar, Malaysia, the Philippines and Turkey.

The Organization is providing advice on the public health aspects of irrigation development programmes financed under the Special Fund component of the United Nations Development Programme with FAO as the executing agency. Surveys are conducted in order to discover the health implications of such programmes and advice is given on the necessary preventive measures. Projects receiving WHO ad-
HEALTH EDUCATION IN UGANDA

Health education is valuable in stimulating interest in such matters as maternal and child health, nutrition, and environmental health. Activities in a concerted effort to improve health education throughout Uganda included cooperation with the Kasangati health centre.

1. A class in health education for members of a local women's club at the Kasangati health centre.
2. A doctor at the centre.
3. The doctor examines a child suffering from malnutrition.
4. A health worker at the centre gives advice on the use of an insecticide during a routine visit to a village.
The identification and characterization of rare or newly discovered abnormal haemoglobins require a high level of technical competence. For this reason, and also because of the increase in population genetic studies arising out of the International Biological Programme, WHO has established an International Reference Centre at the Medical Research Council's Abnormal Haemoglobin Research Unit in Cambridge, England, to which investigators in all parts of the world can send blood samples. Some samples originate from government field surveys assisted by WHO, such as the epidemiological serological surveys for evaluation of yaws campaigns.

1. The first stage in identifying the haemoglobins. Using the method of electrophoresis, the blood sample is applied to a strip of electrically charged filter paper. The various haemoglobins separate into distinct bands.

2. The abnormal band is then cut out and the haemoglobin washed from the paper.

3. The globin is prepared for further analysis.

4. The "fingerprint" of the globin—the two-dimensional peptide map prepared after the globin has been digested with trypsin. The resulting peptides are then separated by electrophoresis and chromatography.

5. One of the peptides is analysed by chromatography to determine its amino acids.
The programme of nursing education in Singapore has reached a stage at which national staff are able to assume the main responsibility for the course in public health nursing in the Institute of Health, which has been assisted by WHO since 1956.

1. Public health nurses visiting a village in Singapore.
2. On the way to an island visit.
3 and 4. Mothers bring their children for vaccination.
visory assistance include the agricultural survey and demonstration programme in the Ouémé Valley (Dahomey), the Kainji Dam development scheme (Nigeria), land and water surveys and pilot agricultural stations in the Hari-Rud and Upper Kabul river basins (Afghanistan), the Mahaweli Ganga irrigation and hydro-power survey (Ceylon), and the Lower Mekong Basin development plan (Thailand, Cambodia, Laos and the Republic of Viet-Nam).

Assistance was given to the Ministry of Health of Bulgaria in preparing a request for aid under the Special Fund component of the United Nations Development Programme for the establishment of a central institute of public health in Sofia. The institute will be concerned with the reorganization of the peripheral public health and preventive services and with the training or reorientation of health personnel in order to meet local health needs.

The Third Report on the World Health Situation covering the period 1961-1964, which was discussed by the Nineteenth World Health Assembly, was revised in the light of amendments received from governments, and prepared for publication in the WHO Official Records series.1

National Health Planning

The number of requests received by the Organization for advice and assistance in national health planning may be considered a reflection of the increased awareness, particularly on the part of the less-developed countries, of the importance of this activity.

Most African countries have now drawn up socio-economic development plans or are working on them. In the preparation of the health sector of these general plans, WHO has given assistance to a number of countries, including Kenya and Upper Volta. Liberia and Sierra Leone have requested the assistance of the Organization in implementing their national health plans.

The national health plan for the Republic of Mali, which was prepared with assistance from WHO, was approved by the Government and published. It provides for a comprehensive programme that can be implemented over a period of ten years. In addition to an account of the characteristics of the country, its organization and existing health services, the plan includes an evaluation of the health problems, a statement on priorities and an outline of the successive stages in the implementation of the plan. A plan for Liberia has also received general approval.

In Libya a WHO advisory team on national health planning prepared a health plan to be integrated into the overall national economic and social development plan, and Ethiopia has asked for assistance in the same field.

In the South-East Asia Region national health planning is in progress in almost all the countries. In the Western Pacific Region interest in the establishment of systematic national health plans is growing; requests for assistance were received from Laos and the Republic of Viet-Nam, and assistance was provided to the Republic of Korea.

The work being done in national health planning in the Americas is mentioned on page 102.

The necessity for developing countries to start the process of planning as soon as possible was recognized by the Expert Committee on National Health Planning in Developing Countries, which met in Geneva at the end of September. The Committee sought answers to five fundamental questions: when is a country ready to plan, what machinery does it need in order to do so, how is the process carried out, who is to be involved in it and what extra training is required? The Committee's report deals with the organization of national health planning under three aspects: the preparation for planning; the elaboration of the plan and planning methods; and training for planning. The Committee paid special attention to the training required by health staff to enable them to take part in planning and apply modern concepts. It was generally agreed that planning should not be taught separately in medicine, but that training in planning should be a part of training in public health administration for all supervisory personnel in health departments. The Committee also made recommendations for future studies, bearing in mind the importance of national health planning in relation to overall socio-economic development plans.

Preparations for the Expert Committee included a study of methods used in national health planning in two areas where much work has been done in this field. In the Region of the Americas visits were made to countries with health plans and also to the Latin American Institute for Economic and Social Planning, Santiago, Chile, in conjunction with which international health planning courses have been held over the last four years. In the Union of Soviet Socialist Republics, particular attention was given to the practical execution of plans as illustrated by the experience in the two Asian Republics of Kazakhstan and Uzbekistan.

Organization of Medical Care

WHO's work with regard to the organization of medical care has been focused on three major aspects: the planning, equipment, organization, functioning and administration of hospitals; the inter-relationship

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of the various aspects of health care, including medical care, and their costs; and medical rehabilitation.

During the year, a meeting of investigators established the methods for use in the Organization's international study on hospital utilization. The study is to include the collection of data on the flow of patients, the characteristics of the population and the facilities available and their utilization. Preliminary work on these lines has started in England (in the region of Liverpool) and in the Federal Republic of Germany (in Schleswig-Holstein), and is to be extended to Finland, France, Sweden and Yugoslavia in 1967.

In the study on comparative organizational patterns for the provision of personal health care, the results of the studies in Yugoslavia were analysed, further studies were made in Israel, and work was also started in Belgium.

The draft report on the study on the cost and sources of finance of health services was circulated to the participating countries for comment.

The Organization continued to assist governments in the planning of hospital services. In India, following a survey, a two-year programme began for planning hospital services and training hospital administrators. A survey in Ceylon revealed considerable pressure on the existing hospital facilities. Advice was provided on hospital planning and architecture in Afghanistan, on the planning and equipment of a new teaching hospital in Baghdad, Iraq, and on hospital administration in Qatar. Plans were prepared for the development of hospital administration studies for the whole Eastern Mediterranean Region. A survey was made of the hospital situation in Barbados. Assistance was provided to the Republic of Korea in evaluating the situation and remodelling the hospital services within the national health plan.

The Organization continued to co-operate with ILO with regard to medical care under social security schemes in Latin America, where the planning of hospitals entails co-ordination among the various authorities concerned. (See also page 102.)

WHO awarded sixteen fellowships for participants in a seminar on recent developments of public health institutions organized by the International Union of Architects in Athens. Emphasis was laid on the need for simple solutions, rather than complicated and mechanical devices, for adapting buildings to various climates. Modular structures seemed the best answer to the need for flexibility.

A monograph on hospital planning and administration was published, dealing with planning on a national and regional scale (particularly the legislative, financial, statistical and overall planning of hospital organization), the planning of a general hospital, and the requisites of the principal departments within a comprehensive general hospital.

A three-month refresher course for clinical instructors in physical therapy was held in Copenhagen from September to November. The course, organized in collaboration with the Danish authorities, was open to physical therapists with three years' training and at least two years' clinical experience, wishing to train as teachers. A three-week course of specialized training in physical therapy for infants and young children was held for qualified physical therapists in Nancy, France, in October and November.

An ad hoc inter-agency meeting on rehabilitation of the handicapped, convened in July under the auspices of the Administrative Committee on Coordination, was devoted mainly to problems of rehabilitation in Africa.

Health Laboratory Services

The Organization's work with regard to health laboratory services was primarily concerned with the planning, organization and strengthening of laboratory services for diagnostic purposes and for the production and control of biological substances and reagents; the training and specialization of scientific and technical laboratory personnel; and the establishment of international centres for the various laboratory disciplines.

During the year assistance was provided to sixty-four countries through 135 projects. Seventy-five of these were exclusively concerned with various aspects of the development of laboratory services, the remainder being assistance in laboratory aspects of specialized programmes on malaria, tuberculosis, venereal diseases and treponematoses, leprosy, etc. Laboratory equipment and reagents were supplied for sixty-seven projects.

WHO provided assistance for courses for the training of laboratory technicians, including auxiliaries, in Afghanistan, the Congo (Brazzaville), India, Jamaica, Libya, Malaysia, Saudi Arabia and Yemen. Specialized training included two courses on the diagnosis of smallpox, held in São Paulo, Brazil.

At the regional level, the second course in Beirut for the training of laboratory technician tutors for countries of the Eastern Mediterranean Region was

1 See Off. Rec. Wld Hlth Org. 147, 44.
completed, and plans were made to continue similar regional courses in Jordan.

Several courses were organized on the laboratory diagnosis of cholera (see page 30).

The second WHO-sponsored advanced course in clinical chemistry was held at the Bispebjerg Hospital, in Copenhagen. This inter-regional course, which lasted two and a half months, was designed to provide clinical biochemists with an opportunity to become better acquainted with chromatography and electrophoresis and the use of these techniques in the different branches of medicine.

With a view to promoting the training of laboratory technicians, the Organization prepared a syllabus for inter-country laboratory technician schools in French-speaking African countries.

The WHO-supported International Committee on Laboratory Animals continued to promote international co-ordination, providing advice on the production of laboratory animals for diagnostic and research purposes, and on the training of personnel.

WHO co-operated with the European Society of Haematology's International Committee for Standardization in the preparation of an international terminology in haematology.

The organization and functioning of laboratory services was the subject of the technical discussions at the nineteenth session of the Regional Committee for South-East Asia.

For details of WHO's work in connexion with antibiotics, see page 53.

Nursing

The increase in the world population, in conjunction with developments in medical science and socio-economic changes, has resulted over recent years in a greatly accentuated demand for nursing services adequate both in quality and quantity.

In order to consider the provision of such services, an expert committee on nursing1 was convened in Geneva in April. It recommended that support be given to countries in their efforts to develop for nursing practice, teaching and administration, a nucleus of qualified nurses, some of whom could assume responsibility for planning nursing services at national level and co-ordinating them with the other national health services. The committee made suggestions for the progressive development of nursing education programmes from the basic to post-basic and post-graduate levels and recommended that the education of the nurse should be incorporated as rapidly as possible into the national system of education. It also considered that nurses should be given opportunities for training in research methods.

In the staffing studies being carried out in a number of countries with assistance from WHO, the duties of the different categories of nursing staff and the degrees of technical skill required are being examined in order to determine the personnel needs and resources and the most effective staffing patterns. Desirable improvements in nursing administration are also considered. Studies of this kind were continued in India and Switzerland. In Israel, WHO-assisted studies included a comprehensive investigation of the use of nursing personnel in the medical and surgical services of general hospitals. Even before the data had been completely analysed, administrative changes were made to enable nurses to have more time with their patients.

A Guide for Staffing a Hospital Nursing Service was published in the Public Health Papers series.2 It provides information on staffing patterns and is designed to help nursing administrators make the most effective use of the nursing personnel available. The guide is based on data collected from nurses, medical officers, and hospital administrators in various countries; it includes a discussion of staff training, and annexes with sample organization charts, nursing care plans, job descriptions, and other information. Practical suggestions are made on personal care of patients, dietary services in hospitals, ward management of nursing care, and in-service education.

A major difficulty facing many countries is the shortage of well prepared nursing leaders capable of filling the increasing number of responsible nursing posts in the health services. Requests for WHO assistance in establishing post-basic and post-graduate programmes for training senior staff for such posts are increasing. In Africa, for example, assistance was continued to a post-basic nursing education programme in Ghana and to a post-basic degree programme at the University of Ibadan, Nigeria. In the Western Pacific Region assistance was given with the planning of a post-graduate course in public health nursing at the Institute of Public Health, Taiwan University.

The international school of advanced nursing education in Lyons, France, which was opened in October 1965, extended the scope of its programme. A course was started in post-basic public health nursing to train teachers or administrators in this subject. Many of the nurses at Lyons and at the school in Edinburgh, which provides similar training in English, received WHO fellowships for attendance at the courses.

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In the Region of the Americas the Organization has helped to establish a collaborative four-year exchange programme between schools of nursing in Guyana and a college of nursing in the United States of America. Members of the college faculty have given a two months’ course for instructors and supervisors in Guyana. Nurses and an instructor from Guyana have visited the college, the former with fellowships to study, the latter to discuss the proposed nursing programme for Guyana. For other work on nursing in the Americas, see page 104.

Assistance with basic nursing education was continued in a number of countries, including Cambodia, Gabon, Gambia, Libya, Somalia and the Republic of Viet-Nam. In some countries the assistance has been given to schools of nursing whose students have not had a full secondary education. For example, a basic nursing programme of this type was established in Niger, at the school in Niamey which is being supported under the Special Fund component of the United Nations Development Programme.

In an increasing number of countries full secondary education is being made a requirement for entry to schools of nursing, in order to attract better educated and career-minded young men and women to the nursing profession. In several countries of the Western Pacific Region plans are under discussion for the establishment of basic nursing education programmes at university level.

In all basic and post-basic nursing programmes clinical practice for students is receiving greater emphasis and WHO is assisting hospitals and public health nursing services in developing in-service training programmes. An example is the assistance given to the Queen Elizabeth Hospital in Barbados. In-service education and clinical practice were among the chief subjects discussed at a seminar on nursing held in Teheran in November and attended by nurse educators and administrators of nursing services from twenty-nine countries.

Assistance has again been provided to a number of countries for the improvement of midwifery education and services at all levels. In Singapore a WHO-assisted project to develop an island-wide midwifery education programme was completed. It started in 1959 and included assistance in the improvement of the basic midwifery curriculum, refresher courses and in-service education of practising midwives, revision of legislation regarding midwifery, re-organization of the midwifery services and establishment of clinical practice areas for midwifery students. In India WHO is assisting in preparing a manual for use as a guide in teaching auxiliary nurse midwives.

In countries where there is an acute shortage of trained staff for the developing health services considerable assistance has again been provided for the training of auxiliary nursing personnel, such as community health nurses in Ghana and Nigeria and assistant nurse-midwives in India. Auxiliary nursing personnel also form a large proportion of participants in in-service education programmes. A number of post-basic programmes include training in the supervision and teaching of auxiliaries.

In a number of countries WHO has continued to assist in formulating long-term plans for the development of nursing services. For example, assistance was given in planning nursing services as part of the national health plan in Libya, and in a nursing survey and the establishment of a division of nursing in the Ministry of Health in Trinidad and Tobago. The comprehensive programme for the development of nursing education and nursing services in Morocco is described on page 130.

A travelling seminar on nursing was organized in the Union of Soviet Socialist Republics to enable nurses from twenty-two developing countries to obtain first-hand information on health services in the USSR involving nursing; the organization and administration of nursing services; the training of nurses, and their work in health services; and the relationship of nurses to other members of the health team—especially fieldshers and midwives. The seminar included visits to institutions in Moscow, Kiev, Suhumi, Tbilisi and Vinnica.

A seminar on nursing research was organized in Copenhagen, with assistance from WHO. It was sponsored by the Nordic Nurses Association and attended by nurses from Denmark, Finland, Iceland, Norway and Sweden.

Day to day contacts with the International Council of Nurses have been facilitated by the transfer during the year of the Council’s headquarters from London to Geneva.

Health Education

WHO’s assistance in health education has again been focused on support to national health authorities in the planning and establishment of health education services as an integral part of public health administrations at the national, provincial, or state level. Health educators provided by the Organization continued to give assistance to health administrations in Afghanistan, Algeria, India, Malaysia, Nigeria, the Republic of Korea, Singapore and Uganda. The Organization also provided advice on health education in Ceylon, China (Taiwan), Guinea, Iraq, East Malaysia (Sarawak), Papua and New Guinea, the Philippines, Sierra Leone and Thailand.

As in the past, health education was used to stimulate public interest and participation in a number of
WHO-assisted programmes for the development of basic health services and on specific subjects, including environmental sanitation, maternal and child health, nutrition, malaria eradication, smallpox, leprosy, and tuberculosis. Thus, health education was an important element in training programmes for malaria personnel in Central America, India, Surinam and Togo; in the development of a nationwide smallpox campaign in Nigeria; in maternal and child health and nutrition projects in Uganda; in securing public support for intestinal parasite surveys in Afghanistan; and in the development of rural health services in the Republic of Korea and of water supply programmes in Latin America.

In the Philippines, WHO assisted in the organization of a national seminar on the administration and supervision of health education services. At the regional level, WHO organized the first regional seminar on health education for countries of the Western Pacific Region, held in Manila in January (see page 142). The planning of health education services and their use in national health programmes were among the main topics discussed.

WHO also assisted various health education projects aimed particularly at strengthening primary and secondary school programmes and teacher training. Such assistance was given, jointly with UNESCO and UNICEF, to Afghanistan, Burma, China (Taiwan), India, the Philippines, the United Arab Republic, and the Republic of Viet-Nam. In connexion with the training of teachers in India, WHO provided assistance in the planning of the health education aspects of the curricula, the preparation of the health education content of teaching materials, the training of student teachers, and in the development of science textbooks for schools and for teacher training.

In the Philippines, WHO continued to provide joint assistance with UNICEF in the development of a co-ordinated school health education programme involving the co-operation of the national departments of education and health, the teacher training colleges and the Institute of Hygiene of the University of the Philippines. In 1966, during the second phase of this programme, the main objectives included intensification of the training of teachers and projects for preparing and testing teaching materials.

The first regional seminar on school health education to be organized by WHO in the Eastern Mediterranean Region was held in Kuwait in March (see page 137).

Planning for Health Education in Schools, compiled jointly by UNESCO and WHO, was published. It is intended for the use of education and health officials and others concerned with the planning of the health education aspects of curricula for schools, and for the training of teachers.

The Organization assisted the health education services of various countries in planning and conducting several in-service training courses in health education for both professional and auxiliary health workers. Such training was provided in courses or seminars for tutors of health workers in Malaysia, environmental sanitation personnel in Singapore, staff of health education services in countries of Central America, in India and the Republic of Korea, and various categories of auxiliary health personnel in Nigeria and Uganda. Efforts were also made to promote the inclusion of health education in the teaching of preventive medicine, and WHO provided assistance in this respect in connexion with courses sponsored by faculties of medicine in Afghanistan, India and Venezuela.

Further steps were taken to establish postgraduate studies in health education for public health students—for example, in India, at the All-India Institute of Hygiene and Public Health in Calcutta; in Japan, at the Institute of Public Health in Tokyo; and in Brazil, at the School of Public Health in Sao Paulo.

A review was made of the needs, existing resources, and prospects for the planning and conduct of studies on health education.

The Organization co-operated in the development of the health education aspects of the League of Red Cross Societies' five-year development programme. In view of the value of the worldwide literacy programme in the furtherance of health education, WHO also took part in several inter-agency meetings convened by UNESCO to review various aspects of this programme.

Maternal and Child Health

In 1966, stress was again laid on paediatric education, including preventive and social aspects. WHO co-operated with UNICEF in preparations for courses to start in January 1967 at the Institute of Child Health, London, for senior teachers of paediatrics in the developing countries. They will be on the lines of similar courses held at the Institute from 1962 to 1965. In particular, the Organization helped in the revision of the curriculum, which now places more emphasis on tropical paediatrics and field work and includes provision for four months' training in India, mainly at the Paediatric Centre in Bombay.

In a similar project, UNICEF and WHO co-operated with Ankara University Hacettepe Medical Centre in arranging an inter-regional training course in child...
health for medical officers who will be responsible for the administration of maternal and child health services or paediatric hospitals in developing countries.

Also in collaboration with UNICEF, WHO has continued to assist various individual countries in the development of paediatric training. In India, for example, UNICEF and WHO have co-operated during the past ten years in providing assistance to paediatric departments of medical colleges in India, and the number of independent paediatric departments rose from four in 1955 to fifty-two in 1966. During 1966 assistance was extended to cover teaching in obstetric departments of medical colleges and in paediatric units in infectious disease hospitals.

In co-operation with UNICEF, WHO has prepared an appraisal of the jointly assisted maternal and child health programme for the years 1960 to 1964 inclusive for consideration by the UNICEF/WHO Joint Committee on Health Policy and the UNICEF Executive Board at their meetings in 1967.

During the year preparations were made for a world-wide study of paediatric research to identify outstanding problems and important gaps in knowledge and explore the possibility of co-ordinating research in different parts of the world.

The Organization has continued to provide assistance for maternal and child health programmes in the six WHO regions, particularly with regard to the integration of maternal and child health services into the general health services. Special stress has also been laid on the social aspects of health services for mothers and children—in connexion with the problems of young children in the Philippines, for example. The training of staff has again been a major feature of programmes in the African Region (see page 96).

The causes and prevention of perinatal mortality was the subject of the technical discussions at the sixteenth session of the Regional Committee for Europe.

WHO continued to co-operate with the International Children's Centre in Paris and was represented at two meetings of its Technical Advisory Committee. It participated in a seminar on development planning for children and youth, organized by the International Children's Centre, UNICEF, and the Institute for the Study of Economic and Social Development.

The Organization was also represented at the meeting of the General Council of the International Union for Child Welfare, held in September at the Hague.
CHAPTER 7

ENVIRONMENTAL HEALTH

Population growth and urbanization and industrialization in communities whose water supplies are already meagre, waste disposal arrangements inadequate, and general environmental conditions unsafe, are causing an increase in the scope and complexity of environmental health problems. Cholera and other enteric diseases, in the dissemination of which contaminated water and insanitary conditions play major roles, are responsible for much morbidity and mortality. Water-borne diseases are one of the chief causes of the high infant mortality in developing countries. These diseases also place economic and other burdens on families and countries that can least afford them.

The greater use of ionizing radiation and the increase in microchemical contaminants are presenting further hazards to public health. The effects on man of long-term exposure to some of these contaminants are not yet fully known. Early preventive action in the developing countries should enable them to utilize the experience forced upon industrialized countries and thus prevent acute and expensive problems of air and water pollution. Closer collaboration is necessary between the health ministries and the other government authorities with responsibilities for the planning and construction of water supplies and other community facilities of importance to public health. The success of environmental health programmes can only be commensurate with the efforts and resources expended from within the countries themselves.

The environmental health work of the Organization during the past year, outlined in the following pages, has been directed toward assistance in meeting some of the more urgent needs.

Community Water Supply

Progress made in the community water supply programme was discussed by the Executive Board at its thirty-seventh session in January and by the Nineteenth World Health Assembly, which also considered the types of WHO action most needed today: these include assistance to Member States in the planning of long-term programmes and, in the case of developing countries, in the establishment of permanent bodies to implement community water supply programmes; assistance with the problem of financing community water supply projects and with the training of the necessary personnel; research and development; the collection and dissemination of data, and more effective evaluation of progress in the field; and the establishment of quality standards for drinking-water.

The present programme aims at strengthening national community water supply programmes by assistance to national and local organizations, and by the development of projects which will be able to attract internal and external financing. Long-term assistance to seventy-four countries was continued by the provision of WHO sanitary engineers. The improvement of community water supplies by such means as long-term planning, the development of new agencies within governmental organizations, and the training of local personnel, was the major objective of eighty-three projects, and in a further forty-seven projects it was one of the components. These projects have a large training element—a major purpose being to produce in the developing countries a nucleus of staff with the technical expertise and managerial competence needed for national and local programmes.

Work on community water supplies has benefited from the collaboration of the Organization with the United Nations Development Programme, the International Bank for Reconstruction and Development, other agencies of the United Nations family, and some regional and bilateral assistance programmes. WHO has given advice on projects financed by the Special Fund component of the United Nations Development Programme and for which FAO is the executing agency (see page 80). This has led to an increased recognition of the importance of community water supplies and of the health implications in water resources development, especially in irrigation projects.

A noteworthy development is the establishment of two new authorities, in Ghana and India, under which have been centralized the responsibilities formerly divided among a number of government agencies. This makes possible more effective planning and more efficient and economical operation, and will, it is expected, allow the authorities to obtain the necessary capital at reasonable interest rates, from both internal and external sources, for the improvement and expansion of the water supply and sewerage systems, so that they may become financially self-supporting.
Both authorities received and are continuing to receive assistance from the Special Fund component of the United Nations Development Programme, in projects for which WHO is the executing agency.

The Calcutta Metropolitan Water and Sanitation Authority will be responsible for water supply, sewerage and drainage services, and refuse collection and disposal in the Calcutta Metropolitan District: a master plan, covering the period 1966-2001, was completed. Assistance will be given to the new authority during its first two years of operation, including managerial, engineering and training assistance. The Government will be assisted in preparing large-scale investment proposals for the metropolitan area and in arranging its financing by the comprehensive pre-investment survey of water supply resources which has been completed with assistance from WHO.

In Accra, the second of the two new authorities, the Ghana Water Supply and Sewerage Corporation, came into effect in 1966. Work began on the second phase of the project, which includes preparation of design and tender documents for the water supply and sewerage installations, intensified assistance to the Corporation during the first two years of its operation, and further assistance in training.

The continuous in-service training of the authorities’ professional and non-professional staff is an integral part of both these projects.

With the assistance of the Special Fund component of the United Nations Development Programme, progress has been made in other water supply and sewerage projects of similar magnitude for which development banks and other financing agencies may be willing to provide loans. Work began on the master plan for water supply and sewerage for Istanbul and the surrounding area, approved by the Special Fund in 1965, with detailed planning for the first phase of improvement and a study of how far it will be possible to manufacture the necessary equipment in Turkey. Assistance is being given to the Government of Malta in preparing a long-term plan for water supply and waste disposal on the islands of Malta and Gozo. A similar project has been initiated in Senegal for Dakar and the surrounding area.

The problem of financing remained a major obstacle to the construction of water supplies in rural areas: however, demonstration projects, some of them assisted by UNICEF, have shown that the operational costs of some rural community water supply projects can be met with the aid of revolving funds and with active support from the rural population. An outstanding example of this method is the work done in a number of countries of South and Central America: from revolving funds initially supplied by the Inter-American Development Bank, loans are made which, with local contributions, make possible the construction of rural community water supplies.

Work continued towards the establishment of national standards for drinking-water quality. The international standards for drinking-water published by WHO in 1963 have been adopted as, or taken into account in establishing, national standards by twenty-three Member countries. Recent advances include new findings on the physiological effects of impurities in drinking-water.

During the year, work began on the first four research projects sponsored by WHO on the subject of water supply. They included studies on disinfection techniques for small water supplies, and on the improvement of water supply systems; the testing of new water supply materials (for example, plastic pipe and fittings, chemical coagulation aids, and new disinfectants for drinking-water supplies); and studies on the relationship between improved water supplies and the socio-economic status of the community.

In September, a WHO inter-regional travelling seminar on community water supply was held in Moscow and Erevan (Armenia), with participants from sixteen countries.

A WHO inter-regional symposium on development work in community water supply was organized in Teheran in October and November, with eighteen participants from eleven countries.

At the Seventh International Water Supply Congress held in Barcelona in October, a session was devoted to the problems of water supplies in developing countries. Closer collaboration is developing between the International Water Supply Association and WHO.

Environmental Pollution

WHO has continued to help countries affected by the increasing physico-chemical contamination of the environment, and to promote and facilitate the further study of air, water and soil pollution with a view to the introduction of more effective control measures.

Following advice from WHO, an inter-municipal commission has been formed in Brazil to identify sources of pollution, to evaluate its effects, and to prepare and co-ordinate control programmes. It includes representatives from most of the local authorities of the great metropolitan complex of São Paulo. Advice on pollution problems has been given to a number of countries, among them Iran, Israel, Lebanon, China (Taiwan) and Turkey.
A number of WHO-assisted courses for sanitary engineers (see page 67) included training in air and water pollution control.

The need for precise pollution-monitoring methods that are internationally comparable was emphasized by the Advisory Committee on Medical Research at its eighth session in June. During its discussion on research on environmental pollution the Committee recommended that WHO should continue to stimulate work on the development of standards of quality which would indicate the maximum permissible concentration of potentially noxious substances in water, in air and on land. In other recommendations the Committee stressed the value of international collaboration, through such means as international reference centres and international agreements, in preserving standards of quality in waterways flowing through more than one country and in preventing air pollution from spreading beyond national boundaries.

Investigations directed towards a better understanding of the role of living organisms in water purification and waste treatment processes have been assisted: field trials were initiated in India of monitoring procedures developed in Europe for the biological estimation of water pollution. WHO also assisted laboratory studies of the ecology of certain protozoa for use as biological indicators of water pollution.

An investigation being conducted at Ferrara, Italy, into the long-term effects on man of agricultural pesticides, was given continued assistance. The work includes a study of the kind and concentration of chlorinated organic compounds in soil, food and water in the rural environment, and also of such concentrations in human and animal fat. Another aspect is a prospective study in two random population groups, one exposed to pesticides in a rural area, and a control group exposed to much lower levels of pollution. The exposure of the individual subjects to pesticides has been investigated, and blood samples analysed for enzyme activity and blood constituents, in order to determine the specific influence of pesticides as distinct from metabolic disorders or general organic changes. A first medical control of the two groups, completed early in 1966, is being followed by a second control during which ophthalmic, auditory, neural, muscular and pulmonary function tests will be repeated and possibly extended.

The greater environmental pollution to be expected as a result of technological and industrial developments and the increase in world population is the subject of a report being prepared by WHO, in cooperation with other agencies, for submission to the Economic and Social Council in 1967. It emphasizes the interdependence of land, water and air pollution; reviews trends of pollution; describes the main application of current research and the most important international co-operative activities in the field; and includes information on control agencies and other institutions conducting research into environmental pollution, and their participation in international activities.

WHO has co-operated with the Organisation for Economic Co-operation and Development, and the Council of Europe, on matters relating to environmental pollution, and also with professional and technical bodies concerned.

Air Pollution

WHO has assisted Member countries in several regions in investigating a wide range of air pollution problems. Most are due to dustfall and smoke, one of the major sources of pollution being the combustion of soft coal by domestic and industrial users. Some pollution is caused by motor vehicles not operating under optimum conditions, and advice has also been requested on control measures for pollution from industrial sources such as cement factories, brick kilns, aluminium plants, and oil refineries. Recommendations were made on legislation (concerning emission standards, regulations for the siting of factories, the height of chimney stacks, etc.), and on the administration of air pollution control measures, surveys and monitoring of air pollution, and staff and training.

A draft guide to the selection of methods for air pollution measurements, started in 1965, was revised in accordance with the suggestions and comments of members of expert advisory panels. It briefly reviews the main sources of pollution and the control problem; the effects of specific pollutants; the prediction and evaluation of health hazards; the methods for atmospheric sampling, the location and pattern of sampling sites, and the selection of sampling procedures; laboratory methods for quantitative and qualitative analysis of pollutants in city air; and units for the expression of measurements.

WHO continued its assistance to the Institute of Occupational Health and Air Pollution Research in Santiago, Chile, where the air pollution equipment provided under the Special Fund component of the United Nations Development Programme was put into operation and the levels of certain air pollutants are now being routinely measured.
A study is being made in Zagreb, with WHO support, on the quantitative determination of the components of samples of particulate air pollution, collected as for optical density determination. Methods for the analysis of lead, mercury, arsenic, titanium and chromium are being investigated, and as experience grows other substances may be included. Micro-determination of optical density samples is based on separation and detection, using ring-oven methods or spectroscopy.

The effects on health of diesel engine emissions were the subject of a study begun in 1965 and continued during the year. It dealt with diesel fuels and the combustion products from diesel engines which are emitted in various concentrations depending on the condition of the vehicle, its maintenance and performance. After a comparison of the major differences between the emissions of petrol and of diesel engines, it was concluded that, as regards the prevention of air pollution, the diesel-propelled vehicle is less hazardous than the petrol engine and is more amenable to control: under conditions of normal operation no carbon monoxide is emitted, nor is there any justification for the emission of large quantities of noisome black smoke by diesel vehicles. The study outlines the causes of smoke production and contains advice on the observation and measurement of emissions, on the test methods and apparatus employed in some countries, and on smoke prevention.

The technical discussions of the Regional Committee for the Eastern Mediterranean, were on the health aspects of industrialization with special reference to air pollution.

In addition to collaboration with IAEA (see page 67), WHO has co-operated with specialized agencies, including the World Meteorological Organization, on the subject of air pollution and meteorology; and was represented at the first general meeting of the International Union of Air Pollution Prevention and Control Associations.

Water Pollution

The Organization's assistance in surveys of water pollution was given to China (Taiwan), Thailand and the United Arab Republic.

Preliminary surveys carried out by WHO in developing countries have shown that the demand for water is likely to double every two decades or so, and that the processing of water for re-use is a major problem everywhere. Although the general principles for the design, construction and operation of water supply or waste treatment installations are universally applicable, their adaptation to local conditions, especially to the amount and quality of local water resources and to available materials, is a prerequisite for maximum efficiency and economy. The Central Public Health Engineering Research Institute at Nagpur has been established to carry out investigations of this kind in relation to the needs of India. Much of the equipment for the Institute has been provided under the Special Fund component of the United Nations Development Programme in a project which was completed in 1966 and which is being assessed by WHO, the executing agency. The Institute is carrying out training programmes and research on specific problems for the Government, local authorities, and private industrial concerns, with emphasis on water supplies and the prevention of environmental pollution. In addition to research on air, water and soil pollution, the Institute is able to provide advisory services on water purification and waste disposal.

WHO is also executing agency for a project assisted by the Special Fund component of the United Nations Development Programme in Poland for the protection of river waters against pollution. This project started operation in February (see also page 126).

Assistance is being given to an investigation into certain wastes in water at Liège, Belgium. Work has centred on the quantitative determination of lead in water and its elimination; the quantitative determination of non-ionic detergents; methods for the extraction, concentration and identification of organic matter in water; and the quantitative determination of arsenic in water.

The conference on water pollution control organized in the European Region is mentioned on page 126.

WHO was represented at the first general meeting of the International Association on Water Pollution Research.

Environmental Health Aspects of Ionizing Radiation

The growth of the nuclear power industry throughout the world means that increased quantities of nuclear fuels will have to be processed, transported and used, and highly radioactive waste disposed of safely. Most wastes are in the liquid or gaseous state, which poses problems of particular importance for the control of air and water pollution. A number of other applications of nuclear energy result in the release of radionuclides into the environment. It has therefore become imperative that national health authorities, as part of their responsibilities for pro-
tecting the public from ionizing radiation, should operate efficient systems for assessing levels of radioactive materials in the environment. A study was started by WHO to help Member countries to establish routine surveillance of concentrations of radionuclides in the environment, and to ascertain whether these are within the prescribed limits or whether the increase in the amounts of radioactive material discharged or accumulating in the environment call for preventive and remedial action.

WHO has continued and expanded its collaboration with IAEA, and took an active part in studies and projects concerned with the safety factors involved in the design and testing of packaging for large radioactive sources, particularly irradiated fuel; the health aspects of the disposal of radioactive wastes into seas, oceans and surface waters; the treatment of the sludges resulting from the processing of low- and intermediate-level radioactive wastes; and the safe operation of nuclear power plants. WHO is also collaborating in studies of other uses of isotopes, including their use in hydrology.

In April, 140 scientists from eighteen countries met to discuss radioactive contamination of the environment, particularly of crops and food, at the International Symposium on Radioecological Concentration Processes organized in Stockholm by the Swedish Royal Academy of Sciences with the assistance of FAO, IAEA and WHO. There were detailed discussions of observations and studies in the various countries of the mechanisms by which radioactive elements become concentrated in certain plants and animals, the extent to which they do so, and the consequences for human health.

For further details of WHO's work on radiation protection, see page 43.

Sanitation Services and Housing

Sanitation Services

The organization and expansion of sanitation services in many national public health administrations, including those of the developing countries, are still seriously hampered by the lack of qualified personnel—particularly sanitary engineers and sanitarians capable of directing and operating the services.

For this reason WHO assistance has been largely concentrated on training activities of various kinds. In Africa, for example, twenty Member countries, received assistance through twenty-two WHO-sponsored training projects, and in the Americas twenty-six projects were in operation in seventeen countries for assistance to universities for research and training in sanitary engineering; teaching staff, visiting lecturers and fellowships were provided, and short courses, seminars, symposia and conferences were organized at national and international level (see page 114).

In June, a second inter-regional travelling seminar on the control of environmental sanitation was held in the Soviet Union. The programme was identical to that of the first seminar, held in 1964, but on this occasion the working languages were Russian and French. The participants were public health and sanitation officials from fifteen countries in five regions. They studied the organization and operation of environmental health activities in Moscow and Baku, and visited scientific institutes where the research is directed towards establishing and improving sanitation standards in the Soviet Union.

Housing and Urbanization

The Expert Committee on Appraisal of the Hygienic Quality of Housing and its Environment met in Geneva in August.

The Committee stressed that the purpose of such appraisal was not to gather statistical information but to stimulate and activate programmes to improve housing and its environment. Appraisal should utilize fully scientific methods and among its objectives should be (1) to determine the acceptability of the level of quality of existing dwellings and their environment and decide on demolition, renovation, replanning, etc.; (2) to determine the acceptability of standards for proposed new housing and its environment; (3) to study experiments in different countries related to health and hygiene and apply the experience gained to the improvement of standards and the development of appraisal programmes; (4) to provide data on the cost of bringing housing and environmental conditions up to suitable levels of hygiene; (5) to provide information on requisite sanitary facilities, equipment and services for housing units; and (6) to establish housing, building and planning regulations and codes of practice. The Committee thought it important that account should also be taken of aesthetic considerations.

The survey methods, standards of comparison, and aims suggested by the Committee vary according to the type of housing and the local conditions. The Committee proposed that a special effort should be made to develop simple procedures for appraising improvised and rudimentary housing. For conventional housing, the suggested list of points to be considered is detailed and comprehensive; the intention is, however, that the points to be selected from the list will vary according to local conditions, as will the indicators of quality. For instance, the provision of piped water would be
an important index of quality in a village in some countries, while in an old slum area of a city, where running water was piped to almost all living units, the index of quality would rather be the provision of a bath and the piping of hot water to baths and sinks.

The Expert Committee recommended that WHO should continue to collaborate closely with interested groups working in the same field; and that it should work with regional and national organizations, educational institutions and governments to develop demonstration and trial projects which would show how the principles outlined in the Committee's report might be applied to encourage, plan, and carry out improvements in housing and the environment.

Techniques for appraising the quality of dwelling units, and urban renewal and planning programmes, were also discussed by the Committee on Housing, Building and Planning of the Economic Commission for Europe in May. WHO was represented at this meeting and also at the fourth session of the Committee on Housing, Building and Planning of the Economic and Social Council in September, when emphasis was placed on the co-ordination and organization of an international programme in housing. Collaboration between the United Nations agencies concerned with housing was also discussed by the Inter-Agency Working Group on Housing and Urbanization which met in Geneva.

The recognition of their complementary interests in housing and urbanization projects under the Special Fund component of the United Nations Development Programme has led to a working agreement between the United Nations and WHO, providing for United Nations consultation on urban planning aspects of WHO water supply and sewage disposal projects, and WHO consultation and assistance in sanitary engineering aspects of United Nations urban and regional development projects.

A sanitary engineer provided by WHO has been working in the housing, building and planning section of the Economic Commission for Africa (ECA) to deal with the environmental health aspects of the housing and physical planning programmes being developed in Africa. Collaboration with ECA is being extended to include rural water supply and air and water pollution projects.

In March, WHO participated in the Working Group on Censuses of Population and Housing convened by the Economic Commission for Europe to prepare for the 1970 world census.

Wastes Disposal

Much of WHO's assistance to countries with regard to wastes disposal is linked with the community water supply programmes mentioned in the first section of this chapter.

In addition, a number of developing countries have received assistance in evolving feasible and economic long-term waste disposal programmes, particularly for capital cities and other large communities. In this connexion advice was given in the preparation of requests to the United Nations Development Programme for assistance, under the Special Fund component, for pre-investment engineering studies of sewerage, sewage treatment and disposal and urban storm drainage, as well as of solid wastes collection and disposal. For example, WHO advised the governments concerned on the preparation of such requests in respect of pre-investment engineering studies for sewerage and sewage disposal for the metropolitan area of Taipei and the city of Teheran. The advisory services provided to the Government of Burundi on sewerage and solid wastes collection and disposal for the city of Bujumbura were financed by contingency funds made available under the Technical Assistance component of the United Nations Development Programme.

In 1966 WHO was designated the executing agency for the project assisted under the Special Fund component of the United Nations Development Programme for the preparation of a master plan for a sewerage system for the Manila metropolitan area. This includes preliminary engineering and economic feasibility reports for the most immediate sewerage and sewage disposal needs of Manila and the other cities and municipalities that constitute Greater Metropolitan Manila.

Advice was given in Lebanon on problems of sewage and solid wastes disposal in the coastal area. In Cyprus, WHO assisted with a preliminary engineering survey on the most feasible and economic alternatives for the provision of sewerage and of sewage treatment facilities for the city of Nicosia, indicating the type and scope of the studies to be carried out for the preparation of a comprehensive engineering and feasibility report.

Increasing urban and industrial growth, accompanied by an increase in quantity and changes in the composition of solid wastes, have made their satisfactory collection and disposal a very complex problem in urgent need of solution. Assistance to Member States
in this field included advice on refuse collection and disposal in Dahomey, where the advisory project on the water supply system of Porto-Novo was extended to include an engineering study on refuse collection and processing for the cities of Porto-Novo and Cotonou.

The most important technological developments in this field were reviewed by the Scientific Group on Advanced Treatment of Wastes, which met in December 1966. The main subject discussed was the treatment and disposal of sludges resulting from the treatment of waste-water and of solid wastes originating from municipalities and from agricultural processes. The preparations for this meeting included a study of the results of the investigations and research being carried out in various parts of the world, particularly regarding the re-use of water for agricultural, industrial and recreational purposes.

Two articles on waste treatment were published in the Bulletin,\(^1\) one dealing with the economics of composting municipal refuse, the other describing new factors in the design, operation and performance of waste stabilization ponds.

The guide on waste stabilization ponds distributed early in 1966 is being revised on the basis of the detailed comments received from many experts and sanitary engineering research centres.

\(^1\) *Bull. Wld Hlth Org.*, 1966, 34, 737-763, 798-809.
CHAPTER 8

HEALTH STATISTICS

Collection and Use of Health Statistics

The need for further improvements in the use of health statistics was stressed during the technical discussions at the Nineteenth World Health Assembly on the subject "The collection and use of health Statistics in national and local health services". The participants - from more than ninety Member States - recognized that considerable progress had been made in many countries, frequently with the assistance of the Organization; in some cases, however, it appeared that not only improved organization, but a greater appreciation of the value of health statistics in public health administration, was required.

It was recommended that statisticians should be given the opportunity of participating in the day-to-day activities of the health department so that they may know better what kinds of statistical data are needed, and contribute facts and figures relevant to the task in hand. It was also pointed out that health statistical services should be designed to suit the particular needs of the country concerned, and that the accuracy and prompt availability of statistics were of greater importance than their volume. To make the best use of the limited resources in many countries, health service statistics should not only show what health personnel and institutions are available, but also how they are utilized. The special need for training in health statistics at the professional and technical level was emphasized.

For the technical discussions on health statistics at the Regional Committee for Africa, see page 98.

International Classification of Diseases

The Eighth Revision of the International Classification of Diseases was adopted (resolution WHA19.44) by the Nineteenth World Health Assembly, with the categories and sub-categories recommended by the international conference held in Geneva in 1965. The Health Assembly also requested the Director-General to issue a new edition of the Manual of the International Statistical Classification of Diseases, Injuries and Causes of Death based on the Eighth Revision, which will be applicable from January 1968. The work of preparing the Manual has begun.

The Director-General was also requested (resolution WHA19.45) to review the Nomenclature Regulations with a view to their revision. It was recommended that a distinction be made between matters which might appropriately continue to be the subject of international mandatory regulations, such as the requirement that Member countries use the International Classification of Diseases for official mortality and morbidity statistics, and other matters which would be more suitable as recommendations to be adopted under Article 23 of the Constitution (by which the Assembly has authority to make recommendations to Members on any matter within the competence of the Organization). In accordance with this request, preliminary drafts of revised Nomenclature Regulations and of recommendations have been circulated to Member States for comments, which will be taken into account in preparing draft regulations and recommendations for submission to the Twentieth World Health Assembly in May 1967.

The use of epidemiological methods in the study of chronic diseases was discussed by the Expert Committee on Health Statistics at a meeting in November. The Committee reviewed epidemiological techniques of proved value in the study of communicable diseases and the possibilities of adapting them to the study of chronic diseases. It noted that the emerging problems of chronic diseases, although urgent in highly industrialized countries, were also important in developing countries, where the rapidly changing patterns of disease and ways of life provided many opportunities for fruitful ecological studies.

The Committee recommended a strengthening of WHO's role in epidemiological methodology. Among areas recommended for priority it included methods of measuring the social and cultural environment and of standardizing description and measurement of personal habits and ways of living; methods of measuring and describing the physical, psychological and social disability associated with chronic disease; the integration of research in different diseases and disabilities in order to ensure that maximum use is made of investigations on populations that are of special interest and, in many cases, rapidly changing; and problems of record linkage, including related statistical and computer methodology.
The value of systems of record linkage—the process of bringing together separate documents concerning an individual or family—has become increasingly evident in recent years with the growing number of individual records and the development of technical possibilities for large-scale automated linkage. The linkage, for example, of early health records to later morbidity and mortality records and to hospital records could provide useful information on the relevance of early habits or physiological measurements to later chronic diseases.

The Committee also suggested that WHO and the relevant national authorities should initiate trials with different forms of death certificates with a view to eliciting more information on the pathological conditions present at death. Other recommendations concerned the need to embody developing epidemiological and statistical knowledge in routine health statistics, the standardization of techniques in the broad field of epidemiology, and the establishment of a multilingual glossary of epidemiological terms. The need for medical students and graduates in specialized medical disciplines to be trained in epidemiological methods and their application to chronic disease was also stressed by the Committee.

Assistance to Governments in the Development of Statistical Services

WHO continued to assist governments in the training at all levels for work in health statistics. In addition to the organization of regional courses and seminars, and participation in the teaching at statistical centres established or assisted by the United Nations, attention was given to the training of national staff for WHO-assisted health statistics projects. To answer requests, information is being collected for the preparation of a document on existing facilities for training in vital and health statistics, including institutions which organize training, the fields of health statistics they cover, curricula and duration of courses.

Forty-nine WHO-assisted projects in vital and health statistics were in operation in 1966, and in fifteen of these hospital statistics was the main subject or was considered in conjunction with other aspects of health statistics. The main purpose of this special aspect of the projects was to develop the services, for hospital statistics as well as for national health statistics, to such an extent that they are able to produce reliable data for the use of the administrations concerned. WHO assistance included the training of personnel for medical records and hospital statistics; the organization of in-service training of personnel in hospitals; and the compilation of manuals giving detailed instructions for medical record-keeping and statistical reporting.

A regional seminar on hospital medical records and statistics was held in the Western Pacific Region (Manila) in November and December. The participants discussed the standards desirable for hospital medical and other records related to the quality of patient care; methods of compilation and comparability of hospital statistical data; the encouragement of the use of hospital statistics; the organization, administration and functions of medical records departments, and desirable standards for the training of their personnel.

Statistical Publications

The World Health Statistics Annual (formerly Annual Epidemiological and Vital Statistics) included for the first time data on available health personnel and on hospital utilization—the tables showing, for each country, the physicians and other medical and paramedical personnel according to field of activity and the available hospitals and hospital beds, by category and type of administration.

Statistics on subjects of current interest and public health importance (for example, on cholera, malaria, tuberculosis, causes of foetal death, blindness, and multiple sclerosis) have been published in the monthly Epidemiological and Vital Statistics Report. Vaccination statistics showing the number of vaccinations and the procedures followed in each country are published with data on the incidence of various infectious diseases.

Statistical Analysis of Research and Technical Programmes

WHO-assisted projects which presented problems of statistical methodology included surveys on yaws in Nigeria, Togo, and Western Samoa, on eye diseases in the United Republic of Tanzania and on chronic respiratory diseases in Czechoslovakia; field studies on BCG vaccines in Denmark; bilharziasis skin test studies in Africa; trachoma therapy in China (Taiwan); epidemiological studies of atherosclerosis in Europe; and international collaborative laboratory assays of antibiotics. Suitable statistical standards for the assessment of the interruption of malaria transmission, and for sampling techniques in tuberculosis prevalence surveys, were the subject of theoretical study.

Statistics form an important aspect of the planning, execution and evaluation of medical research and other epidemiological and field studies. Examples are the linked clinical and pathological studies of cardiovascular conditions undertaken in several countries (see page 39), dental health surveys and research
into existing data for the mapping of global dental epidemiology (see page 40); an epidemiological study of xerophthalmia; community health studies of the patterns and utilization of health and medical care services; and studies on nursing activities.

Statistical work is being facilitated by the installation of an electronic data-processing system in the WHO headquarters building. Intensive study has been made of the feasibility of transferring work to the computer, and initial trials have given encouraging results. While the routine compilation and dissemination of statistics were carried out, as in previous years, by conventional methods, more frequent use was made of computers in compiling complex statistical tables based on data from various projects: for example, multi-variate statistical analysis of research data on cardiovascular diseases; simulation studies on malaria epidemics; and statistical analysis, storage and retrieval of information on insect resistance to insecticides.

The use of electronic computers in health statistics and medical research was the subject of a symposium organized by WHO in Stockholm in June (see page 128).

**Participation in United Nations Statistical Programmes**

WHO participated in an inter-agency meeting held in Geneva in August, at which a draft paper on an integrated five-year work programme on international statistics for presentation to the United Nations Statistical Commission was reviewed, and co-ordination problems and methods were discussed. Tables of statistics on certain health aspects of the social situation in the world were prepared for inclusion in the second edition of the United Nations publication *Compendium of Social Statistics*; and data on health personnel were sent to the United Nations for publication in its *Statistical Yearbook*.
EDUCATION AND TRAINING

In view of the worldwide shortage of medical teachers, particularly in the basic medical sciences and preventive and social medicine, an expert committee was convened in Geneva at the end of November 1965 to consider the training and preparation of teachers for medical schools, with special regard to the needs of developing countries, where this shortage is felt most acutely. The committee recommended that, in order to meet the present critical situation, WHO provide assistance for the early implementation of the following measures: the use of WHO fellowships to provide opportunities for persons already qualified in a basic or clinical discipline to gain additional training in educational science; the establishment of an international centre or centres that would train medical teachers in educational science and provide advice to individual institutions; the establishment, within individual medical schools, of departments or divisions of medical education; and the creation of educational demonstration programmes in selected medical schools in developing countries.

In spite of the difficulties in recruiting senior teaching staff, the Organization has been able to assign a number of teaching personnel to a wide range of schools for professional and auxiliary personnel. The tables below show: (1) according to subject, the number of professors, lecturers, and other teaching staff assigned by WHO to medical schools and to public health nursing and other training institutions during the period 1 January to 31 December 1966, and (2) the countries in which they worked.

(1) For training professional personnel * (by subject)

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</thead>
<tbody>
<tr>
<td>Basic medical sciences</td>
<td>23</td>
</tr>
<tr>
<td>Paediatrics, maternal and child health</td>
<td>19</td>
</tr>
<tr>
<td>Other clinical subjects</td>
<td>11</td>
</tr>
<tr>
<td>Public health and preventive medicine (including hospital administration and statistics)</td>
<td>30</td>
</tr>
<tr>
<td>Radiology, laboratory techniques</td>
<td>8</td>
</tr>
<tr>
<td>Physical and occupational therapy</td>
<td>6</td>
</tr>
<tr>
<td>Environmental health</td>
<td>10</td>
</tr>
<tr>
<td>Nursing</td>
<td>102</td>
</tr>
<tr>
<td>For training auxiliary personnel</td>
<td>56</td>
</tr>
<tr>
<td>Total number of months assigned: 2313</td>
<td></td>
</tr>
</tbody>
</table>

(2) Countries to which assigned

<table>
<thead>
<tr>
<th>Country</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>10</td>
</tr>
<tr>
<td>Algeria</td>
<td>7</td>
</tr>
<tr>
<td>Brazil</td>
<td>1</td>
</tr>
<tr>
<td>British Solomon Islands</td>
<td>1</td>
</tr>
<tr>
<td>Burma</td>
<td>4</td>
</tr>
<tr>
<td>Burundi</td>
<td>4</td>
</tr>
<tr>
<td>Cambodia</td>
<td>7</td>
</tr>
<tr>
<td>Cameroon</td>
<td>2</td>
</tr>
<tr>
<td>Chad</td>
<td>3</td>
</tr>
<tr>
<td>Chile</td>
<td>1</td>
</tr>
<tr>
<td>China (Taiwan)</td>
<td>1</td>
</tr>
<tr>
<td>Cyprus</td>
<td>1</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>5</td>
</tr>
<tr>
<td>France</td>
<td>1</td>
</tr>
<tr>
<td>Gabon</td>
<td>4</td>
</tr>
<tr>
<td>Gambia</td>
<td>1</td>
</tr>
<tr>
<td>Ghana</td>
<td>4</td>
</tr>
<tr>
<td>Gilbert and Ellice Islands</td>
<td>1</td>
</tr>
<tr>
<td>Guatemala</td>
<td>1</td>
</tr>
<tr>
<td>India</td>
<td>35</td>
</tr>
<tr>
<td>Indonesia</td>
<td>5</td>
</tr>
<tr>
<td>Iran</td>
<td>8</td>
</tr>
<tr>
<td>Iraq</td>
<td>7</td>
</tr>
<tr>
<td>Israel</td>
<td>2</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>2</td>
</tr>
<tr>
<td>Japan</td>
<td>2</td>
</tr>
<tr>
<td>Jordan</td>
<td>3</td>
</tr>
<tr>
<td>Kenya</td>
<td>4</td>
</tr>
<tr>
<td>Laos</td>
<td>10</td>
</tr>
<tr>
<td>Lebanon</td>
<td>2</td>
</tr>
<tr>
<td>Libya</td>
<td>12</td>
</tr>
<tr>
<td>Total number of months assigned: 265</td>
<td></td>
</tr>
</tbody>
</table>

* Some instructors were engaged in the training of both professional and auxiliary personnel.

Fellowships and Travel Grants

The granting of fellowships makes it possible for a large number of health workers to acquire knowledge and practical experience not available in their home countries; furthermore, the personnel thus trained can help in the continuation and development of many programmes after the Organization’s assistance ends. From 1 December 1965 to 30 November 1966 WHO provided assistance to enable 3123 individuals to go abroad. WHO awarded 2576 fellowships for study (as compared with 1749 for the same period ending

The work of WHO, 1966

Programme has continued during the year. Further information on fellowships awarded in relation to particular countries and projects may be found in Part III, and Annex II summarizes the fellowships awarded by subject of study and by region. Some other aspects are analysed below:

Professions of fellows

<table>
<thead>
<tr>
<th>Profession</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>1339</td>
<td>52%</td>
</tr>
<tr>
<td>Nurses</td>
<td>348</td>
<td>14%</td>
</tr>
<tr>
<td>Sanitarians</td>
<td>167</td>
<td>6%</td>
</tr>
<tr>
<td>Other</td>
<td>722</td>
<td>28%</td>
</tr>
</tbody>
</table>

Fields of activity

<table>
<thead>
<tr>
<th>Field</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching</td>
<td>298</td>
<td>12%</td>
</tr>
<tr>
<td>Research</td>
<td>57</td>
<td>2%</td>
</tr>
<tr>
<td>Medical and health services</td>
<td>1970</td>
<td>76%</td>
</tr>
<tr>
<td>Undergraduate study</td>
<td>251</td>
<td>10%</td>
</tr>
</tbody>
</table>

Types of studies arranged

<table>
<thead>
<tr>
<th>Type</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHO-sponsored courses</td>
<td>960</td>
<td>37%</td>
</tr>
<tr>
<td>Other courses</td>
<td>849</td>
<td>33%</td>
</tr>
<tr>
<td>Individual studies</td>
<td>767</td>
<td>30%</td>
</tr>
</tbody>
</table>

Places of study

<table>
<thead>
<tr>
<th>Place</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In fellow's region</td>
<td>1377</td>
<td>53%</td>
</tr>
<tr>
<td>In another region</td>
<td>1199</td>
<td>47%</td>
</tr>
</tbody>
</table>

The emergency programme for training physicians abroad for the Democratic Republic of the Congo is practically completed (see page 97), but fellowships have been granted to sub-professional medical personnel of other African countries to enable them to receive complementary training leading to a full medical degree in three or four years.

Owing to the lack of training facilities in the African Region, there has been an increase in the number of fellowships granted to undergraduate students from that region for full medical studies lasting six years. However, training in the home environment is especially valuable for basic studies and it is expected that, with the growth of training facilities in Africa, the number of undergraduates trained overseas will begin to decrease.

A total of 989 participants assisted by WHO and other agencies attended 39 regional and inter-regional seminars, symposia and other educational meetings sponsored by WHO. These meetings were held in 26 countries and territories; details are given in Part III.

The evaluation of the results of the fellowships programme has continued during the year.

Medical Education

The Third World Conference on Medical Education, organized by the World Medical Association and co-sponsored by the Organization, was held in New Delhi in November. In several countries preparatory discussions were held on the main theme of the conference, “Medical education — factor in socio-economic development”, and WHO participated in some of these discussions as well as in the proceedings of the conference itself.

An expert committee met in Geneva in July to study the use of health service facilities in medical education, with special reference to the orientation of students in the field of community medicine. It reviewed the limitations of the teaching hospital in providing the undergraduate student with the necessary full range of experience and proposed different methods of supplementing hospital teaching with teaching in the community: through centres for ambulatory care, domiciliary care, field training areas and other public health and social services and — probably the most effective method yet developed — the teaching health centre. The committee also indicated the fields of study to be included in the medical school curriculum, and recommended that special attention be given to growth and development, aging, and genetics and psychology. It stressed the need for specialized staff in the following more community-oriented areas of study: epidemiology (including survey methods in the study of community health), statistics, social sciences in medicine (behavioural sciences and economics), population genetics, and health administration and practice (including community organization, health education, and environmental health). It also recommended that the teaching health centres or other community health services chosen for teaching should have special units concerned with the following: family medicine, maternal and child health, care of the aged, occupational health, communicable disease control, care of chronic invalids, rehabilitation, community psychiatry, and nutrition.

The Organization assisted Cameroon, Ethiopia, Kenya, Kuwait, Syria and Zambia in the establishment of new medical schools, and also provided advice to several countries on the improvement of teaching methods.

An inter-regional travelling seminar on the preparation of teachers for medical schools was organized in the USSR. Participants — mainly deans and professors of medical schools — studied the methods used in the USSR in the selection of candidates for teaching careers, and in the organization of their training and of refresher courses.

In the South-East Asia Region, the Organization
assisted various medical schools in India, demonstrating modern methods and techniques of teaching and encouraging their introduction and promotion; observing the teaching and research programmes in the various disciplines; and assisting the heads of the departments concerned in the organization and content of courses, and the planning, design and methodology of research. An account of the assistance provided to medical education in Gujarat state is given on page 122. Working conferences (or "workshops") on teaching methods were also organized in some countries of the Region.

At a seminar in the African Region, emphasis was laid on the adaptation of medical education to African needs (see page 98).

In view of the fact that examination methods have been, for some time, a matter of considerable interest and concern in many countries, WHO undertook a review of the old and new methods of student examination and evaluation in medical schools in order to assess their relative advantages and limitations. The resulting observations should help medical schools in the planning, application and evaluation of new techniques of examination and of assessment of students' aptitudes and performance.

In accordance with resolution WHA 19.53 of the Nineteenth World Health Assembly, calling for a study of the criteria for assessing the equivalence of medical degrees in different countries, a questionnaire has been circulated to governments and the replies are being reviewed for the preparation of reports to the Executive Board and the Assembly.

The Nineteenth World Health Assembly also adopted a resolution (WHA 19.7) establishing a revolving fund for teaching and laboratory equipment for medical education and training (see page 88).

In the series of directories of institutions for the training of medical and paramedical personnel, the World Directory of Schools of Pharmacy was published; and the second edition of the World Directory of Dental Schools was in press at the end of the year.

**Training in Preventive Medicine and Public Health**

A conference of directors of schools of public health, held in Geneva in August, was attended by representatives of about half the countries where post-graduate training in public health is available. Participants discussed the programme content of schools of public health and the organization of the curriculum to allow for the best utilization of the available time in one academic year; the requirements of both national and foreign students; the question of more advanced courses, and the related problem of recognition of degrees and diplomas for acceptance of foreign post-graduates to these courses.

Inter-institutional or international recognition would be facilitated by better knowledge of the details of the various post-graduate courses. In this connexion more than eighty institutions providing post-graduate training in public health have supplied material that is now being prepared for publication in a world directory of schools of public health.

The process of exchange of information and cooperation between schools was also promoted through regional meetings. WHO provided assistance in connexion with the third meeting of directors of European schools of public health, held in Ankara in October, and in February helped to organize a symposium in Lisbon on the education of the public health physician in relation to his work in the community (see page 126).

Assistance was given to institutions providing, or planning to provide, post-graduate training in public health, in Argentina, Belgium, Brazil, Burma, Chile, China (Taiwan), France, Iran, Mexico, Pakistan, Senegal, Turkey, the Union of Soviet Socialist Republics, and the United Arab Republic.

The teaching of preventive medicine to medical students was promoted through regional meetings (such as the meeting on the co-ordination of departments of preventive and social medicine at the university level in the Region of the Americas, and the seminar on the teaching of preventive and social medicine, in the South-East Asia Region), and by assistance to medical schools (for example, in Brazil, Ceylon, Ethiopia, India, Iraq and Jamaica).

**Training of Auxiliary Personnel**

The report of a meeting on the training of auxiliary health workers, held in Mexico City in March, was considered by the Pan American Sanitary Conference/WHO Regional Committee for the Americas. In the Western Pacific Region, the first regional seminar on the training of auxiliary health personnel was held in Manila in October (see page 145).

In connexion with the survey of the various medical duties performed by auxiliaries, training schemes in Algeria, Saudi Arabia, Somalia, Togo and the United States of America were studied.

WHO provided assistance to many countries in the training of auxiliaries — in particular, for the development of basic health services (for example, in Algeria, India, Malaysia, Nigeria and Somalia), nursing services (Gabon and India), and sanitation (Morocco and Togo).
Collaboration with the United Nations and the Specialized Agencies

WHO collaborated with ILO in the revision of the International Standard Classification of Occupations, with regard to the health professions.

The Organization participated in the work of the ACC Sub-Committee on Education and Training; it also co-operated with the United Nations in the preparation of a report on the development and utilization of human resources and documentation for the Advisory Committee on the Application of Science and Technology to Development, and participated in the work of the Economic Commission for Africa's Working Party on Manpower and Training.

Co-operation also continued with the UNESCO-sponsored International Institute for Educational Planning, in Paris.
CHAPTER 10

MEDICAL RESEARCH

Research in communicable diseases continued to receive a large share—approximately 38 per cent.—of the research funds available from all sources. Increasing attention, however, was paid to other subjects. Non-communicable diseases received about 15.3 per cent. of the funds. The biomedical sciences including human genetics, immunology, human reproduction and biological standardization, and pharmacology and toxicology, together were allotted approximately 13 per cent. of the research funds. The research programmes in environmental health and public health practice also increased: each received about 12 per cent. of the funds. Most of this work was financed from the regular budget, as contributions to the Special Account for Medical Research are now received for designated projects forming part of the general programme: for example, six research projects continued to receive support from the United States Public Health Service. (For total contributions to the Special Account in 1966, see page 87).

An important aspect of research co-ordination is the scheme by which research training grants are awarded to young scientists desiring to acquire experience in research methodology. Of the 62 grants awarded in 1966, 4 were partly supported by the Government of Czechoslovakia, 5 by the Government of Israel, and 3 by the Swedish National Association against Heart and Chest Diseases. Besides the above, 32 grants were awarded to individual investigators for projects closely related to the WHO research programme. Research training grants and grants for exchange of research workers awarded during the period under review are listed in Annex 13.

One hundred and sixty-eight new collaborative research projects were started in 1966 bringing the total to 555 projects currently in operation (see Annex 12). Fairly new programmes in the general context of WHO's research activities include projects in drug evaluation (see page 53) and comparative oncology (see page 37). Work has been considerably increased in the fields of malaria eradication (see page 6), parasitic diseases (see pages 16 to 20) and vector control (see pages 20 to 24). Information on these collaborative research projects is given in the appropriate sections of this report.

Co-ordination of research was further enhanced by the designation of new international reference centres to the WHO network which plays so important a part in ensuring comparability of findings. The new centres included those for serum protein groups, streptococcus typing, gonococci, mycoplasmas, BCG seed-lots and control of BCG products, rabies, comparative oncology, histopathology of odontogenic tumours, and those for the maintenance and distribution of the Culex pipiens complex, of Musca domestica and of Anopheles. In addition three new regional reference centres were designated for work on malaria, smallpox and genetic factors of human immunoglobulins. The reference centres supported by WHO are listed in Annex 14.

Apart from the meetings of expert committees (see page 78), thirty-four meetings of scientific and other research groups were organized during the year to examine the present stage of knowledge in the various medical fields, to indicate gaps in research and to help in selecting the subjects which are most suitable for WHO collaborative investigation. Mention is made of these meetings in the relevant sections of this report and the scientific groups are listed in Annex 5.

Although such meetings are convened primarily to advise the Director-General on the development of the research programme, the reports on the following subjects were considered to be of wider concern and were published in the Technical Report Series: chemotherapy of bilharziasis, human viral and rickettsial vaccines, clinical aspects of oral gestogens, trachoma research, basic and clinical aspects of

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1 Specific activities in the medical research programme of WHO are described elsewhere in this report under their respective subjects. This chapter summarizes the research programme as a whole.

The Advisory Committee on Medical Research held its eighth session in Geneva in June 1966. The sixteen experts who attended are listed in Annex 4. The Committee reviewed in detail WHO's research programme in cardiovascular diseases and advised on its future development (see page 38), and discussed research that could be sponsored by WHO on environmental biology and pollution (see page 65). It also considered reports of thirteen scientific groups, selected for their special interest, namely those on genes, genotypes and allotypes of immunoglobulins; chemistry and physiology of the gametes; immunological aspects of human reproduction; clinical aspects of oral gestogens; basic and clinical aspects of intra-uterine devices; principles for pre-clinical testing of drug safety; international drug monitoring; trachoma research; human viral and rickettsial vaccines; research on genetics in psychiatry; haemoglobinopathies and allied disorders; identification and measurement of air pollutants; and standardized strains of insects of public health importance.

A further important contribution to the research programme is made by the expert committees whose reports often contain recommendations on further studies needed in the particular fields discussed. Twenty-one such committees (including three expert committees organized jointly with FAO) met during the year.

The work of the expert committees is summarized in the appropriate sections of this report. Their members are drawn from the expert advisory panels: forty-four of these were in existence at the end of the year (for list, see Annex 4).

In accordance with resolution WHA18.43 the Director-General presented to the Executive Board and to the Health Assembly a plan for the development of WHO research activities in epidemiology and communications science. This was approved by the Assembly in resolution WHA19.34. Plans were further elaborated for studies of the health effects of rapid ecological change in the context of rural-urban migration, and of the health correlates of ecological variation between different populations and environments. Studies are also being planned on the development of more sensitive indicators of health status and the application of mathematical models and computer technology to health problems. By the end of the year recruitment was in progress and the research programme will be initiated during 1967.

WHO has continued to provide support to the Council for International Organizations of Medical Sciences (CIOMS) and thus to contribute to the exchange of scientific information through the symposia, seminars and the other meetings sponsored by the Council. Collaboration with CIOMS in immunology is mentioned on page 50.

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Besides taking part in inter-agency programmes, WHO continued to work with individual organizations of the United Nations system on matters of common interest. As most of this work is carried on from year to year only new developments and some examples of joint activities are mentioned here.

United Nations Development Decade and Other Inter-Agency Programmes

WHO again called to the attention of the Economic and Social Council the spread of certain communicable diseases and other deficiencies in health work that are largely due to inadequate resources, international as well as national. The Organization took part in inter-agency consultations leading to a report to the Economic and Social Council on areas in which the organizations of the United Nations system can make their maximum contribution, both individually and by concerted action, to the goals of the Development Decade. WHO was represented at the first session, in May, of the United Nations Committee for Development Planning. This committee of experts on planning was established in 1965 as an advisory body to the Economic and Social Council.

WHO took part in the consultations of the United Nations with interested specialized agencies concerning the five-year programme of work for the Social Commission, which has been re-named the Commission for Social Development. The Organization undertook a study on social questions relating to the extension of health services, for presentation to the Commission in 1967.

WHO contributed to the discussions of the Advisory Committee on the Application of Science and Technology to Development, which met in March and October, and of the Sub-Committee on Science and Technology of the Administrative Committee on Co-ordination.

Through the ACC Sub-Committee on the Development and Use of Water Resources, WHO continued its collaboration with other agencies in a concerted action programme. An important part of WHO's contribution is the community water supply programme (see under United Nations Development Programme below, and pages 63-64). WHO cooperated with ECE and FAO in meetings on water pollution in Europe.

WHO took part in the discussions of the Statistical Commission of the Economic and Social Council, and continued to collaborate with the Statistical Office of the United Nations and the statistical divisions of other specialized agencies as regards work of common interest.

Co-operative activities in development planning included the work of the WHO advisers assigned to the African and Asian Institutes for Economic Development (see page 119), and the continuation of the training given jointly with the Latin American Institute for Economic and Social Planning. The Organization maintained its association with the United Nations Research Institute for Social Development and with the United Nations Institute for Training and Research.

For WHO co-operation with the United Nations in housing and urban planning, see page 68. The continued assignment of a WHO sanitary engineer to work at the headquarters of the Economic Commission for Africa at Addis Ababa has facilitated co-operation in Africa with regard to housing and sanitation programmes. A WHO housing and urbanization adviser stationed at the headquarters of the Economic Commission for Latin America in Santiago, Chile, assisted the Commission in its work.

WHO participated in an inter-agency review of the policy issues in community development and continued to assist governments in community development programmes, particularly in the Regions of the Americas (see page 105), South-East Asia and the Western Pacific.

Co-operation in the field of public administration has been continued through consultations and joint action with the United Nations (including the regional economic commissions) and the specialized agencies concerned. In the Region of the Americas, for example, there was co-operation with the United Nations Public Administration Branch and the Economic Commission for Latin America. A public administration specialist from the Economic Commission for Asia and the Far East participated in the
WHO regional seminar for the Western Pacific on the integration of health services (see page 227).

**United Nations Development Programme (UNDP)**

By General Assembly resolution 2029 (XX), the merger of the Special Fund and the Expanded Programme of Technical Assistance into the United Nations Development Programme became effective on 1 January 1966. In combining the two programmes, however, the General Assembly made clear its wish that their special characteristics and operations should be maintained, as well as two separate funds.

At its thirty-seventh session in January 1966 the Executive Board in its resolution EB37.R41, noting the General Assembly resolution, considered that the Organization should continue to participate in the United Nations Development Programme, under the authorities already given to the Director-General and the Executive Board by the World Health Assembly. The Board also requested the Director-General to report to the Board and the World Health Assembly on any developments that may affect the participation of the World Health Organization in this programme.

As far as the Special Fund component is concerned, the Governing Council of the United Nations Development Programme, at its January 1966 session, approved two projects for which WHO is executing agency: one to strengthen the Pan American Zoonoses Centre in Buenos Aires, Argentina (see page 108) the other to help establish the Calcutta Metropolitan Water and Sanitation Authority (see page 64). The latter project constitutes a new phase of the WHO-assisted project for a survey of water supply resources for Greater Calcutta.

At its June session, the Governing Council approved four additional projects which WHO is to execute: the second phase of the preparation of a master plan for water supply and sewerage in Ghana; a wastes disposal and water supply project for Malta; a master plan for a sewerage system for the Manila metropolitan area, Philippines; and a master plan for water supply and sewerage systems for Dakar and surrounding areas, in Senegal (see pages 64 and 95).

Developments in other projects assisted under the Special Fund component and now in operation are mentioned in the pages indicated: the protection of river waters in Poland against pollution (see pages 66 and 126); preparation of a master plan for water and sewerage systems for the city of Istanbul and the neighbouring industrial region (see pages 64 and 126); the School of Nursing, Niamey, Niger (see pages 60 and 97).

WHO has been engaged in the latter part of 1966 in the preparation of the final reports on the Ghana water supply and sewerage project, the Calcutta water supply survey, and the Central Public Health Engineering Research Institute, Nagpur (see pages 66 and 117).

Thus far WHO has been designated executing agency for sixteen of the 657 United Nations Development Programme (Special Fund) projects which have been approved. In addition, the Inter-Agency Consultative Board recommended the Governing Council to approve assistance under the Special Fund component for a project of operational research on human and animal trypanosomiasis eradication in the Nyanza and Western Provinces, Kenya (see page 93).

WHO also co-operates in reviewing technical requests received from governments in fields such as irrigation, regional development and land and water resource surveys for financing under the Special Fund component of the United Nations Development Programme.

For projects assisted by the Special Fund component and executed by other agencies, WHO has provided consultants, who have been made available under sub-contractual arrangements with the agency concerned. So far twelve consultants in various fields, mainly in epidemiology, public health administration and sanitary engineering, have been provided by WHO in this way, involving some nine projects. Further WHO assistance totalling 387 man-months is foreseen in forty-two projects so far approved by the Governing Council. In other cases WHO has made available at short notice the services of its field staff to advise on the health aspects of certain UNDP (Special Fund) projects in operation. Most of these arrangements have been short-term (about two to three months) but some have been for longer periods, such as the two-year mission of the WHO sanitary engineer with the agricultural survey project in Dahomey, assisted by the UNDP with FAO as executing agency (see pages 56-57).

Collaboration of this nature on UNDP (Special Fund) activities has been strengthened between FAO and WHO in agricultural projects and projects for land and water development. Similar arrangements between the United Nations and WHO, for public health and sanitation aspects of housing and urban development projects, were discussed during the year. On the basis of an agreement reached with the United Nations, WHO is providing consultants for five projects in the urban planning and housing field. Discussions have also been initiated with UNESCO to explore the possibility of WHO assisting in sanitary engineering education within the context of UNESCO's civil engineering projects.

WHO participated in eight preparatory assistance missions of the UNDP (Special Fund) to appraise
requests received or assist governments in reformulating their proposal. They included requests from the Governments of Honduras (regarding the urban development of Puerto Cortes; Kenya (trypanosomiasis research, see page 93); Philippines (master plan for Manila sewerage system, see page 141); and Senegal (master water and sewerage plan for Dakar, see page 95); and a request of the Government of Mexico for assistance in research on paralytic rabies, a project for which FAO would be executing agency.

Under the Technical Assistance component, WHO implemented the second half of the approved 1965-66 biennial programme. The Organization's inter-regional project to strengthen cholera control in South-East Asia, the Eastern Mediterranean and the Western Pacific (see page 30) was financed under contingency arrangements and is to continue through the 1967-68 biennium.

Projects financed under the Special Fund and Technical Assistance components of the United Nations Development Programme are shown in the list in Part III of the Report.

United Nations Children's Fund (UNICEF)

The Executive Board of the United Nations Children's Fund, at its meeting in Addis Ababa in May, approved programme allocations for a total of 224 projects, including twenty-nine new projects. Health projects (seventy-five for basic health services including maternal and child health, and forty-two for malaria eradication and disease control) absorbed approximately two-thirds of the total UNICEF programme commitments of US $28.8 million.

The UNICEF Executive Board discussed the possible role of UNICEF aid in family planning on the basis of a report by the Executive Director that UNICEF should accept for consideration requests for assistance to family planning programmes where the requesting governments considered these as important for children's health and welfare. The Board, which was informed of resolution WHA19.43 on programme activities in the health aspects of world population, decided to defer action until its 1967 session. In the meantime, the Board requested the advice of the UNICEF/WHO Joint Committee on Health Policy on ways in which UNICEF might take part in programmes of family planning, with particular reference to the technical aspects.

The Board reviewed recommendations of the Director-General of WHO which were based on the conclusions of the Expert Committee on Leprosy, and agreed that future UNICEF aid to leprosy control would be provided if the criteria suggested by WHO are met in the assisted countries.

The UNICEF Executive Board also discussed basic health services, training of health personnel, the need to improve maternal and child health, malaria eradication, and control of tuberculosis and yaws. Following the recommendations of the UNICEF/WHO Joint Committee on Health Policy adopted in 1965, two new types of disease control project were approved, one for vaccination against measles in Chile and the other for vaccination against poliomyelitis in China (Taiwan).

On the occasion of the Board session, WHO participated in a special three-day meeting on the needs of African children.

In March, the Organization took part in the Asian Conference on Children and Youth in National Planning and Development, held in Bangkok, and co-sponsored by UNICEF and the regional economic commissions and regional development institutes.

World Food Programme

The initial three-year experimental phase of the United Nations/FAO World Food Programme came to an end on 31 December 1965 and, by decision of the General Assembly of the United Nations and the Conference of FAO, the Programme was placed from 1 January 1966 on a continuing basis for as long as multilateral food aid is found feasible and desirable. Under its new mandate the Programme is in a position to commit its resources for longer periods than hitherto, since projects may now be planned over a period of five years. Greater attention is to be paid to health implications. WHO's advice was sought with regard to a large number of projects, both at the planning stage and for evaluation. The Programme resources are increasingly being used to assist in development projects. For example, a WHO-assisted malaria eradication project in Turkey is receiving support from the World Food Programme (see page 4) and discussions have taken place with regard to possible similar assistance to smallpox eradication.

Co-operation with Individual Organizations

United Nations. WHO's work with the United Nations on narcotic and other dependence-producing drugs is mentioned on page 53.

WHO participated in an inter-agency meeting, sponsored by the Administrative Committee on Co-ordination (ACC), on activities relating to population problems.

Consultations were held on plans for the observance of the International Year for Human Rights, 1968.

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Co-operation with the Economic Commission for Europe was extended to questions of veterinary control at frontiers, on which recommendations had been made by a joint meeting of FAO and WHO with the International Office of Epizootics in 1964. Contact was maintained between the United Nations Economic and Social Office in Beirut and the Eastern Mediterranean Regional Office of WHO. For examples of co-operation with the Economic Commissions for Africa, for Latin America and for Asia and the Far East, see pages 97, 106 and 119.

Under the agreement with the United Nations Relief and Works Agency for Palestine Refugees in the Near East, which was extended by the Nineteenth World Health Assembly (resolution WHA19.25), WHO continued to provide the Director of Health Services and a second medical officer for the Agency.

WHO also collaborated with the Office of the United Nations High Commissioner for Refugees and ILO in the provision of health services to refugees in Africa. Assistance to the Democratic Republic of the Congo is dealt with on page 97.

International Labour Organisation. The Joint ILO/WHO Committee on Occupational Health which met in Geneva in August (see page 45) provided the basis for further co-operation. The question of co-ordination between medical care and social security also received the attention of the two organizations (see page 58). Contact was maintained with regard to ILO programmes for the protection of women and children, and for the integration of rural populations into the national community (see page 103).

Food and Agriculture Organization. WHO's co-operation with FAO has continued on nutrition (see page 42); food hygiene, the Codex Alimentarius and food additives (see pages 43 and 54); the toxicology of pesticide residues (see page 54); veterinary public health, with particular reference to research and other work on the major zoonoses of public health importance, including the meeting in December of the joint expert committee on those diseases (see pages 31 to 34); and in biological standardization. Collaboration between the two organizations has been intensified with regard to the health implications of large-scale irrigation projects, and a number of WHO advisers have been assigned to projects of this kind financed from the Special Fund component of the United Nations Development Programme and for which FAO is the executing agency (see page 80).

The joint FAO/UNICEF/WHO inter-agency working group on milk and milk products assessed the work done in UNICEF-assisted projects in this field.

United Nations Educational, Scientific and Cultural Organization. WHO co-operated with UNESCO in school health education and other work (see pages 61 and 76). Contacts were made in countries between UNESCO literacy missions and WHO field staff with a view to incorporating health content into literacy projects, and exploring possibilities of literacy training for health auxiliaries. Through the Administrative Committee on Co-ordination, WHO arranged to co-operate with UNESCO in its review of the Arab States Training Centre for Education in Community Development (ASFEC) and the Community Development Training Centre for Latin America (CREFAL).

International Atomic Energy Agency. The work of liaison officers in the two organizations has led to better co-ordination of programmes and projects. Further steps were taken to improve working methods and to ensure early consultations on programme proposals in relation to a resolution of the Economic and Social Council. For work carried out in co-operation with IAEA, see pages 44 and 67.

Other Specialized Agencies. References to co-operation on quarantine matters with the International Civil Aviation Organization (ICAO) and the Inter-Governmental Maritime Consultative Organization (IMCO) will be found on page 9 and to co-operation with the World Meteorological Organization on air pollution on page 66.

Regional Intergovernmental Organizations

Contact was maintained with the Organization of African Unity (OAU), and WHO took part in a conference on research in trypanosomiasis sponsored by the OAU.

Co-operation with the Inter-American Development Bank, the Inter-American Committee of the Alliance for Progress, and the Institute of Nutrition of Central America and Panama is mentioned in Chapter 15.

WHO participated in several meetings of the Council of Europe on demographic questions and on environmental pollution.

Non-governmental Organizations

In January 1966, the Executive Board, at its thirty-seventh session, made its quadrennial review of non-governmental organizations in official relations with WHO and, after examining the report of the Standing Committee on Non-governmental Organizations, decided to maintain official relations with all organizations already admitted.
The Board also admitted the International Epidemiological Association and the International Planned Parenthood Federation into official relations with WHO, thus bringing the total number of non-governmental organizations in official relations with WHO to sixty-eight (see Annex 6). Co-operation with them during the year is mentioned in the appropriate chapters of this report.

With regard to the Central Council for Health Education, the Board recommended that the Council's activities should be co-ordinated to the greatest possible extent with those of the International Union for Health Education, and that the two organizations should set up a single body to represent both.

WHO collaborated with the League of Red Cross Societies in evolving the health education aspects of its five-year development programme. As in previous years there was joint action with the League in assisting countries in emergencies, in particular with regard to flood relief in Mongolia and earthquake relief in Turkey (see page 90). WHO participated in the first seminar of Red Cross, Red Crescent, and Red Lion and Sun Societies of North Africa and the Middle East, held in Morocco in May.

The Third World Conference on Medical Education, organized by the World Medical Association and co-sponsored by WHO and PAHO, was held in November in New Delhi (see page 74).

WHO took part in the third Asian Conference on Student Health, held in Chiangmai, Thailand, in April and organized by World University Service.
CHAPTER 12

PUBLIC INFORMATION

Information provided by WHO in 1966 on a variety of subjects—among others tetanus, the spread of cholera, rabies and filariasis, drug dependence (including alcohol) and the rodent problem—was widely reproduced and was taken up in radio or television programmes. The malaria and smallpox eradication programmes continued to receive notice in the press. In all, some sixty press releases and feature articles on the Organization’s activities were issued from Geneva. Matters widely reported in the world’s press included the Director-General’s warning on “the disquieting lack of progress” towards meeting the United Nations Development Decade’s targets for health, and the action of the Nineteenth World Health Assembly on the health aspects of world population. Scientific group reports related to the latter subject also gave rise to many newspaper articles.

The theme of World Health Day 1966 was “Man and his Cities” and an issue of the WHO magazine, World Health, was devoted to the subject. Articles from that issue on problems of urban development were distributed separately. Eleven recordings in eight languages were produced by WHO on the World Health Day theme and were broadcast by forty-eight stations in all WHO regions. A number of television programmes to commemorate the day were produced, with the Organization’s collaboration. Four thousand photographic prints related to the theme and ten sets of large-size photographs for exhibition purposes were distributed on request from Geneva.

“Man and his Cities” proved to be of special topical interest in all parts of the world. In the United States of America, for example, in the months preceding World Health Day, national scientific, pictorial and news magazines published special issues on American cities, and hundreds of clippings on World Health Day from newspapers and magazines printed on or about 7 April were received by WHO from all over the country. In Kuwait, an exhibition on “Man and his Cities” was held under the patronage of the Ministry of Public Health; four pamphlets, a variety of posters and ten series of commemorative postage stamps were issued; and considerable notice of the event was taken by the daily press, the radio and television. In Yugoslavia, World Health Day was celebrated with local events organized by municipal and educational authorities as well as by non-governmental organizations such as United Nations and Red Cross associations.

For World Health Day 1967 the theme “Partners in Health” has been chosen to call attention to the world-wide shortage of health workers and to make existing health services better known.

During the Nineteenth World Health Assembly, seventy-seven sound-recordings of delegates’ statements were made and distributed to seventy-four broadcasting stations throughout the world; interviews of radio correspondents from many European broadcasting organizations with delegates were facilitated. There was extensive photographic coverage of the Assembly and over 1000 prints of photographs taken were distributed.

Press and radio correspondents attended the televised ceremony of the inauguration of the new WHO headquarters building which took place during the Assembly. Television crews from the Netherlands and Switzerland filmed the new building. Ten radio programmes were produced by WHO on this occasion. Of photographs taken of the event, over 1000 prints were sent on request to periodicals and agencies in the Americas, Asia and many European countries. The new headquarters building and its inauguration were featured in a special double issue of World Health. A souvenir album of the inaugural ceremony was published, illustrated with photographs of the building and of the gifts received from governments. The album first appeared in a limited edition for distribution to guests at the inauguration and to heads of Assembly delegations. Later, a less expensive edition of 30,000 copies was printed. From May to October over fifty groups, totalling some 2200 persons from many countries, visited the building.

Nine issues of World Health were published in English, French, Portuguese, Russian and Spanish. The average number of copies per issue remained at about 120,000 and efforts were made to increase the number of subscribers. The policy of devoting each issue to a special subject was continued and gave rise to a considerable number of requests for documentation. Among the issues, apart from those
on man and his cities and the new headquarters building, mention should be made of those on alcoholism and genetics. UNESCO was the subject of the December issue of World Health on the occasion of that agency's twentieth anniversary.

The small descriptive pamphlet on WHO and its activities appeared in a new presentation, with illustrations from the field; basic information about WHO was given under the headings of world-wide services, services to countries and medical research. The pamphlet was first distributed in copies of World Health.

A French version of the documentary film on WHO entitled “Man Alive”, produced in 1965 by the United Nations Information Centre in Paris with assistance from WHO, was completed, and Spanish, German and Arabic versions are in course of production. The film “Smallpox, Merciless Traveller” was produced in Russian both in 16 mm. and 35 mm. copies.

The WHO films “Speciosa” (on nurse training in Burundi), “The Monster and You” (on tuberculosis), and “To Your Health” (on alcohol), were shown at the International Documentary Film Festival in Cracow, Poland. “The Monster and You” was awarded a silver cup at the International Film Festival in Fiuggi, Italy, and the film “Speciosa” was selected by the Centro Culturale Cinematografico Italiano for presentation at the International Film Festival in Bologna, Italy, held late in the year. During 1966, over 160 copies of “To Your Health”, were sold.

The three films completed in 1965 by the Documentary Film Studio, Warsaw, on WHO activities in the African and Eastern Mediterranean Regions—“Speciosa” (see above), “Operation Beheira” (on bilharziasis control in the United Arab Republic) and “Visit in the Desert” (on trachoma control in the Sudan)—are being shown as part of ordinary programmes in commercial cinema circuits throughout Poland. A Serbo-Croat version of “The Monster and You” was similarly shown in Yugoslavia.

The WHO exhibit of photographs and maps on nursing, shown at a congress in the Federal Republic of Germany in 1965, was used in 1966 at the Nursing Exhibition held at Brighton, England, in conjunction with the Eighth World Congress of Catholic Nurses.

In addition to the radio activities already mentioned, WHO in Geneva assisted in the production of some thirty interviews and feature programmes in the official languages as well as in Arabic, Czech, German, Italian and Swedish. A programme on cardiovascular diseases produced by WHO was much in demand; six recordings were made and a total of 209 copies were provided on request to broadcasting organizations all over the world. Another programme dealt with the rat as a public health menace. WHO co-operated closely with the overseas services of the Société Suisse de Radiodiffusion et de Télévision in the production of a series of twenty-six quarter-hour programmes on health in Africa today.

WHO photographs continued to be in demand for distribution to publishers and for exhibition outside the Organization, as well as for use in World Health. Dental health, the health of seafarers, and modern medical installations and equipment provided subjects of photo stories produced during the year. In response to some 400 requests for photographs from magazines in all parts of the world and from many book publishers, over 4000 prints were distributed. Following discussions at the Consultative Committee on Public Information, a more systematic distribution of WHO photographs was made to United Nations Information Centres, which received some 2000 prints.
CHAPTER 13

CONSTITUTIONAL, FINANCIAL AND ADMINISTRATIVE DEVELOPMENTS

Constitutional and Legal

Singapore became a Member of the World Health Organization on 25 February 1966 by depositing with the Secretary-General of the United Nations an instrument of acceptance of the Constitution. On 27 September 1966, Guyana—formerly British Guiana—similarly became a Member of WHO on its accession to independence. At the end of the year WHO had 124 Members and three Associate Members. A list of Members and Associate Members as at 31 December 1966 is given in Annex 1.

The Nineteenth World Health Assembly decided to suspend the right of Portugal to participate in the Regional Committee for Africa and in regional activities until the government of that country had agreed to conform to the injunctions of the United Nations. It also suspended, pursuant to Article 7 of the Constitution, technical assistance to Portugal in application of point 9 of the operative part of resolution 2107 (XX) of the General Assembly of the United Nations.

As at 31 December 1966, twenty-eight Member States of WHO had deposited with the Secretary-General of the United Nations an instrument of acceptance of the amendment to Article 7 of the Constitution approved by the Eighteenth World Health Assembly in resolution WHA18.48. These are, in chronological order, the following: Mauritania, Zambia, Madagascar, Trinidad and Tobago, Ivory Coast, Dominican Republic, Guinea, Rwanda, Dahomey, Ghana, Sierra Leone, Burma, Tunisia, Yugoslavia, Upper Volta, Niger, India, Kuwait, Algeria, Syria, Nigeria, Senegal, Pakistan, United Arab Republic, United Republic of Tanzania, Ethiopia, Mali and Afghanistan.

At the thirty-eighth session of the Executive Board, the question was raised of the numerical relationship between the membership of the Board and the membership of the Organization itself, which has substantially increased in recent years. The Board came to the conclusion that, in order to provide for an equitable distribution of Members entitled to designate a person to serve on the Board, an increase in the membership of the Board was desirable, which would necessarily entail the amendment of Articles 24 and 25 of the Constitution. Members were therefore requested to consider this subject. Proposals for amending the Constitution in this respect have already reached the Director-General and have been communicated to Members.

The following Members acceded 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: Canada (with reservations), Madagascar, Senegal, Singapore and the Union of Soviet Socialist Republics (with reservations). The Gambia, which is not a Member of WHO, also acceded to the Convention.

International Agency for Research on Cancer

The International Agency for Research on Cancer came into operation during the year. The Agency’s Scientific Council, the members of which had been appointed by the Governing Council in 1965, held its first session from 4 to 7 April 1966. It adopted the proposed rules of procedure, discussed the specific projects proposed for the period 1966-1967 and endorsed the overall programme.

The Governing Council held its second session on 25 and 26 April 1966. It reviewed the report of the Scientific Council and resolved to appropriate for the financial year 1966 an amount of US $1 150 000, of which $1 028 300 were for programme activities, and to appropriate $1 200 000 for 1967, of which $1 068 600 were for programme activities. It also examined the report on the financial operation of the Agency for 1965. The Governing Council decided to admit Israel as a Participating State in the Agency, and reappointed for three years four members of the Scientific Council whose mandate had expired.

For work done by the Agency, see page 37.
The Financial Position

Budget for 1966

The Eighteenth World Health Assembly established by resolution WHA18.19 an effective working budget for 1966 of US $42,442,000, i.e. $2,935,000 over the corresponding total of $39,507,000 for 1965. The approved budget for 1966 was $45,057,590, the difference of $2,615,590 between the effective working budget and the approved budget being appropriated in resolution WHA18.35 as an undistributed reserve, equal to the assessments on China and on the inactive Members (the Byelorussian SSR and the Ukrainian SSR). The Nineteenth World Health Assembly, on the recommendation of the Executive Board, approved in resolution WHA19.8 supplementary budget estimates for 1966 amounting to $2,039,800, thus increasing the effective working budget to $44,481,800. The supplementary estimates were to meet:

1. Increased salary scale for professional staff $1,662,800
2. Increase in education grant $27,000
3. Regional Office for Africa: staff housing $250,000
4. Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training $100,000

Total $2,039,800

The distribution of the approved budget among the appropriation sections is shown in Annex 7, which also shows the transfers between appropriation sections, made with the concurrence of the Executive Board, and the amounts of the approved supplementary estimates.

United Nations Development Programme

The United Nations Special Fund and the Expanded Programme of Technical Assistance were consolidated, with effect from 1 January 1966, in the United Nations Development Programme (see page 80).

The Governing Council of the United Nations Development Programme established in June 1966 a revolving fund of $7,500,000 for the purpose of financing Technical Assistance contingency authorizations and Special Fund preparatory assistance under the criteria already established, and for the additional purpose of financing urgent preliminary operations prior to approval of the projects concerned by the Governing Council.

Under the Technical Assistance component of the United Nations Development Programme the amount available to WHO for 1966—the second year of the 1965-1966 biennium—was $917,176,126 or 15.98 per cent. of the total funds for the programme. This sum included $1,149,197 for administrative and operational services costs. Contingency allocations in 1966 for WHO projects amounted to $322,942. The total amount allocated to WHO in 1966 was thus $9,497,686 as compared with the figure of $8,756,302 made available to the Organization in 1965.

Under the Special Fund component WHO was allocated an amount of $2,814,700 during 1966. This sum, together with an amount of $2,116,660 remaining undischarged from previous years, resulted in a total of $4,931,360 available for disbursements.

Voluntary Fund for Health Promotion

Contributions in cash and in kind received in 1966 for the Voluntary Fund for Health Promotion amounted to $1,567,523, bringing the total value of contributions credited to the Fund to $29,725,359 as at 31 December 1966. These contributions related to the following sub-accounts:

<table>
<thead>
<tr>
<th>Sub-account</th>
<th>1.1.1966-31.12.1966</th>
<th>Total from inception</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Account for Undesignated Contributions</td>
<td>14,869</td>
<td>44,602</td>
</tr>
<tr>
<td>Malaria Eradication Special Account</td>
<td>77,225</td>
<td>208,725</td>
</tr>
<tr>
<td>Special Account for Smallpox Eradication</td>
<td>40,780</td>
<td>876,280</td>
</tr>
<tr>
<td>Special Account for Medical Research</td>
<td>744,426</td>
<td>5,790,757</td>
</tr>
<tr>
<td>Special Account for Community Water Supply</td>
<td>25,000</td>
<td>969,090</td>
</tr>
<tr>
<td>Special Account for Assistance to the Democratic Republic of the Congo</td>
<td>84,000</td>
<td>324,975</td>
</tr>
<tr>
<td>Special Account for Accelerated Assistance to Newly Independent and Emerging States</td>
<td>13,017</td>
<td>53,464</td>
</tr>
<tr>
<td>Special Account for the Leprosy Programme</td>
<td>85,142</td>
<td>122,882</td>
</tr>
<tr>
<td>Special Account for the Yaws Programme</td>
<td>8,922</td>
<td>21,870</td>
</tr>
<tr>
<td>Special Account for Miscellaneous Designated Contributions</td>
<td>474,142</td>
<td>649,084</td>
</tr>
</tbody>
</table>

Collection of Contributions and Advances to the Working Capital Fund

The obligations incurred in 1966 and the status of collection of contributions and of advances to the Working Capital Fund at the end of 1966 are shown in

1 Includes adjustments of previous years' contributions.

Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training

The Nineteenth World Health Assembly in its resolution WHA19.7 established a Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training. The resolution enables the Director-General to purchase on a reimbursable basis, without service charge, when requested to do so by Members, teaching and laboratory equipment for medical and paramedical education and training. The Director-General was authorized to accept in reimbursement for such purchases the national currency of the Member concerned subject to certain conditions. The Health Assembly decided to appropriate to the Revolving Fund an amount of US $100 000 in the supplementary budget estimates for 1966 and requested the Director-General to include similar amounts for the same purpose in the budgets for the years 1968 to 1971. For purchases in 1966, see page 89.

Administration

Structure and Staff

Extensive organizational changes at headquarters took place during the year, resulting in the redistribution of responsibilities as illustrated in Annex 17.

The Division of Biology and Pharmacology was disestablished and its functions, together with those of some units in other divisions, regrouped into two new divisions. These are the Division of Biomedical Sciences, composed of units dealing with Immunology, Human Reproduction (transferred from the Division of Public Health Services), Human Genetics (transferred from the Division of Health Protection and Promotion), and Biological Standardization; and the Division of Pharmacology and Toxicology, comprising units responsible for Drug Dependence, Drug Safety and Monitoring, Pharmaceuticals and Food Additives. This latter function was transferred from the Nutrition unit in the Division of Health Protection and Promotion, while the functions connected with antibiotics previously exercised by Health Laboratory Services in the Division of Public Health Services were provisionally transferred to Drug Safety and Monitoring.

The Office of External Relations ceased to exist as a separate unit, but an external relations officer on the staff of the Director-General’s Office continued to be responsible for many of its former functions while others were absorbed by Programme Co-ordination. A new unit, Co-operative Programmes for Development, assumed responsibility for those technical assistance and development programmes in which WHO is a joint participant with the United Nations and other agencies. Programme Formulation and Evaluation reverted to its former title of Programme Evaluation.

The Environmental Biology unit in the Division of Environmental Health was transferred to Vector Control, which changes its name to Vector Biology and Control. The Senior Staff Training unit, which previously reported to an Assistant Director-General, was placed in the Division of Administrative Management and Personnel.

The names of two units were changed: Global Epidemiological Surveillance to Epidemiological Surveillance, and Radiation and Isotopes to Radiation Health.

The Organization of Medical Care unit assumed the functions connected with the medical rehabilitation of the physically handicapped, formerly the responsibility of the Social and Occupational Health unit, and also those for gerontology and chronic non-communicable diseases.

On 30 November 1966, the total staff numbered 3190, (excluding WHO agents on duty in the Democratic Republic of the Congo), as compared with 2955 on 30 November 1965, an increase of approximately 8 per cent.

The details of the numbers and composition of the staff at 30 November 1966 are given in Annexes 8 and 9. In recruitment, efforts continued to ensure that priority is given to candidates from those countries of which no or few nationals are employed in the Secretariat. There has been further improvement in the geographical distribution of the staff, and on 30 November 1966 the number of Members whose nationals were employed by the Organization was ninety-three, compared with ninety-one at the end of 1965.

The move to the new building entailed the recruitment of new staff for the operation and maintenance of the building and also for the various functions related to the reproduction and distribution of docu-

1 Off. Rec. Wld Hlth Org. 159.

2 Excluding staff of the Pan American Health Organization.
The inauguration ceremony for the new headquarters building of the World Health Organization in Geneva was held on 7 May 1966, during the Nineteenth World Health Assembly, in the presence of 350 distinguished guests. These included representatives of the Swiss Federal Council and the Republic and Canton of Geneva, as well as delegates of Member States to the Nineteenth World Health Assembly.

1. The ceremony, held in the main hall of the building, was opened by the President of the Nineteenth World Health Assembly, Dr. A. Sauter, Chief Delegate of Switzerland. At the table, from left to right: Mr. André Ruffieux, President of the Conseil d'Etat of the Republic and Canton of Geneva; Mr. W. Spühler, Conseiller fédéral, representing the Swiss Federal Council; Dr. Sauter; Mr. P. P. Spinelli, Director-General, United Nations Office at Geneva; Professor E. Aujaleu, Chairman of the Standing Committee on Headquarters Accommodation; and Dr. M. G. Candau, Director-General.

2. Mr. W. Spühler addressing the guests on behalf of the Swiss Federal Council.

3. Dr. Brock Chisholm, first Director-General of WHO, during his address.

4. The guests included former Presidents of the World Health Assembly. Front row, from the left: Dr. V. V. Olguín (Argentina), Dr. A. L. Mudaliar (India), Sir John Charles (United Kingdom of Great Britain and Northern Ireland), Dr. S. Al-Wahbi (Iraq), and Dr. K. Evang (Norway).
The Organization's new headquarters building, which was inaugurated in May, was designed by the late Mr Jean Tschumi, the Swiss architect, who won first prize in an international competition, held in 1960, in which fifteen architects from thirteen countries took part. After the death of Mr Tschumi, Mr Pierre Bonnard continued the work on the building.

1. In aluminium, glass, marble and concrete—the secretariat block on the left is 150 metres long and 20 metres wide, carried on 22 pillars; in the foreground the library; right, the patterned marble facade of the Executive Board building.

2. The interior of the Executive Board room during the Board's thirty-eighth session, the first to be held in the new building. The teak panelling is one of the many gifts received from Member States for the building.

3. An aerial view, taken before the building was completed, with the runways of Geneva airport in the background.
Dr Arnold Sauter, Chief Delegate of Switzerland, was elected President of the Health Assembly. Dr Sauter is Director of the Swiss Federal Public Health Service.

U Thant, Secretary-General of the United Nations, addressing the Nineteenth World Health Assembly, which was held in the Palais des Nations, Geneva, from 3 to 20 May 1966.

Dr Karl Evang, Chairman of the Executive Board, introducing the Board’s reports. During the Assembly, Dr Evang, who is Director of the Norwegian Health Services, was awarded the Léon Bernard Foundation Medal and Prize in recognition of his outstanding achievements in the field of public health and social medicine.
ments formerly carried out by staff of the United Nations. Special briefing programmes were arranged for the different categories of new staff comprising six courses on WHO structure, programme activities and internal administrative procedures.

Three courses were held between October 1965 and November 1966 for senior staff of regional offices and WHO representatives.

Data Processing

In accordance with the contract signed in 1965, the Organization's electronic computer was delivered in mid-1966. Preparations have been completed for electronic data processing in medical research and health statistics, as well as in the administrative and financial services, and plans for an extended use of the computer are being implemented.

Four computer application courses were held for headquarters staff. These were followed by several specialized courses for the staff directly involved in computer application.

The New Headquarters Building

In January 1966 the transfer to and installation in the new headquarters building of the Secretariat was commenced. The move was completed in June.

On 7 May 1966, four years after the foundation stone had been laid by the late Professor S. V. Kurašov, President of the Fifteenth World Health Assembly, the building was inaugurated in the presence of the delegates to the Nineteenth World Health Assembly and guests. The President of the Health Assembly, Dr A. Sauter, presided over the ceremony, during which Mr W. Spühler, Conseiller fédéral, and Mr A. Ruffieux, President of the Conseil d'Etat of the Republic and Canton of Geneva, spoke on behalf of the Swiss Federal Council and the local authorities, respectively. The architect, Mr P. Bonnard, to whom had been entrusted the execution of the plans drawn up by Mr J. Tschumi, who died in 1962, handed over the key of the building to Professor E. Aujaleu, Chairman of the Standing Committee on Headquarters Accommodation. The latter traced the history of the construction of the building before presenting the key to the Director-General. He was followed on the rostrum by Dr Brock Chisholm, former Director-General, and Dr M. G. Candau, Director-General of the World Health Organization.

The building comprises a Secretariat block and an Executive Board block (a meeting room for the Board, with associated offices grouped around it). The Secretariat block is an eleven-storey structure, 150 metres long and 20 metres wide. The eight storeys above ground level are poised on twenty-two slender pyramids of reinforced concrete, ranged in two rows eight metres apart. Offices are based on a standard “module” and walls can be speedily taken down and re-erected to form rooms of various sizes. There is a total of approximately 10 000 square metres of occupied office space. In addition to the Executive Board room there are four main committee rooms and other, smaller, meeting rooms. An underground car park on two levels can accommodate 380 vehicles.

On the basis of bills received as at 31 December 1966 the estimated final cost of the building was approximately Sw. fr. 63 500 000. The building costs were met through loans granted by the Swiss Confederation and by the Republic and Canton of Geneva, through budgetary appropriations and through voluntary contributions (in cash or in kind) received from Member States.

The Executive Board met for the first time in the new headquarters building at its thirty-eighth session in May 1966.

Supply Services

During the period 1 October 1965 to 30 September 1966, supplies and equipment purchased by WHO amounted to 22 000 line items with a total value of $2 030 000. This figure includes $303 000 for reimbursable purchases made for China (Taiwan), Greece, Iraq, Kuwait, Lebanon, Morocco, Nigeria, Pakistan, Philippines, Portugal, Qatar, Saudi Arabia, Syria and Turkey.

X-ray equipment was purchased for UNICEF and a sterilizer for ILO, and medical kits for staff on mission were among other purchases made for the United Nations and for a number of specialized agencies.

By 31 December 1966 five requests for purchases out of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training had been received, two from the United Arab Republic and three from India.

Studies have been undertaken of freeze-drying equipment produced by various manufacturers, and visits were made to institutions using different makes in connexion with the purchase of such equipment for smallpox vaccine production in the African and South-East Asia Regions.
Emergency Assistance to Member States

Arrangements were concluded with two suppliers for the maintenance by each of them of a stand-by stock of cholera vaccine immediately available to WHO on demand.

WHO provided jet injectors and yellow fever vaccine for use in Senegal, and supplied cholera vaccine for Cambodia and Iraq. For the study of the incidence of diarrhoeal diseases, a mobile laboratory unit loaned to the Organization by the Government of Czechoslovakia was allocated to Iraq for three months. In addition, vaccine was donated to Iraq through the Voluntary Fund for Health Promotion, which received contributions in cash and in kind for that purpose. Gamma globulin was provided to Mongolia. Triple vaccine against diphtheria, tetanus and pertussis was provided to Turkey in connexion with the earthquakes in that country. WHO also purchased cholera vaccine for Syria and TAB vaccine for Italy on a reimbursable basis. Freeze-dried live plague vaccine was purchased against reimbursement for use in an outbreak in Brazil.

Close co-operation continued with the League of Red Cross Societies, and a number of purchases were made on behalf of the League for flood relief in Mongolia and earthquake relief in Turkey.
PART II

THE REGIONS
WHO REGIONAL OFFICES AND THE AREAS THEY SERVE

REGIONAL OFFICE

- Regional Office for Africa
- Regional Office for the Americas/PASB
- Regional Office for South-East Asia
- Regional Office for Europe
- Regional Office for the Eastern Mediterranean
- Regional Office for the Western Pacific

AREA SERVED, AS AT 31 DECEMBER 1966, BY:

- BRAZZAVILLE
- WASHINGTON
- COPENHAGEN
- ALEXANDRIA
- NEW DELHI
- MANILA

WHO 41515
CHAPTER 14

AFRICAN REGION

The communicable diseases continue to dominate the public health scene in the African Region, and notwithstanding progress resulting from the discovery of new biological and pharmacological products or the use of more effective operational methods, malaria, smallpox, trypanosomiasis, onchocerciasis, bilharziasis and measles—to mention only a few—still defy the authorities responsible for the health of the countries of the Region.

Communicable Disease Control

Malaria

Although malaria pre-eradication and eradication programmes in the Region now cover a population of almost 100 million, there are areas with almost as many people for which no programmes are as yet planned.

Pre-eradication programmes were in progress in twelve countries in 1966. Good progress has been made—in Togo, for example—in the development of basic health services within the framework of pre-eradication programmes, and peripheral integrated health services provide the possibility of including certain activities in support of antimalaria campaigns. Plans have been prepared for the development of the basic health services in Cameroon, Dahomey, Ghana, Eastern Nigeria and Sierra Leone. In Réunion the pre-eradication survey proceeded smoothly.

The two eradication programmes in the Region were evaluated at the end of 1965, and a detailed account of the position in Mauritius is given on page 99. In the United Republic of Tanzania, there was recrudescence of malaria transmission in Zanzibar, while good progress was maintained in the eradication programme in the island of Pemba.

Five courses were held during 1966 in the two malaria eradication training centres in Lagos and Lomé, with participants from the African and other regions. Two were specialized courses for senior laboratory technicians; in the others emphasis was laid on public health and on pre-eradication programmes.

Other Parasitic Diseases

Trypanosomiasis is a constant threat to the countries of the Region and has repercussions on economic development, since this disease affects both man and animals. In order to provide an opportunity for exchange of views among those in charge of national trypanosomiasis programmes, FAO and WHO organized an inter-regional seminar in Nairobi in October. Participants included trypanosomiasis specialists, epidemiologists, veterinarians and public health administrators from thirteen countries in the African Region and two countries in the Eastern Mediterranean Region.

A joint FAO/UNDP/WHO mission drew up a plan of operational research on the eradication of human and animal trypanosomiasis in the Nyanza and Western Provinces of Kenya (see also page 19). The WHO-assisted trypanosomiasis control programme has continued in Botswana, where the aim is to stop the spread of the tsetse fly and, if possible, eradicate it in the already infested areas, while at the same time taking measures to reduce and eventually eliminate the human and animal reservoirs of the disease.

For details of other work on trypanosomiasis in Africa, see page 19.

Bilharziasis gives rise to serious problems in many countries of the Region, and the growing number of irrigation works has increased the risk of this disease spreading. Steps have been taken to set up a regional advisory team and organize courses for the training of personnel. The pilot bilharziasis control project has continued in Ghana, and plans have been prepared for a control project in the United Republic of Tanzania.

As the prevalence of onchocerciasis is closely associated with river systems covering more than one country, control projects must be planned at inter-country level. In the Volta River basin, for example, such a project needs to include northern Ghana, north-west Togo and the southern part of Upper Volta. In this connexion, a WHO regional onchocerciasis advisory team started work in 1966 on a survey that is to cover the river systems of the Red and White Volta and the Sissili (see also page 18). A survey was also made in Nigeria to evaluate the
results of the *Simulium* control operations which have been under way for three years.

WHO also co-operated in carrying out certain preliminary studies for programmes to be financed under the United Nations Development Programme with FAO as the executing agency in order to determine the potential public health risks involved and methods of overcoming them.

**Tuberculosis**

In the WHO-assisted tuberculosis control projects under way in the Region, efforts have been continued to unify and simplify working methods by applying the principle of a national tuberculosis programme integrated within the basic health services, and to extend direct BCG vaccination (without a preliminary tuberculin test), either alone or combined with smallpox vaccination.

The increasing orientation of antituberculosis work towards general public health activities is reflected in the extension of the work of the former Tuberculosis Epidemiological Centre, in Nairobi, which has become a multipurpose epidemiological centre (see page 100).

**Leprosy**

In the work on leprosy control, steps have been taken to implement the recommendations made by the Expert Committee on Leprosy in 1965.\(^1\) The priority concentration of available economic and technical resources on infectious cases can certainly decrease the burden on public health budgets, but programmes can be readapted only gradually. In some projects the surveillance of patients could be stricter.

During 1966 UNICEF and WHO continued to provide assistance to a number of countries in the Region, leprosy case-finding often being undertaken during campaigns against other communicable diseases, with treatment being provided by the specialized service. The general trend is to integrate leprosy programmes into the existing health services; in the Vogan demonstration area in Togo, for example, smallpox, yaws and leprosy control activities have been taken over by the general health services.

**Treponematoses**

A certain number of yaws control projects which have been in operation for a long time—such as those in Liberia, Nigeria, Sierra Leone (see page 100) and Togo—have reached a stage at which their continuation as special campaigns would no longer be economic, since yaws has been reduced to a controllable level as a result of mass treatment of the population with repository penicillin. The scope of these projects is being broadened to include certain other communicable diseases, while surveillance and consolidation activities with the aim of preventing the recrudescence of yaws, and of finally eradicating it, will continue.

The inter-regional treponematoses epidemiological team continued evaluation of the results of the serological and epidemiological survey in Northern Nigeria, and the regional treponematoses advisory team began a serological and epidemiological survey of yaws and other communicable diseases in Western and Midwest Nigeria (see also page 25).

**Smallpox**

As a first step towards preparing the region-wide smallpox eradication programme, a report has been drawn up on the situation in thirty-two countries and territories in the Region. The information collected has made it possible to estimate the maximum requirements of each country for the organization of a smallpox eradication campaign.

The two smallpox inter-country advisers provided by WHO—for West Africa and for Central and East Africa—drew up reports on the situation in Dahomey, Ghana, Sierra Leone, Togo, the United Republic of Tanzania, and Zambia. They give a detailed account of the situation with regard to smallpox, the measures taken to vaccinate the population, possibilities for co-ordination between the smallpox vaccination programme and other campaigns in the field of health and for improving the vaccination campaign, and the technical aspects which should be brought to the attention of the services concerned.

WHO's assistance is especially concentrated on the countries of East Africa, since the Government of the United States of America has offered bilateral assistance for smallpox eradication programmes in nineteen countries in West and Central Africa. An effort will thus be made to create a continuous belt of countries where smallpox has been eradicated. The Organization has co-operated closely with the United States Public Health Service in the co-ordination of programmes. WHO has also maintained contact with the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases (OCCGE) and with the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases in Central Africa (OCEAC), which are carrying out mass campaigns combining smallpox vaccination with vaccination against other diseases.

**Yellow fever**

A serious epidemic of yellow fever occurred in Senegal at the end of 1965, causing 216 deaths. A vaccination campaign was undertaken immediately, and with the assistance of all available physicians and

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paramedical and auxiliary personnel more than two million inhabitants were vaccinated in a few weeks. As a result the focus was rapidly contained and the rest of the population protected.

During March and April 1966 WHO helped to assess the situation in countries of West Africa where there is a risk of yellow fever appearing, and advised health authorities (see also page 15). A stock of 200 000 doses of yellow fever vaccine has been established for use in an emergency.

This episode is a reminder that constant vigilance is necessary in yellow fever surveillance in vulnerable areas where there are people who are not vaccinated, or where animal reservoirs of infection exist.

**Trachoma**

In the WHO-assisted trachoma control programme in the United Republic of Tanzania, a survey of a representative cross-section of the population was started during 1966. The results should be useful in planning the control of eye diseases in general, and in considering the priority of such work in communicable disease control.

**Organization of Public Health Services**

The results obtainable in communicable disease control are dependent in a large measure on the organization and administration of public health services, and WHO has assisted many countries of the Region in the planning and development of basic health services.

In the demonstration area of peripheral integrated health services at Vogan, Togo, activities are now continuing under the direction of national personnel, WHO assisting only in the evaluation of the work done. In the demonstration areas in Kenya, Nigeria and Togo, national personnel are acquiring qualifications and experience that will enable them to perform their tasks with the maximum efficiency.

In Cameroon, progress has been made in the reform of the programme for the development of the basic health services and a public health demonstration area is being established. Progress has also been made in the Congo (Brazzaville) in the development of rural health services.

The concept of the planning and co-ordination of health work within the framework of national socio-economic development programmes is gaining ground. Reorganization of the health services is well under way in Upper Volta, and a national health planning project was begun during the year in Kenya. The Organization provided advice in specialized fields—for example, health legislation, epidemiological surveys, and statistics—to the Governments of Mali and Niger, which are implementing plans drawn up in previous years.

The importance of vital and health statistics in the planning of health services is now generally recognized, as was shown in the technical discussions during the sixteenth session of the Regional Committee (see page 98).

WHO provided advice to Dahomey and Mali on the establishment of health statistics divisions in the ministries of health. It also advised the United Republic of Tanzania on a study of hospital statistics at one of the hospitals at Dar-es-Salaam.

Projects in the Ivory Coast and Senegal have given paramedical personnel (health inspectors, public health nurses and midwives) a knowledge of the basic elements of vital and health statistics.

With a view to overcoming the shortage of qualified statisticians in the Region, a further course on vital and health statistics was organized at the ECA training centre at Yaoundé, Cameroon, with assistance from WHO, which provided two instructors. This inter-country activity provides training only for personnel who have had a secondary level education, but plans have been made for the provision of training at advanced level.

With regard to the development of public health laboratory services, WHO provided assistance to Mauritius, Nigeria, Sierra Leone and Togo. It also assisted Congo (Brazzaville) and Gabon in connexion with the training of technical health laboratory personnel.

**Environmental Health**

Increasing interest is being shown by Member States in water supply and sewage disposal programmes. During the year WHO provided assistance for some twenty environmental health projects in the Region, sixteen of which were also assisted by UNICEF. Training programmes for supervisory and other sanitation personnel were developed in a number of countries, including Gabon and Sierra Leone.

Much of the work however concerned large-scale programmes for which financing under the Special Fund component of the United Nations Development Programme has either been approved or is being requested. In the first category is the project for providing water supply and sewage disposal systems for Dakar and the surrounding area, and also the project in Ghana which entered its second phase. This includes the preparation of design and tender documents for the water supply and sewage disposal installations in the Accra-Tema metropolitan area (see also page 64).

The Organization also provided assistance in connexion with pre-investment studies in Burundi (sewerage and solid wastes disposal for Bujumbura), Dahomey (water supply for Porto-Novo), Mali
(water supply for several towns, and sewage disposal for Bamako), Nigeria (sewage disposal for Ibadan), and Uganda (water supply and sewage disposal for Kampala, Jinja and their suburbs). Following the completion of the studies in Nigeria and in Uganda, the Governments submitted requests for assistance to the United Nations Development Programme.

A study was also made on the possibility of constructing a composting plant in Cotonou, Dahomey.

Maternal and Child Health

The assistance to governments for the development of maternal and child health services was concentrated on two main activities: training, and the integration of services for mothers and children into the general health services, particularly in the rural areas.

Training was provided at all levels. Seminars—organized by UNICEF and WHO, or by the International Children’s Centre with the assistance of WHO—were of help in the training of medical and paramedical personnel in the field of maternal and child health. Assistance was given to medical schools (University of Ibadan, Nigeria, and Makerere College, University of East Africa, Uganda) for the paediatric training of medical students. All field projects also included training of various categories of paramedical personnel.

Special emphasis has been laid on the health aspects of UNICEF-assisted programmes aimed at improving community life and social and educational services for children, especially in towns. These include projects for the establishment of day-care centres for young children, and school health and school feeding programmes.

Nutrition

Protein-calorie malnutrition is still one of the major public health problems in the Region. A combination of the various factors giving rise to this type of malnutrition—low purchasing power, inadequate and unbalanced diet, lack of hygiene—is to be found particularly in the rapidly expanding urban areas.

The problem of malnutrition is being tackled in various ways, and several applied nutrition programmes are being carried out with the co-operation of FAO and UNICEF.

In programmes in West, Central and East Africa, WHO has provided assistance in the organization of nutrition sections in ministries of health, and in personnel training. Training of personnel at all levels was continued, with refresher courses, teaching of nutrition in medical faculties and nursing and midwifery schools, and training in applied research and nutrition education.

Clinical, biometric and food surveys were carried out in Madagascar, Senegal and the United Republic of Tanzania to assist in the planning of preventive and nutrition education programmes, and simple biological tests to assess the nutritional status of population groups were tried out and developed in Kenya.

In Mauritius, WHO has helped to set up a nutrition section in the Ministry of Health, to draw up plans for the control of nutritional anaemias, to develop a nutrition education programme for mothers in health centres, and to improve the maternal and child health services.

In the United Republic of Tanzania several nutritional rehabilitation centres are being established. These centres have two purposes: the economic treatment of under-nourished children whose condition does not necessitate hospitalization, and the education of mothers in regard to diet and nutrition. In a project in Senegal jointly assisted by FAO, UNICEF and WHO, the production of a protein-rich food for child weaning has been developed in Dakar. The first tests for tolerance, acceptability and effectiveness of this product were carried out in selected maternal and child health centres.

The Organization continued to co-operate in the work of the Joint FAO/WHO/STRC Regional Food and Nutrition Commission for Africa.

Health Education

As in previous years, stress was laid on the incorporation of health education activities in all health programmes, and on the need to train all medical and paramedical personnel in health education. The training of personnel at postgraduate level continued, both for full-time health education work and for activities in connexion with other aspects of the health services, such as public health administration.

The Organization provided assistance to the Governments of Nigeria, Sierra Leone and Uganda in the establishment of long-term plans for the development of health education services and specialized training in health education.

Education and Training of Health Personnel

The training of public health personnel continued to receive high priority. During 1966 over forty WHO-assisted projects were devoted exclusively or mainly to training.

As in the past, special attention was paid to medical education. In Cameroon, Kenya and Zambia WHO assisted in preparations for the establishment of medical schools. The Organization also provided

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assistance in connexion with the provision of teaching personnel in Nigeria (for the department of paediatrics at Ibadan University), Senegal (for the Faculty of Medicine at Dakar), Uganda (for Makerere College, University of East Africa), and the United Republic of Tanzania (for the medical school at Dar-es-Salaam).

The regional seminar on medical education in Africa, held in Yaoundé in March, provided an opportunity for an exchange of views and experience on the adaptation of teaching programmes to African conditions and for the definition of certain fundamental principles for future guidance in setting up medical schools in the Region (see page 98).

In the field of nursing, WHO has continued to place emphasis on the establishment of post-basic education centres in the Region for nurse educators, supervisors and administrators, and the past year marked an important development in this respect. At the University of Ghana, the first group of students to graduate were awarded their nurse educator diplomas at the end of two years' study, and at the University of Ibadan the first students began their studies for the B.Sc. degree in nursing. A similar programme is planned for East Africa.

Assistance to basic nursing education was also continued and strengthened, the curricula being adapted to the needs of the countries concerned. The School of Nursing in Niamey, Niger, is being developed with support from the Special Fund component of the United Nations Development Programme.

Attention continued to be given to the training of auxiliary personnel, who play an important role in the expansion of the health services.

The fellowships programme remains one of the most effective means of helping to strengthen the health services, and during the year there was an increase in the number of fellowships awarded for study within the Region.

**Assistance to the Democratic Republic of the Congo**

The increase in the number of qualified national health workers in the Democratic Republic of the Congo enabled WHO to reduce correspondingly the number of operational staff it provided.

Special attention was paid, as in the past, to teaching programmes and the training of medical and other health personnel. WHO strengthened its assistance to the Universities of Lovanium and Lubumbashi, provided fellowships to enable some Congolese doctors to pursue post-graduate studies in Canada and France in selected fields, and maintained its support for training in nursing, hospital administration, dentistry, radiology, pharmacology and sanitation.

The training programme for assistants médicaux will come to an end when the few remaining students return at the end of the 1966-1967 academic year on completion of their medical studies. In all, 137 doctors will have been trained under this scheme.

**Collaboration with other Organizations**

Close co-operation has been maintained between the various agencies and organizations helping to promote the socio-economic development of the African countries. Mention has already been made of collaboration with the United Nations Development Programme in pre-investment surveys in the field of water supply and sewage disposal, river basin development programmes, trypanosomiasis eradication, and nursing education; with UNICEF in regard to maternal and child health, social and community development, the control or eradication of communicable diseases, and environmental health; and with FAO in nutrition programmes and the control of certain communicable diseases such as trypanosomiasis. WHO also collaborated in the Region with ECA, the International Children's Centre, the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases (OCCGE) and the Organization for Co-ordination and Co-operation in the Control of Major Endemic Diseases in Central Africa (OCEAC), the United States Agency for International Development, and various other agencies.

**The Regional Committee**

The sixteenth session of the Regional Committee for Africa, which was held at Kinshasa (formerly Leopoldville), Democratic Republic of the Congo, from 12 to 22 September 1966, was attended by representatives of twenty-six Member States in the Region, and one Associate Member. Representatives of two European countries attended on behalf of certain territories in the Region. The United Nations Development Programme, UNICEF, ECA, two inter-governmental and two non-governmental organizations were also represented. The Deputy Director-General attended on behalf of the Director-General.

The Committee discussed the Regional Director's report on the work accomplished during the period 1 July 1965 to 30 June 1966 and approved the proposed programme and budget estimates for the Region for 1968. It also expressed satisfaction with the proposed activities under the United Nations Development Programme and the hope that the necessary fundt
would be forthcoming for the implementation of the projects proposed under the Voluntary Fund for Health Promotion. The Committee's discussions covered a wide range of health problems of specific interest to the countries of the Region.

With regard to education and training, emphasis was placed on the advantages and desirability of training in Africa, and on the need for more capital investment to develop new medical teaching institutions or expand those already existing in the Region.

The necessity of developing basic health services to support malaria eradication programmes was acknowledged and, in view of the financial inability of the majority of Member States to develop such an infrastructure unaided, an appeal was made for increased material assistance from WHO in this regard. Emphasis was also laid on the need for further research so that a methodology adapted to the needs of the Region might be developed, thus helping to ensure the success of malaria eradication programmes.

The nineteen representatives who took part in the discussions on mass vaccination campaigns against smallpox expressed their governments' intention of participating in a regional programme for the eradication of this disease. In general, little difficulty was envisaged in achieving total coverage, provided adequate supplies and equipment were furnished, the validity of vaccinations checked at frontiers, and suitable measures taken to ensure inter-country co-ordination.

Emphasis was laid on the need for greater efforts in health education, with a view to obtaining the active participation of the population—a prerequisite for the success of all public health programmes.

Repeated reference was made to the necessity of co-ordinating health programmes in the Region, particularly those relating to communicable diseases.

The respective merits of advisory services and material assistance were discussed, and the need for expanding the latter was emphasized.

The subject of the technical discussions was "The place and role of vital and health statistics in the development and execution of health programmes". There was general agreement on the value of statistical departments established within ministries of health. Emphasis was laid on the need for adequate training and refresher courses for the staff and on the importance of establishing close contact between the health statistical department and the national statistical services. The role of WHO in this field would consist of the granting of fellowships, provision of consultants, convening of seminars, and co-ordination of activities in the various countries.

The subject chosen for the technical discussions in 1967 was "Health problems of pre-school age children in Africa and their management".

The Committee discussed the procedure for the nomination of Regional Directors and amended its relevant rule of procedure. It confirmed that its seventeenth session would be held at the Regional Office, and decided that its eighteenth session, in 1968, would also be held there.

Administrative Developments in the Regional Office

Construction of the extension to the Regional Office building proceeded on schedule, and it is expected that the building will be ready for occupancy in July 1967. The Government of the Congo (Brazzaville) has been requested to consider making a further contribution to the Regional Office facilities at Djoué by donating two parcels of land now leased to the Organization. One of these is part of the plot on which the Regional Office and new extension are situated. On the other are garages, shops and warehouses which, for space limitations, cannot be accommodated in the new extension.

In view of the increasing need for staff housing at Djoué, construction of two additional apartment blocks, each containing six single housing units, was commenced in August.

Some Aspects of Work in the Region

A list of projects current during the year will be found in Part III. The following have been selected for fuller description.

Seminar on Medical Education, Yaoundé

A regional seminar on medical education was held in Yaoundé, Cameroon, from 22 to 28 March 1966. Thirteen professors of medicine and public health administrators from as many countries in the Region participated in the work of the seminar, and an observer from the Association of Medical Schools in Africa also attended.

The main purpose of the seminar—convened at a time when several new medical schools are being established or planned—was to review and define the specific factors in the Region which should be taken into account in medical education, and to discuss how to adapt teaching programmes and methods to specifically African needs and conditions,
while bearing in mind world trends in medical education.

It was felt that medical education in the Region should be based on observed pathology in Africa and also take into account the structure and operation of the health services and the socio-economic context. It was unanimously agreed, therefore, that the most suitable place for training young doctors for the Region was Africa itself.

Particular emphasis was laid on the need to avoid any curtailment of the curriculum, despite the considerable shortage of doctors; it was agreed that there should be only one level of training for physicians in the Region—namely, that of the fully qualified doctor.

The participants also considered that medical schools in the Region should endeavour to develop a pattern of medical education appropriate to Africa, and of an adequate standard. The chief objective should be to produce clinically competent general medical practitioners orientated towards preventive medicine. Emphasis should be laid on practical knowledge, and preventive medicine and public health should take an important place in the course of study. Tropical medicine should form an integral part of the curriculum, and should not be treated as a special or optional post-graduate subject. It was also generally felt that all newly graduated medical students should spend some time in supervised practice immediately after termination of their studies, and that only a minority of graduates should go on to train as specialists, the number of doctors so trained and the fields of study being based on an assessment of the needs of the countries concerned.

With the increasing need for medical schools in the Region, the establishment and development of new medical schools should be carefully planned. They might begin modestly and be progressively expanded. In some cases it might be possible to send students to do their pre-clinical studies at the medical school of another African country. In this connexion, it was emphasized that efforts should be made to overcome the linguistic barrier; the intention to create a bilingual (French and English) medical school within an existing bilingual university should be encouraged and assisted, although the considerable difficulties involved were recognized.

It was considered unlikely that all countries in tropical Africa would have their own medical schools. Since they must all train medical practitioners, the need for international co-operation was obvious, and the advantages of the creation of a regional medical school, which would accept students from neighbouring countries, were evident.

Malaria Eradication Programme, Mauritius

Malaria appears to have been introduced into the island of Mauritius in the mid-nineteenth century, and large epidemics followed. A control programme was implemented, and by 1951 the principal vector, Anopheles funestus, had virtually disappeared. Nevertheless, low-level transmission continued, due to A. gambiae, and following a WHO-assisted independent evaluation in 1958 an eradication programme was started in January 1960 with the Organization’s assistance.

Residual spraying with DDT was reintroduced to cover a large part of the island, excluding the high central plateau, and a case-detection system was set up to cover the whole island. The total numbers of cases and of indigenous cases (i.e., primary cases due to local transmission) occurring during the years 1961 to 1965 were as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total cases</th>
<th>Indigenous cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1961</td>
<td>955</td>
<td>719</td>
</tr>
<tr>
<td>1962</td>
<td>226</td>
<td>180</td>
</tr>
<tr>
<td>1963</td>
<td>30</td>
<td>10</td>
</tr>
<tr>
<td>1964</td>
<td>20</td>
<td>3</td>
</tr>
<tr>
<td>1965</td>
<td>14</td>
<td>2</td>
</tr>
</tbody>
</table>

A WHO-assisted independent assessment in November 1965 confirmed the satisfactory progress of the programme. It was estimated that if this rate of progress continued the malaria eradication programme in Mauritius might be expected to reach the stage of certification in 1968.

However, a review of the health services of the country indicated the need for closer co-ordination and integration to produce a well developed, multipurpose home visiting service. WHO is providing assistance in planning such a health service.

All routine spraying operations were suspended at the end of December 1965; in the first eight months of 1966, during which nearly 57 000 blood slides were examined, nine cases were detected—five imported, three relapses and one cryptic.

From May 1966 house visiting by surveillance agents was reduced from fortnightly to monthly in parts of the area in the consolidation phase where no indigenous cases had been recorded for the past three years, and where spraying operations had been suspended for two to three years. The programme of work in 1966 also included verification of the malaria status of the islet dependencies of Mauritius—Rodrigues, Agalega, the Cargados group and the Chagos Archipelago. The absence of Anopheles in Rodrigues has been confirmed, and investigations in the other dependencies are proceeding.
The results achieved reflect the great effort made by the Government in terms of supplies, manpower and recurrent costs, and legislative support. A full-time national malarialogist has recently been appointed and, with the co-operation of international airlines serving the island, a system has been introduced to appraise travellers arriving from malarious areas of the risk of infection being inadvertently imported by them into areas now free of malaria. In the field of passive case-detection, the Government has also endeavoured to secure the collaboration of medical practitioners and health staff, and the eventual integration into the general health services of most of the forty-eight malaria surveillance agents.

Yaws Control, Sierra Leone

In 1958 a yaws control project was started by the national health services of Sierra Leone, with technical and material assistance from UNICEF and WHO. The project—similar to those carried out in Cameroon, Ghana, Liberia, Nigeria and Togo during the past decade—covered the entire country, of which the population was estimated at 2,250,000 in 1965. WHO provided a medical officer and a laboratory technician, while UNICEF supplied long-acting penicillin, transport and other equipment.

During initial treatment surveys, 1,249,116 people were examined in the Northern, Eastern and Southern Provinces. The incidence of active yaws ranged from 2.9 per cent. (in the Southern Province) to 14 per cent. (in the Northern Province). During subsequent surveys carried out up to June 1966, 1,311,953 persons were re-examined and the incidence of active yaws ranged from 1.8 per cent. (in the Eastern Province) to 4.1 per cent. (in the Northern Province). Infectious cases diagnosed clinically during resurveys ranged from 0.01 per cent. (in the Eastern Province) to 0.3 per cent. (in the Northern Province). It is evident that, although the incidence of yaws has been markedly reduced as a result of the campaign, follow-up activities are still necessary to prevent recrudescence of the disease.

Smallpox vaccination and leprosy case-finding were added to the tasks of the mobile yaws teams during the later stages of the project. House-to-house surveys provided an excellent opportunity for detecting cases of leprosy which had hitherto escaped notice. They also made it possible to carry out limited but systematic smallpox vaccination with a high coverage rate. Between mid-1964 and mid-1966 over 200,000 persons were vaccinated against smallpox by the mobile yaws teams, and over 600 cases of leprosy were detected. The practical experience gained by the teams should prove useful for the planning and execution of a systematic smallpox vaccination campaign covering the whole country.

As a result of the mass campaign, yaws no longer constitutes a major public health problem, and the Government of Sierra Leone has therefore requested that assistance be extended in 1967 to cover the control of other communicable diseases, as well as yaws follow-up activities. In this expanded project the mobile and fixed rural health units set up under the original yaws control project will continue to play an important role.

Epidemiological Centre, Nairobi

The Tuberculosis Co-ordination Centre in Nairobi, originally established as an extension of the Tuberculosis Research Office in Copenhagen, was responsible for directing the activities of tuberculosis survey teams and for providing to the Regional Office for Africa technical advice with regard to planning and implementing tuberculosis control activities. Subsequently the Regional Office became responsible for the co-ordination of tuberculosis projects and other activities in this field. The Centre, renamed the Tuberculosis Epidemiological Centre, assisted the Regional Office in maintaining up-to-date information on the tuberculosis situation in the countries of the Region; in ensuring uniformity and standardization of national control programmes being conducted with WHO's assistance; in providing training and briefing for fellows and WHO staff members; in carrying out studies, preparing reports and assisting in the design, planning and evaluation of tuberculosis projects.

During 1966, the activities of the Centre, renamed the Epidemiological Centre, were expanded to include nutrition and the control of communicable diseases in general (excluding malaria). Specific examples of the Centre's activities include studies on combined vaccination in Swaziland; advice on statistical methodology for nutrition surveys in countries of East Africa and serological surveys in Kenya; and assistance to the United Republic of Tanzania in connexion with hospital records and a survey of communicable eye diseases.

At the same time, the Centre has continued its work on tuberculosis. The results of tuberculin sensitivity
surveys have been evaluated, and reports prepared; working protocols have been drawn up to facilitate WHO-assisted national tuberculosis control projects in Kenya, Lesotho, Nigeria and Swaziland; assistance has been given in planning and analysing the results of trials, such as BCG vaccination without previous tuberculin testing, and comparative trials of different vaccines; and advice was given to the United Republic of Tanzania on the development of an integrated tuberculosis programme in Zanzibar.

The Centre has thus become an essential part of the services provided for the countries of the Region. Its role is particularly important in view of the fact that increasing emphasis is being given to sound initial planning based on epidemiological information and to continuous evaluation of the work carried out.
This chapter describes the work done in the Region of the Americas, where the Pan American Sanitary Bureau has a dual capacity as secretariat of the Pan American Health Organization and Regional Office of the World Health Organization.

National Health Planning

Twenty countries have now adopted the principle of comprehensive health planning. Most of them have been actively engaged in the integration of health plans into their overall socio-economic development plans.

The Organization gave assistance to the secretariat of the Inter-American Committee of the Alliance for Progress on the aspects of national development relating to requirements and planning in the health sector. The Committee has emphasized this integrated planning approach in its annual reviews of national development plans. In some countries social security services have been included in health planning.

The need has become apparent to establish an international health planning centre to consolidate the experience accumulated and conduct research on planning methods and concepts as a public health discipline. A request for assistance by the United Nations Development Programme in the establishment of such a centre has been submitted.

By the end of 1966, 160 health planners had received training at international courses organized with assistance from the Organization and the Latin American Institute for Economic and Social Planning. The students came from twenty countries of the Americas and included public health physicians, nurses, engineers, dentists, veterinarians, statisticians and hospital administrators. The Organization also co-operated in the fourth international course in health planning held at Johns Hopkins University.

Organization of Medical Care

During the year, the Organization gave advice on the co-ordination of government medical services with those of social security institutions, and also on hospital planning, construction and administration, to Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Panama, Peru, Trinidad and Tobago, Venezuela, and in the West Indies.

With the co-operation of the Organization of American States, a survey was made of the relationships between the medical services provided by social security institutions and those provided by ministries of health in ten Latin American countries. The information collected served as a basis for the technical discussions at the XVII Pan American Sanitary Conference/eighteenth session of the WHO Regional Committee for the Americas and will facilitate the extension of the Organization's assistance in this field.

In the field of medical rehabilitation, the Organization gave assistance particularly in the planning and organization of workshop services for the production of orthopaedic appliances, and in the training of personnel.

Strengthening National Health Services

In all the countries in the Region except three, and in five of the territories, the Organization is assisting in programmes for the development of general health services; they are to strengthen services at the central, intermediate and local levels, and emphasis is laid on extending the services to rural areas where there are no basic health services. Thirty-four projects of this type are receiving assistance, including twenty-three of nation-wide scope, six covering several states or provinces in a country, and five with aims limited to a single state or province.

In public administration related to health activities, assistance was given in such matters as cost and expenditure analysis and control, data-processing, development of administrative manuals, reorganization or strengthening of budget and finance divisions, control and inspection, and maintenance.

Five countries made major changes in their central health structures, reorganizing or increasing their technical and administrative departments. Advice was given on the integration of some of the activities of the malaria eradication programmes into the routine work of the general health services. Plans for integration were prepared for Brazil, Honduras,
Nicaragua and Peru, which have reached different stages in the eradication campaign, and local seminars for executive and field staff were conducted.

In the Andean region development programme in which the United Nations, ILO, FAO, UNESCO and WHO are helping to promote the integration of indigenous communities into the national life, health care services were expanded, new premises installed and mobile health units organized.

**Maternal and Child Health**

The Organization assisted with ten projects for the expansion of maternal and child health activities by the introduction of new services. In seven other projects the standard of care was improved, coverage was extended and better qualified staff were engaged.

In support of the concept of comprehensive care in the obstetric and paediatric fields as an integrated activity of general community health services, a book printed and distributed during the year in the PAHO Scientific Publications series describes in detail the administrative and operational aspects involved and explains their application in national health planning.\(^1\)

In Panama, this approach was tried in one rural health centre with encouraging results and its use is being extended to other areas in that country.

The School of Medicine of the University of Pernambuco, Brazil, received assistance in post-graduate paediatric education, residential training as a means of improving hospital teaching services, and the use of health areas for paediatric education. Two courses in social paediatrics for teaching staff were given at Santiago, Chile, and Medellin, Colombia, with assistance from the Organization.

**Nutrition**

A regional seminar on the planning and evaluation of applied nutrition programmes for Latin America, organized jointly with FAO and held at Popayán, Colombia, in November, was attended by representatives of the agricultural, educational and health sectors of sixteen countries. They agreed upon a guide for future requirements in the planning and evaluation of applied nutrition programmes and upon recommendations for improving activities.

The Organization assisted the National Institute of Nutrition of Colombia in reviewing the progress achieved in the nutrition programmes conducted under the Institute's supervision, and in recommending future activities.

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The promotion of salt iodization on a national scale is continuing. The reference laboratory and training centre for iodine determinations in Santiago, Chile, has already been established; it is carrying out tests on paired samples and training laboratory technicians in methods for iodine analysis.

Work continued on the co-operative study of nutritional anaemias with the participation of seven laboratories in seven countries, using standard protocols based on those elaborated by WHO. Visits were made to the participating laboratories and advice was given on methods of haematological diagnosis.

Mental Health

In Argentina, Guatemala, Honduras, Jamaica (see page 112), Uruguay and Venezuela the Organization assisted in preparing and implementing national mental health programmes aimed at improving the standard of hospital care services and community mental health services, and the training of staff.

In June a meeting on the epidemiology of alcoholism was convened by the Organization at San José, Costa Rica. Agreement was reached on the basis for an international survey on the prevalence and distribution of alcoholism and its relation to certain cultural factors. In August a symposium on alcohol and alcoholism was held with the assistance of the Organization in Santiago, Chile; the participants discussed topics relating to the biochemistry of alcohol and to the clinical and pathological aspects of alcoholism, and reviewed the programmes of prevention and treatment.

Assistance was given with courses in psychiatric nursing held in Jamaica (see page 112) and Venezuela for nurses of those countries.

The first phase of study being conducted with the assistance of the Foundations' Fund for Research in Psychiatry in Buenos Aires, Argentina, on attitudes and patterns of communication among members of the families of schizophrenic patients, was completed. In Chile work continued, with the assistance of the Organization, on the programme of research on the epidemiology of mental diseases and the distribution and frequency of epilepsy.

Dental Health

Assistance was given in strengthening the departments of preventive and social dentistry at the University of Antioquia, Colombia, and the National University of El Salvador, and in preparing new curricula, to include preventive and social aspects, for the courses at the universities in Colombia and the Dominican Republic, the National Universities of Nicaragua and Paraguay and the Zulia and Los Andes Universities in Venezuela. Advice was also given to the University of Panama and the University of Ica, Peru, with regard to the design of buildings for their faculties of dentistry.

In Brazil, the Organization provided a lecturer, teaching material, laboratory equipment and fellowships for an international course for professors of oral microbiology.

Assistance was given to the Government of Nicaragua for the establishment of a dental centre under the Ministry of Public Health, and to the Government of Venezuela for the preparation of a programme for the planning of dental services in the country.

The Latin American Association of Dental Schools, the W. K. Kellogg Foundation and the Organization jointly sponsored the third Latin American seminar on dental education, held in Petropolis, Brazil, in November. The fifty-five participants came from forty-seven schools of dentistry in Argentina, Brazil, Paraguay and Uruguay, and observers from other countries of the continent also attended. The third international course on the teaching of dentistry, which followed the seminar, was attended by more than one hundred professors and deans from twenty countries.

Nursing and Midwifery

The shortage of nurses has been accentuated in a number of countries by the utilization of nursing staff for work outside their own field of activity and by the emigration of many of the best-qualified nurses to more developed countries. In order to determine the extent of the problem, studies have been conducted in selected hospitals, with the assistance of the Organization; in some countries of the Region a wider study on the emigration of health service personnel has included the particular problem of nurses.

Of a total of some 65,000 nurses in the Member countries receiving assistance from the Organization in the field of nursing, from 60 to 65 per cent. are working in hospital services; most of them have had to take charge of the administration and supervision of services without adequate training for that responsibility. The trend towards integrated health services, together with the fact that hospital services account for the major part of the health budget, has led to increased assistance in this field.

Assistance with regard to the administration and supervision of hospital nursing services included advice to El Salvador in the organization of the nursing services in the new paediatric hospital, and to Venezuela in the organization of operating theatres and the training of staff for recently constructed hospitals.

In Argentina, advice was provided for the organization of premature baby centres in Córdoba, and in Peru improvements were introduced into some of the clinical areas used for practical training. In mid-
wifery, assistance was given in organizing two courses for graduate midwives aimed at extending their knowledge of public health services, particularly those concerned with child health, so that they can play a more important part within the community health services. In Brazil, assistance was given to schools of nursing in Bahia and in Rio de Janeiro on the teaching of midwifery in basic nursing education.

The nursing education programmes in which the Organization participated included nine advanced courses, thirteen basic courses, and six courses for auxiliary personnel.

Programmes of advanced nursing education, including theoretical and practical training in the principles of administration and organization of services, were launched in Bolivia, El Salvador, Ecuador, Nicaragua, Panama and Peru, and similar courses were held in Barbuda (Leeward Islands) and Uruguay. A course in paediatrics to prepare midwives from the Caribbean area for their present responsibilities in public health programmes was completed, and short courses were conducted in this subject for midwives in Argentina and Uruguay.

A course for nursing instructors and supervisors was given in Guyana by three members of the teaching staff of a nursing college in New York (see also page 60). This is an example of the co-operative arrangements being promoted by the Organization between nursing schools in the United States and those in other countries.

The report on the survey completed in 1965 on nursing schools in the English-speaking countries of the Caribbean area was published and used as reference material during a seminar, held in Jamaica, on the development of the curriculum.

A second course on the use of “programmed instruction” in the teaching of nursing auxiliaries was held at Cuernavaca, Mexico. Nurses, nurse educators and supervisors of auxiliaries from Brazil, Cuba, the Dominican Republic, El Salvador, Guatemala and Mexico attended.

Health Education

Assistance continued to the countries of the Region in the orientation and strengthening of health education services and the training of staff. These activities were developed, for example, in connexion with the integrated health programmes of the western Caribbean and the malaria eradication programmes in Surinam and the Central American countries. In the promotion of community action in the rural areas of Central America, Argentina and Peru, the inclusion of community development specialists in the advisory teams helped to awaken the interest of the village communities in health programmes and to enlist their support.

Assistance was given in the organization and conduct of the fifth health education congress for the Central American isthmus, held in Managua, Nicaragua.

At the fundamental education centre for community development (CREFAL) in Pátzcuaro, Mexico, which operates under the combined auspices of the United Nations, UNESCO, FAO, ILO and WHO, the Organization continued its assistance through the services of a medical officer who is responsible for directing the teaching of the health aspects of community development. Courses held at the centre were attended by ninety-eight participants from countries in the Region.

The Organization was represented at the Inter-American Seminar on the Junior Red Cross and Health Education, held in Quito, Ecuador, at the end of October.

Public Health Laboratory Services

Assistance with the training of laboratory personnel has formed an important part of the Organization's work for the strengthening of public health laboratory services. Such training activities included a short course on laboratory methods for the diagnosis of venereal diseases held in Argentina by the National Institute of Microbiology, with the assistance of the Communicable Disease Center of the United States Public Health Service; a training course for laboratory technicians, held in Jamaica under the auspices of the University of the West Indies and attended by students from the western Caribbean; two courses on laboratory methods for the diagnosis of smallpox held at the Adolfo Lutz Institute, Brazil, with the cooperation of the Communicable Disease Center of the United States Public Health Service, and a course on enteric bacteriology and diagnosis of cholera, attended by officials from ten countries of the Americas.

In Venezuela, the Organization has assisted in strengthening the present health laboratory division of the Ministry of Health and Welfare with a view to standardizing techniques and procedures and gradually reorganizing the regional and local laboratories.

The Organization advised on possible sites for an international laboratory to provide training on the quality control of pharmaceutical products. Assistance was also given in the review and coding of 400 health standards for food control in the Central American Common Market, and in field and laboratory training for personnel with responsibility for this type of work in Argentina, El Salvador, Guatemala, Honduras, Panama, Paraguay, Peru and Venezuela.
Environmental Health

In the administration and organization of existing water supply services, the Organization gave advisory assistance to the authorities of Chile, Colombia, Ecuador, El Salvador, Peru, Trinidad and Tobago, Uruguay and Venezuela. Assessments made in connexion with the water supply services in Managua, Nicaragua, and the national water and sewerage service in Honduras revealed a considerable improvement in their administration.

The Organization also continued its assistance to a number of countries in planning long-term environmental health projects suitable for international loans. It is estimated that since 1961 some US $936 million have been invested in the construction and extension of water supply and sewerage systems, benefiting more than forty-seven million people in developing countries of the Region. Of that amount, some $401 million have been provided by international lending agencies—the greater part of it by the Inter-American Development Bank. The country contributions, in the form of local funds, amounted to $535 million.

At the end of the year rural water supply programmes were under way in Argentina, Brazil, Chile, Costa Rica, El Salvador, Honduras, Peru and Venezuela—all receiving the assistance of the Inter-American Development Bank. The Organization co-operated in sanitary engineering, community organization and financial and technical aspects of these programmes. Measures to promote the creation of revolving funds to maintain the continuity of this type of programme continue to receive the closest attention. In Brazil, a revolving fund to finance environmental health work has been functioning satisfactorily, and legislation has been prepared for the creation of similar revolving funds in Colombia and Costa Rica.

The Organization continued to assist countries of the Region in drawing up and implementing plans for sewerage and waste water disposal. By the end of 1966, more than $70 million in external loans had been provided, with an equal local contribution, the greater part being used to extend existing services. Technical assistance was given to Jamaica in connexion with the contamination of beaches by discharge of sewage in the Montego Bay area.

Assistance with the control of air pollution continued in municipalities in the neighbourhood of São Paulo, Brazil. Equipment necessary for the installation of air sample collectors in some of the other main cities of the Region was purchased. The collection of such samples has been continuing in Buenos Aires, Mexico City, Lima and Santiago, Chile.

A study on housing and environmental health in Central America was launched as a basis for the planning of activities in which various international organizations will participate, and a sanitary engineer was seconded to the Inter-American Housing Centre which has its headquarters in Bogotá, Colombia.

Further progress was made in the programmes for training personnel in sanitary engineering being carried on in Brazil and Venezuela with financial assistance from the Special Fund component of the United Nations Development Programme. In Venezuela, assistance was provided in the teaching of sanitary engineering and the organization of laboratories.

The extensive training programme by which universities in various countries provide short courses in sanitary engineering subjects is described on page 114.

Other activities in environmental health included collaboration in a regional course on ECLA housing programmes, and assistance in organizing two courses in Argentina, one on housing and environmental health, in Buenos Aires, the other for personnel working in the water supply programme for rural areas.

Occupational Health

In the Institute of Occupational Health and Air Pollution Research in Santiago, Chile, which is assisted by the Special Fund component of the United Nations Development Programme with WHO as executing agency, the installation of the laboratories was completed and work continued on the training of various grades of professional and auxiliary staff. Assistance in the planning and execution of industrial health programmes was given to a number of countries, including El Salvador, Jamaica, Mexico and Panama.

The study on manganese poisoning in Chilean miners was continued under a four-year grant from the United States National Institutes of Health, using the facilities for neutron activation analysis of the Brookhaven National Laboratories, New York.

Radiation Health

The Organization continued its collaboration in the programme, being implemented jointly by a number of countries in the Region and by the United States Public Health Service, for measuring the radionuclide content of the air and of milk in order to establish the potential risk of ionizing radiation for the population. Three new sampling stations were added to the six already in operation. Five of the nine stations are forwarding milk samples as well as air samples for
tests to determine the strontium 98, strontium 90, caesium 137 and iodine 131 content. The Organization provides technical advice for this programme.

The Organization increased its assistance to countries with regard to the standardization of X-ray equipment. It supplied technical literature to schools of medicine, dentistry, sanitary engineering, public health and nursing in order to improve teaching in connexion with the various aspects of radiation health. It also helped to organize a course on radiation protection in El Salvador.

In Santiago, Chile, a further six months’ advanced course on specialized techniques for the use of radio-isotopes in medical diagnosis and treatment was organized in co-operation with the W. K. Kellogg Foundation.

The Organization continued to co-ordinate the studies being conducted by the United States Atomic Energy Commission, the University of Brazil and the Catholic University of Rio de Janeiro, in areas of Brazil with a high natural background radiation.

**Eradication or Control of Communicable Diseases**

**Malaria Eradication**

A number of advances were made in malaria eradication. Wide areas in Brazil and smaller areas in Argentina and Colombia were included in the attack phase. In Cuba and the Dominican Republic good progress was made. In Peru, extensive coastal areas were transferred to the maintenance phase under the responsibility of the general health services, which receive technical advice from the national malaria eradication service. In Colombia, the Cauca Valley entered the consolidation phase. The large-scale mass drug administration programme in Haiti is described on page 113.

In other programmes developments were less favourable. In Guatemala the whole programme regressed to the attack phase after several years of inadequate financial support; in Guyana and Nicaragua consolidation areas became reinfected. Argentina and Venezuela continued to report similar situations, caused by the importation of cases from neighbouring malarious areas. In Tobago, which had been free from malaria for thirteen years, a small outbreak occurred. In Paraguay, where the programme has been in the preparatory phase since 1961 owing to lack of financial assistance, an epidemic of malaria occurred, in which 13,000 cases were reported during the first six months of the year.

Two evaluation teams carried out an independent assessment of the situation in Central America and drew up recommendations for reclassification of areas. A loan agreement was signed for the financing of the malaria eradication programmes in coming years.

In Mexico, the Organization assisted in various projects intended to test and select suitable alternative attack methods for use in an expanded programme. It continued to give advisory assistance to Brazil and Colombia in connexion with experiments on the radical treatment of *Plasmodium vivax* infections and determination of the resistance of *Plasmodium falciparum* to chloroquine, and collaborated with a laboratory in Panama in a village-scale trial of fortnightly doses of primaquine and pyrimethamine in the Rio Sambu areas of the province of Darién.

Assistance was given to the Government of Brazil in connexion with training for the malaria eradication programme (see page 5).

The Organization also sponsored the annual meetings of the directors of national malaria eradication services of Central America, Mexico, Panama and the Caribbean islands, held in Costa Rica, and of the countries of South America, held in Venezuela.

**Aedes aegypti Eradication**

Administrative and technical problems continued to hold up the progress of the *Aedes aegypti* eradication campaign in areas still infested in the extreme north of South America, the Caribbean area and the United States of America, and in one country of Central America.

Foci of reinfection appeared in certain localities of Colombia. In El Salvador the vector has reappeared and spread throughout the country with a resulting risk to other countries.

Investigation of the susceptibility to various insecticides of *Aedes aegypti* in the Caribbean area and in the north of South America was continued, as well as evaluation of new products which might replace chlorinated insecticides for mosquito eradication.

**Smallpox Eradication**

In order to determine the nature and extent of international collaboration in smallpox eradication programmes, the Organization carried out a three-month survey of all the countries and territories of the Region. The results of the survey were discussed at the XVII Pan American Sanitary Conference/eighteenth session of the WHO Regional Committee for the Americas.

Appreciable progress was made in the various smallpox eradication programmes which at some stage benefited from the Organization’s assistance. In Bolivia, 470,696 persons had been vaccinated by 31 August and 1,547,791 revaccinated in a house-to-house campaign. Ecuador achieved the goals laid down in its programme and improved the epidemiological surveillance services. Plans for a programme to cover 80 per cent. of the population of seven states
in the north-east region of Brazil were approved, and assistance was given with the preparation of a similar programme in the state of São Paulo. The Organization supplied high-capacity freeze-drying apparatus for the preparation of smallpox vaccine in Argentina.

Assistance was given in the organization of two courses, held in the city of São Paulo in October, on laboratory methods for smallpox diagnosis; the courses were attended by medical officers from various countries in the Region.

**Chagas’ Disease**

At a meeting on Chagas’ disease, held in Puerto Rico in November, questions relating to serological diagnosis were discussed. Assistance was given to Uruguay in planning prevalence studies and reinforcing the control programme.

The collaborative research programme on the biology and ecology of *Rhodnius prolixus*, the main vector of Chagas’ disease in the northern part of South America, was continued and has yielded useful information on the effect of radiation on the insect’s mating habits.

**Bilharziasis**

A guide for the identification of intermediate hosts of schistosomiasis in the Americas was published. The Organization continued to give assistance to the International Centre of Snail Identification for the Study of Schistosomiasis, at the National Institute of Rural Endemias, Belo Horizonte, Brazil. Assistance was also given to Brazil in planning and organizing a schistosomiasis pilot control programme.

**Venereal Diseases and Treponematoses**

A report on venereal disease control activities was prepared for submission to the XVII Pan American Sanitary Conference/eighteenth session of the WHO Regional Committee. Progress was made in the preparation of a glossary of terms relating to these diseases. A data registration system was also in preparation. Two courses on diagnostic laboratory techniques were held in Buenos Aires with the Organization’s assistance.

The Organization assisted two countries with yaws eradication programmes: Haiti in devising action to overcome the problems facing the eradication programme; and Brazil in planning a yaws survey.

**Tuberculosis**

Advice on tuberculosis control was given to Argentina, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Honduras, Nicaragua and Peru. Studies were made in Brazil and Colombia in preparation for the establishment of pilot areas in which to apply the measures recommended at the regional tuberculosis seminar, held at Maracay and Caracas, Venezuela, late in 1964. In Argentina, the tuberculosis control programme in Recreo, Santa Fé, which has been in operation for five years, was reviewed; progress has been made especially in the training of professional and auxiliary personnel. Other provinces of Argentina, and neighbouring countries also, have benefited from the experience acquired in this programme and are using similar methods, based on measurable objectives. In Ecuador, assistance was provided in drawing up a tuberculosis control programme in the province of Manabí that could be integrated into the general health services.

In line with the trend in the Central American countries towards the standardization of health programmes and the integration of tuberculosis activities into the national health services, the authorities concerned met in Panama in July to set up a tuberculosis working group.

**Leprosy**

The leprosy control programmes in Argentina, Ecuador (see page 112) and Venezuela received assistance in the improvement of techniques and procedures for the prevention of deformities in leprosy patients, and for the training of personnel. Advice was also given in connexion with programme planning, the organization and functioning of data registration systems, the analysis of work techniques, their cost and efficiency, and the determination of national objectives.

**Plague**

Plague control programmes in Ecuador and Peru continued to receive advice and supplies and equipment from the Organization, which also provided assistance for a new plague research project in the north-east region of Brazil.

**Zoonoses**

Financing under the Special Fund component of the United Nations Development Programme was approved to enable the Pan American Zoonoses Centre in Argentina to extend its assistance to countries in the planning and execution of programmes against some of the most important zoonoses, particularly brucellosis, rabies, bovine tuberculosis and hydatidosis. WHO is the executing agency for this project. The Centre’s activities in 1966 included testing of brucellosis vaccine used in programmes in Argentina and the provision of antigens; assistance with a survey of
bovine brucellosis in the Tierra del Fuego area of Chile, and of brucellosis in goats in the north of Argentina and in Chile; and advice to Brazil, Colombia, Peru and Venezuela on the preparation of suckling-mouse brain tissue vaccine for use against human rabies, and the training of personnel.

A leptospirosis serological survey of 3000 cattle in southern Chile was started with the collaboration of the Communicable Disease Center of the United States Public Health Service, and antigens, sera and diagnostic leptomis strains were supplied to Brazil, Colombia, Guatemala and Uruguay.

The Organization provided assistance for rabies control programmes and research in Argentina, Brazil, Colombia, Guatemala, Mexico, Peru, Uruguay and Venezuela.

A joint FAO and PAHO/WHO mission visited Argentina, Brazil, Mexico, Trinidad and the United States of America to study the problem of paralytic rabies in cattle and the possible establishment of a research project on that subject.

For assistance with the teaching of veterinary medicine in the Region, see page 110.

Health Statistics

The collection, tabulation and analysis of vital and health statistics, and their publication, continued during 1966, and assistance was given to further countries in the strengthening of their statistical services and in the training of staff.

Apart from the Weekly Epidemiological Report six statistical reports and studies were published during the year, including Health Conditions in the Americas, 1961-1964; and Facts on Progress, a report to the Inter-American Economic and Social Council on an evaluation of the progress towards the health objectives in the Charter of Punta del Este.

In addition to the statistical advisory services available to all the countries of the Region from zone offices, assistance on health statistics was provided to Argentina, Brazil, Chile, Dominican Republic, Haiti, Jamaica, Paraguay, Peru and Trinidad and Tobago.

Training activities included special courses in health statistics for professional and technical staff in other disciplines, and short courses on selected aspects of medical and health statistics for clinical physicians and executive officials. In assisted courses 174 intermediate statistical technicians from twenty countries, and 848 auxiliaries from eleven countries received training. As in 1965, an eleven-month course on hospital statistics was held in Venezuela with assistance from the Organization.

In statistical research, the analysis continued of data, covering 40,000 death certificates of adults, for the Inter-American Investigation of Mortality. In Peru, a longitudinal study on population dynamics was launched in small urban areas with a view to investigating the cultural, economic, medical and biological factors influencing population growth and decline.

Education and Training

There was again an increase in the fellowships programme: between 1 December 1965 and 30 November 1966, over 930 fellowships were awarded in the Region by PAHO and WHO.

Assistance to medical education programmes was aimed at strengthening and developing national educational resources and co-ordinating international aid for higher education. During the year twenty-seven schools in fifteen countries received assistance for various activities and agreements were signed with eight universities for help with medical education. Assisted activities included four two-week courses, or "workshops", on medical education and human relations, given in medical schools in Costa Rica, Mexico, Peru and Uruguay, and attended by 127 teachers from twelve countries. The Organization gave technical advice and fellowships for a training centre for professors from the medical schools of Latin America, which was established in the medical school of the University of Antioquia in Colombia, with the assistance of a five-year grant from the W. K. Kellogg Foundation. (A similar programme is being developed in conjunction with the medical school of the University of Nuevo Léon in Mexico.) Advisory assistance was also given for the evaluation and improvement of the medical education programme in Nicaragua.

The analysis was begun of data collected in a two-year study in Colombia on manpower resources for health services and medical education. An evaluation was started of the impact made by the seminars on preventive medicine held ten years ago; at the same time a sociological study is being made on the attitudes of medical faculties and students towards preventive medicine. Basic information for the studies was collected during visits to ten medical schools in Brazil, Chile, Honduras and Venezuela.

A meeting was organized in Rio de Janeiro, Brazil, to discuss the co-ordination of departments of preventive and social medicine at the university level. Agreement was reached upon the basic elements for a co-ordinated and collaborative programme for the departments concerned with preventive medicine in different schools within a single university.

Under the auspices of the Milbank Memorial Fund, the Medical Education Information Centre, for which
the Organization provides the secretariat, held its eighteenth meeting in New York, with the participation of officials from twenty-seven interested institutions. Co-operative medical education activities in Latin America were reviewed and information was provided on 143 medical education and research projects and 161 fellowships for advanced training.

Medical literature and teaching equipment were provided, together with advisory assistance, for public health schools of Latin America. The Organization also collaborated in the redrafting of the epidemiology curriculum of the School of Public Health in Lima, Peru; in the organization of libraries in the medical schools of the National University of El Salvador, the Central University of Venezuela and the University of the West Indies; and in the establishment of an audiovisual methods unit in the agency responsible for the development of north-eastern Brazil.

Assistance was provided for a four-month course on health and population dynamics, held at the School of Public Health of the University of Chile in August. It was attended by professors of preventive medicine, obstetrics and paediatrics from schools of medicine and public health in Latin America.

The first Latin American meeting on the teaching of veterinary medicine was held in Maracay and sponsored jointly by the Government of Venezuela, FAO and PAHO/WHO; the meeting was attended by forty-four deans of veterinary schools in the Latin American countries. The Organization assisted schools of veterinary medicine in Belo Horizonte, Brazil; Santiago, Chile; Lima, Peru; Maracay, Venezuela; and in Guatemala. It also co-operated in a survey on curricula, staff resources, facilities, and numbers of students in Latin American schools of veterinary medicine.

For work on nursing education in the Region, see page 104.

The training of auxiliary health personnel was discussed at a meeting in Mexico City, in March, at which a report was prepared for submission to the XVII Pan American Sanitary Conference/eighteenth session of the WHO Regional Committee for the Americas. The report expresses the opinion that auxiliary staff, while they cannot replace professional personnel, can form a useful part of a public health team in a well organized health service which can provide adequate supervision and further training.

Research

The PAHO Advisory Committee on Medical Research, at its fifth meeting held in June 1966, reviewed, inter alia, studies on nutritional anaemias, endemic goitre, mental health, sanitary engineering research, manganese poisoning, population dynamics and certain research activities of the Institute of Nutrition of Central America and Panama and of the Pan American Foot-and-Mouth Disease Centre.

The Committee considered the report on the migration of Latin American health, scientific and engineering personnel (which appeared in the PAHO Scientific Publications series), and agreed that, rather than increasing restrictions affecting journeys abroad and domicile requirements, emphasis should be placed on efforts to improve working conditions in Latin America. A special meeting of the Committee was held to discuss the natural and acquired acclimatization of man at great altitudes and attention was drawn to those areas where increased research was desirable.

At the PAHO/WHO international conference on vaccines against viral and rickettsial diseases of man, held in November, the present status of knowledge was reviewed and research needs in this field discussed.

Publications and Visual Aids

In 1966 PAHO published some forty-five titles, and a total of 230,670 copies were distributed. This does not include the monthly Boletín de la Oficina Sanitaria Panamericana, which continued to appear regularly with an average press run of 11,000 copies.

A new quarterly series appeared in Spanish under the general title Medical Education and Health. Twelve film strips dealing with epidemiology, bacteriology, environmental health and laboratory techniques were added to the series issued by PAHO.

The Regional Committee

The XVII Pan American Sanitary Conference, which was also the eighteenth session of the WHO Regional Committee for the Americas, was held at the new building in Washington, D.C., from 26 September to 7 October 1966. It was attended by representatives of all the Member States in the Region, and by representatives of France, the Netherlands and the United Kingdom of Great Britain and Northern Ireland on behalf of certain territories in the Region. Guyana—formerly British Guiana—was represented at the Regional Committee. Representatives of the United Nations, UNICEF, FAO, ILO, and the Organization of American States and observers from eleven non-governmental organizations were present; and also the Director-General and an Assistant Director-General of WHO.
Dr Abraham Horwitz, Director of the Pan American Sanitary Bureau, was elected for a third period of four years to begin on 1 February 1967, and his designation for reappointment as Regional Director for the Americas was communicated to the Executive Board of WHO.

In accordance with usual practice, the representatives of the governments reported to the Conference on the health problems, achievements and setbacks in their countries in the last four years. They also described the general trend in health activities for the immediate future. The annual report of the Director of the Pan American Sanitary Bureau/Regional Director of WHO for 1965 and the quadrennial report for the years 1962-1965 were discussed.

The proposed regular budget of PAHO for 1967 was established at US $9 115 680, and the proposed regional projects for the biennium 1967-1968 were approved for submission to the United Nations Development Programme. The proposed WHO programme and budget for the Region for 1968 was approved for transmission to the Director-General, and the provisional draft of the proposed programme and budget of PAHO for 1968 was noted. The financial report for PAHO for 1965 and the corresponding report of the External Auditor were also approved.

With regard to malaria eradication programmes in the Americas, it was noted that the progress made was, generally speaking, less than had been expected, owing to various operational deficiencies: topographical difficulties in malarious areas, and social, technical, financial and administrative problems. Governments were reminded of the need for intensified efforts to obtain funds for the programmes so as to avoid the unnecessary prolongation of eradication work; it was recommended that biological and operational studies be continued in collaboration with countries, and also that the co-ordination of local health services with the malaria eradication programme be accelerated. Thanks were expressed to the Government of the United States of America for assistance to the malaria eradication programmes in the Region, and the need was stressed for continuing voluntary contributions to the PAHO Special Malaria Fund until the necessary funds should become available in the regular budget.

Governments were recommended to undertake smallpox eradication programmes as soon as possible, to continue maintenance and epidemiological surveillance in countries from which smallpox had been eradicated, and to collaborate in all phases of smallpox eradication programmes. They were also recommended to use the services of the reference laboratories with which PAHO has concluded agreements to ensure that the smallpox vaccine prepared met international standards of potency and purity.

It was pointed out that the campaign for the eradication of *Aedes aegypti*, the urban vector of yellow fever, had made progress in only a few restricted areas and that in some the situation had worsened. Countries and territories still infested by *A. aegypti* were therefore urged to give the highest priority to eradication campaigns, and other countries were urged to maintain strict vigilance services to prevent reinestation. The Regional Director was requested to intensify the continental eradication campaign.

In view of the serious increase in venereal diseases, ministries of health were recommended to undertake studies to determine the precise incidence and prevalence of these diseases, to organize laboratory services for their diagnosis and implement control programmes as soon as possible.

Emphasis was placed on the need to maintain the activities of the Pan American Foot-and-Mouth Disease Centre at a sufficient level to allow it to continue combating the disease effectively.

The serious problem created in many Latin American countries by the migration of health personnel, scientists and engineers was considered, and governments were requested to strengthen national policies leading to research and training programmes in health and the sciences which would provide incentives for professional personnel to remain in their own countries. A decision was taken to establish a Special Fund for Research to provide support for research and research training centres with a view to lessening the emigration of health personnel.

The importance of a proposed programme for the supply of textbooks for students of Latin American schools of medicine was emphasized, and the Regional Director was requested to continue his negotiations in order to obtain the necessary financial support.

Attention was drawn to the urgent need to define the functions of auxiliary health personnel, to train them accordingly and provide for their supervision.

Further development of the activities on aspects of health related to population dynamics was recommended in accordance with requests of the governments for co-operation. It was recommended that the programme of medical care administration be strengthened, especially the field activities, and that both health and social security institutions should take part in studies for the formulation of national health plans. It was also recommended that governments that have not yet done so create mental health departments to draw up national programmes for incorporation in the general health plans.

Difficulties met in controlling the quality of pharmaceutical preparations were discussed. The continuation
of assistance to governments in establishing, operating and improving their services for control and analysis of such preparations was recommended, and also the continuation of negotiations in connexion with the establishment of international laboratories to serve as training, research and reference centres in this field. Thanks were expressed to the Government of Uruguay for its co-operation in this connexion.

Technical discussions were held on "Means for promoting and making effective the co-ordination between the services of ministries of health, social security institutes and other institutions that conduct activities related to health". The subject "Methods of increasing health service coverage in rural areas" was chosen for the technical discussions in 1967.

Some Aspects of Work in the Region

Mental Health, Jamaica

In 1964, mental health services in Jamaica were supplied almost entirely by the Bellevue psychiatric hospital, which had some 3000 patients, many of whom were receiving custodial care. Since October 1964 the Organization has assisted the Ministry of Health in drawing up a national mental health plan in collaboration with local psychiatrists. The main problems were lack of personnel, overcrowding of the existing psychiatric hospital, lack of community mental health programmes, an uncomprehending attitude in the community towards mental illness, and the fact that many patients hospitalized by court order had to remain in hospital, although free from psychiatric symptoms requiring in-patient treatment. The following aims were therefore set out in the national mental health programme: provision of complete treatment services for mental patients; revision of procedures for the admission and discharge of patients; extension of psychiatric services to cover the whole country and promotion of follow-up care; provision of local emergency and advisory services; and development of a training system for nurses, general practitioners and other staff (in this connexion, maximum support was recommended for the psychiatry programme of the University of the West Indies). Measures were also planned to bring about a change in the attitude of the public to mental illness. Continued evaluation of progress was to be maintained through objective analysis.

In 1966 several improvements were noted. A psychiatric medical officer was appointed by the Ministry of Health. The number of patients in the psychiatric hospital further decreased. A training programme for nurses, including extramural and community mental health work, was started at the Bellevue psychiatric hospital. A comprehensive psychiatric service was included in the plans for the new Montego Bay general hospital. Discussions were started with the aim of setting up a psychiatric unit in the prison and establishing a demonstration unit in the Bellevue psychiatric hospital. The programme receives the full support of the Government which has earmarked funds, in conjunction with the United Nations Development Programme, for the engagement of a medical officer and psychiatric nurse in 1967 and 1968.

Leprosy Control, Ecuador

The leprosy control programme in Ecuador, which is also receiving assistance from UNICEF, started in 1964. The planning of the programme was largely based on the ideas expressed at the seminar on leprosy held in Cuernavaca, Mexico, in 1963 with the assistance of the Organization. The programme aimed at reducing the prevalence of leprosy until it ceased to be a health problem. Targets were set for each year of work. Since the extent of the problem was unknown in 1964, arbitrary figures had to be accepted until an effective registration system could be established. Arrangements were made for the continuous evaluation of the programme. The programme of work defined the population to be examined, the examination techniques, the form of treatment, and the frequency and nature of follow-up
tests on patients and contacts. It also provided directives for the prevention of deformities and treatment of disabilities, and for physical and social rehabilitation of patients. Eight physicians, six health inspectors and twenty-two auxiliaries are responsible for carrying out this programme. Some of the doctors have followed full public health courses, while others have specialized in such subjects as histopathology, the prevention of deformities, and physical rehabilitation. Health inspectors and auxiliaries attended special training courses before starting work in the field.

By 31 December 1965, case-finding covered the whole country, and the number of leprosy cases recorded was 1174, including 1125 subject to periodic follow-up examinations. Children under fourteen accounted for 7.2 per cent. of all cases. The distribution by clinical form was as follows: lepromatous — 47.9 per cent.; tuberculoid — 18.1 per cent.; indeterminate — 32.3 per cent.; dimorphous — 1.7 per cent. Of all cases registered 52 per cent. showed some form of disability. The total number of contacts registered by the end of December 1965 was 4116, of whom 3152 were being regularly followed up.

Of the 333 new cases discovered in 1965, 51 per cent. were contacts of patients and 32.1 per cent. were detected as a result of reports or notifications. The remaining cases were distributed among different population groups (schoolchildren, soldiers, etc.). By the end of June 1966, 2592 examinations of contacts had been made. In the first half of 1966, 109 new cases were found.

From the outset it was decided that leprosy control should be integrated into other health activities as soon as possible. At the beginning of 1966 the personnel and equipment for leprosy control in the Manabi province were incorporated into the general health services of this area, while technical supervision, evaluation of control activities and personnel training were continued by the leprosy service.

The leprosy control programme in Ecuador has shown that, given careful organization, much can be achieved with limited human and material resources. It has also indicated that public attitudes to leprosy may be modified, as demonstrated by the participation of specially trained unpaid volunteers who distribute the drug DDS (diaphenylsulfone) and check that it is used correctly.

Malaria Eradication, Haiti

A malaria eradication programme was started in Haiti in 1958 but suspended in 1959 for economic reasons. The present programme, started in 1961, is being carried out through an autonomous body with representatives of the Government, the United States Agency for International Development (AID), UNICEF and the Organization. Responsibility for the programme is shared by a national director and an internationally recruited co-director appointed by the Organization.

The entire programme, covering a population of 3 200 000, is at present in the attack phase. During 1962 and 1963, standard cycles of DDT spraying were applied, but malaria transmission continued over the greater part of the area.

In October 1963, hurricane Flora struck the southern peninsula, destroying 60 per cent. of the houses and leaving 250 000 persons homeless. Six to eight weeks later an epidemic began in the area which was almost without protection, and during the following three or four months some 50 000 cases occurred. However, an increase in the number of confirmed cases was noted in other areas also, although spraying had been carried out efficiently against a vector fully susceptible to the insecticide and in houses well suited to spraying. Studies to determine why the spraying operations had not been satisfactory showed that the vector was most active during the first and second hours after sunset, the time when most of the Haitians in the rural areas remained outside their houses.

Following an evaluation in July 1964 in which the Organization and AID participated, the malarious region was divided into three types of areas: those where there was little or no transmission and where spraying could be terminated; those where transmission persisted only at low altitudes and where spraying would therefore be limited to the low-lying districts; and those with high transmission indices (representing almost half of the malarious region) where spraying would be carried out every four months using 1 g/m² of DDT. The network of voluntary collaborators was reorganized and by the end of 1964 their number had been increased from 500 to over 4000.

In October 1964 mass drug administration was started in Petit Goâve, covering a population of 45 000 persons and using a dosage of 600 mg of chloroquine and 50 mg of pyrimethamine at three-week intervals. A further evaluation in February 1965 showed that, while some areas had been virtually cleared of the disease during the three years of spraying, there had been no appreciable reduction in endemic prevalence in areas where transmission persisted, even after four annual rounds of spraying. As a consequence, and in view of the results obtained in Petit Goâve, mass drug administration was recommended in all the high transmission areas, covering initially 57 400 people, together with an annual cycle of 2 g/m² DDT spraying and active case-detection; in the low altitude trans-
mission areas, there was to be an annual spraying cycle of 2 g/m², active and passive case-detection, and distribution of drugs as a supplementary measure when necessary; and in the low transmission areas, intensive passive case-detection, investigation and follow-up of cases, supplemented by attack measures where foci occurred.

Intensive case-detection was carried out, slides being taken from about 10 per cent. of the population in 1965. The target of 10 000 persons per month to be attended by each surveillance agent was found too high and was reduced to 6500. Until January 1966 it had not been possible to cover all the areas due for active case-detection under the programme, but investigation personnel was then increased, and cases are now being investigated within a few days of diagnosis. The number of confirmed cases fell from nearly 20 000 in 1964 to about 10 000 in 1965, and to 6419 in the first nine months of 1966, while the number of blood smears examined increased from 473 500 in 1964 to over 736 000 in 1965, and reached a total of over 1 600 000 for the first nine months of 1966.

The population under drug administration reached a maximum of about 1 700 000 in May 1966. Acceptance of treatment by the population was very good and incidence fell satisfactorily in all areas once drugs had been administered. In view of the results obtained and in application of the criteria established by the evaluation team, mass drug administration ceased in most of the areas during the first half of 1966, and by mid-October only 287 000 persons were under treatment. The distributors of the drugs, who visit the communities concerned every three weeks, carry out active case-detection. Surveillance agents carry out monthly active case-detection among a population of 2 809 000 persons. Only 115 000 people in mountainous areas with a very low malaria potential are not covered by active case-detection.

In October 1966 an independent team again evaluated the programme. It found that malaria transmission and the number of cases had been greatly reduced, but that some problem areas remained where a low level of transmission persisted. It considered that the areas above 500 metres, though previously thought to be non-malarious, in fact constituted a reservoir of infection. It therefore recommended a number of measures including the treatment of the entire population (estimated at 1 500 000) with antimalarial drugs and the extension of passive case-detection to the area. For the region affected by the hurricane Inez (on 29 September 1966) the team advised immediate DDT-spraying for all new or reconstructed shelters, if necessary by large-scale dispersal of insecticide by aircraft, and entomological investigations to measure vector density.

Training and Research in Sanitary Engineering

Training activities in sanitary engineering have constituted one of the Organization's main areas of interest in the Region since 1948. During the first fourteen years, attention was given to co-operation with individual schools of engineering in which academic programmes of sanitary engineering were established.

In 1962 a new policy was adopted according to which education, training and research in sanitary engineering were planned as a single regional programme, in which the various academic programmes, short courses and seminars were carried out in a logical sequence although held in various countries of the Region. Simultaneously, opportunity was taken to focus interest on the main sanitary engineering problems of the Region, especially on those concerning water supplies. By 1966 sixteen countries had received assistance from the Organization in initiating or revising training programmes; improving teaching facilities and preparing requests to external finance agencies for assistance; promoting post-graduate training activities; developing research activities; and helping teaching personnel to follow further training abroad through the fellowships programme.

During the same period an extensive programme of training was conducted through short courses. With a view to a unified approach for the Region, the Organization prepared and distributed a manual of operations. The participating universities were responsible for organizing the courses and for the greater part of the teaching programme. The Organization assisted in both the organization of courses and the teaching, and provided teaching materials and approximately half the costs; financial assistance was also given by the Organization of American States. The universities that took part responded with an enthusiasm that exceeded all expectations: in 1966, sixty-nine such courses were organized, as compared with three in 1963.

A technical manual was prepared for each course giving in detail the material for the classes. These manuals were distributed to the participants during the course and sent to sanitary engineering institutions in the country and abroad; they constituted an important contribution to the technical literature of the Region.

The earlier courses were concerned principally with water supplies—the main sanitary engineering problem of the Region. As the programmes expanded, however, courses were held on subjects ranging from sanitary aspects of housing, occupational hygiene, sewage and wastes disposal and control of water pollution, to the use of digital computers and maintenance of hospital
equipment. During the period under review some 2300 persons received training in this way.

The Organization contributed an average of US$ 2900 per course. The subsidies granted to the schools of engineering were used mainly for supplementing the salaries of the local lecturers, co-ordinators and auxiliary personnel; to help cover the production costs of the technical manuals; and to improve the library, laboratory, or printing and reproduction facilities.

The machinery established for the training programme, and the network of co-operating universities, greatly facilitated the promotion of applied research. In 1966 four sanitary engineering research projects began: one in Brazil, one in Colombia and two in Mexico. With the assistance of the United Nations Development Programme, further projects have been developed in which provision is made to equip laboratories to provide services, promote training and conduct research, using the permanent staff of four universities in Venezuela and one institute of sanitary engineering in the state of Guanabara, Brazil. The main emphasis is on academic training in sanitary engineering.

In addition to the assistance of the United Nations Development Programme and the Organization of American States, support has been given by the Inter-American Development Bank and the W. K. Kellogg Foundation. In collaboration with the latter, the Organization has developed a four-year programme for teaching the engineering aspects of water fluoridation techniques. Twenty-three courses are to be given in this field, beginning in 1967.

The regional approach adopted has made it possible at relatively low cost to stimulate a great number of national sanitary authorities, universities and schools of engineering in the Region to take part in much-needed programmes for sanitary engineering training and research.
CHAPTER 16

SOUTH-EAST ASIA REGION

Progress in planning and development in countries of the South-East Asia Region has been accompanied by increasing requirements for national personnel, and much of the Organization’s activity during the period under review was devoted to promoting and accelerating the education and training of all categories of staff, from auxiliary to post-graduate.

Specialized disease campaigns are slowly giving way to an expansion of basic health services. The aim is to begin by providing the minimum service at the village level, and to increase these services steadily to the greatest extent possible, taking care that supervisory services at the district level, which are also still very weak, are strengthened so as to provide the necessary link between the village and the centre. The support and strengthening of integrated district or provincial supervisory health services have therefore received more attention, with respect both to decentralization of authority and the guidance of day-to-day operations.

WHO was able to participate more widely in the development of long-term national plans for basic health services, which included extensive training programmes. Assistance has been given to the faculties of the National Institute of Health Administration and Education in New Delhi and to the Asian Institute for Economic Development and Planning in Bangkok, where general and short courses were held to prepare administrators in planning techniques and public health administration (see page 123).

WHO has increasingly become involved in operational research in connexion with the definition of functions of different categories of health personnel.

Communicable Diseases

Although some progress was made in building up basic health services in support of control or eradication programmes, the notification of communicable diseases remained incomplete, and even the proper utilization of the sources of information that are available, such as hospital statistics, is yet to be fully developed.

The lack of nation-wide basic health services, and the involved logistics of storage and distribution of drugs, biological substances and other reagents have also hindered the prevention of such communicable diseases as diphtheria and tetanus.

Assistance to malaria eradication programmes, in collaboration with the United States Agency for International Development (AID) and UNICEF, has continued. The programme in India made further progress. Epidemiological studies in Afghanistan revealed that some areas previously believed to be free from transmission were malarious; this necessitated the inclusion of an additional population of over one million in the eradication programme. WHO assisted independent assessment of the programmes in Afghanistan and India. In Nepal new areas have been brought under attack and in Thailand advances have been made in both attack and consolidation phases. In Ceylon, scattered foci of resurgent malaria suggested defects in the surveillance mechanism, which has been under study. Administrative and economic difficulties hampered the progress of the planned programme in Indonesia. A study was started on the feasibility of interrupting transmission by residual spraying in the Maldives.

Gastro-intestinal diseases have continued as the major cause of morbidity and mortality. Two large endemic foci of cholera still exist in the Region. The resurgence and spread of cholera and of cholera El Tor have created a new awareness of the urgent necessity for effective measures to control and confine this disease. To this end, assistance was given to countries in defining endemic areas, in undertaking control measures and treatment, and in training staff. An inter-regional course on cholera control was held during the year in Calcutta (see page 30), and a regional course was held in Hyderabad in July. Assistance was also given to countries to enable them to improve the production, storage and distribution of rehydration fluids for the treatment of cholera and gastro-enteritis.

Several countries have made further progress in vaccine production. Assistance was given in the production of diphtheria and tetanus toxoids, and freeze-dried smallpox vaccine, in Burma, India and Indonesia; of pertussis vaccine in India and Indonesia; and of freeze-dried BCG and oral poliomyelitis vaccine in India. Although the production targets have not yet been achieved, India and Thailand
are meeting a third of their own needs in smallpox vaccine. WHO also assisted countries in establishing biological standardization and quality control of the vaccines.

Contact was maintained with several collaborating institutes and laboratories with regard to diseases of national and international importance, including influenza, cholera, plague, encephalitis, poliomyelitis and mosquito-borne haemorrhagic fever. Limited multipurpose serological surveys have been started in Burma, India and Mongolia to determine the existence or otherwise of antibodies to several bacterial and virus diseases.

Following the recommendations contained in the eighth report of the Expert Committee on Tuberculosis, direct BCG vaccination (that is, without prior tuberculin test) of the most susceptible groups is now generally accepted and is being used in all countries of the Region. In Nepal, for example, direct BCG vaccination was adopted as a routine among the schoolchildren of the Kathmandu Valley, and as part of the vaccination work now integrated into, and carried out by, the maternal and child health services. In Afghanistan, most of the maternal and child health centres in Kabul have adopted direct BCG vaccination.

Bacteriological detection of cases and their ambulatory treatment, with radiological examination for the diagnosis of referred cases only, are now generally considered to be the sound epidemiological approach to tuberculosis control, and were the basis of several country projects. In Burma, in the Greater Rangoon area, an integrated tuberculosis case-finding and ambulatory treatment programme has been well developed, and a similar programme was started in Mandalay. Assistance to a provincial tuberculosis control programme started in Ceylon: bacteriological case-finding and ambulatory treatment of detected cases are undertaken at peripheral health centres. The programmes in India and in Thailand (in Bangkok) were continued.

Advice was given to countries in estimating their requirements for a smallpox eradication programme. Assistance with leprosy control was continued (see also page 122).

Health Laboratory Services and Health Statistics

Although there has been some improvement, national health laboratory services continue to be a weak element in the health services. WHO has assisted in the development of laboratories in almost all the countries of the Region. The technical discussions on "Health laboratory services" held during the nineteenth session of the Regional Committee may well give impetus to further development in this field.

Many relatively effective systems of hospital statistics and records have been developed with WHO assistance, but inadequacies in the collection, recording and purposeful analysis of vital statistics and statistical data on communicable diseases continue to be a serious drawback in health planning and administration and the operation of realistic preventive measures.

Environmental Health

Promotion of community water supply and sewage disposal systems in urban programmes received high priority. In addition to providing five countries with sanitary engineers, WHO assisted Afghanistan, Ceylon, India, Nepal and Thailand to review the technical schemes prepared by their respective governments for local financing or for assistance from international financing agencies, and where required helped them to prepare requests for such assistance. An example of co-operation between the United Nations Development Programme and WHO is the newly-established Calcutta Metropolitan Water and Sanitation Authority, mentioned on page 64. Preliminary studies of environmental sanitation problems in Mongolia have been undertaken.

WHO advised UNICEF on the supply of materials and equipment for a number of rural water supply schemes promoted by WHO in Afghanistan, Ceylon, India, Nepal and Thailand to review the technical schemes prepared by their respective governments for local financing or for assistance from international financing agencies, and where required helped them to prepare requests for such assistance. An example of co-operation between the United Nations Development Programme and WHO is the newly-established Calcutta Metropolitan Water and Sanitation Authority, mentioned on page 64. Preliminary studies of environmental sanitation problems in Mongolia have been undertaken.

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**Nursing**

WHO has maintained its assistance in the establishment and strengthening of nursing divisions in health directorates, in the overall development of sound nursing services and, particularly, in post-basic and post-graduate nursing education. The definition of the various categories of nursing personnel and of the functions of nurses and nursing auxiliaries has been facilitated, the preparation of suitable curricula for all levels of training has been assisted and interest has been created in nursing legislation.

Member countries have been helped in their efforts to improve auxiliary, basic and post-basic nursing education. Auxiliary nursing schools were further developed in most of the countries of the Region. Post-basic courses at the certificate or degree level were supported in four countries, and further assistance was given to hospital schools of nursing in five. Assistance was also given in the development of organized short courses for nurses and in the establishment of in-service programmes for nursing personnel, and plans were made for such assistance to be considerably expanded.

Following the completion of the curriculum guide to accompany the revised syllabi for nursing and midwifery training in India (described in the Annual Report for 1965), working groups (“workshops”) were organized in five cities in India to discuss the implementation of these syllabi. These activities have promoted interest in a wide range of problems related to nursing education.

**Maternal and Child Health**

Although much attention has been given in national development programmes to planning services for mothers and children, and the importance of the social and preventive aspects of the teaching of paediatrics and obstetrics is now better recognized by medical schools, the problem of reaching the vulnerable pre-school age group will not be solved until there is effective coverage by basic health services ministering to the whole family, with well-organized home-visiting programmes. In WHO-assisted projects in Afghanistan, Mongolia and Nepal, the emphasis was still on the development of maternal and child care, integrated into the general health services.

WHO also continued to promote the provision of health care in schools and colleges through the general health services, with the emphasis on immunization, environmental sanitation and safe water supplies, and effective referral systems. School-teachers are now taking more responsibility for screening pupils (see below).

**Health Education**

The principle that health education is the responsibility of all health workers, trained and guided by professional health educators, is now widely accepted. In preparation for an inter-country meeting in 1967 on the methodology, planning, implementation and evaluation of health education, working groups of health administrators, teachers and health education specialists were set up in most of the countries of the Region to study existing health education services and practices, and to make suggestions on problems to be considered at the meeting.

WHO has stressed the key position of school-teachers in health education, and has collaborated with UNESCO in introducing health education into schools and teacher-training establishments. For example, health education has been included in teacher-training programmes in Afghanistan and in India.

Wider facilities for training health education specialists within the Region, notably in India and Thailand, have now been provided.

**Radiation Health**

Advice was provided by WHO on the legislative and administrative requirements for the establishment of a division of radiation protection in the Ministry of Public Health in Thailand. The New Zealand Government provided fellowships under the Colombo Plan for the training of key staff in support of this activity.

Radiography tutors have been assigned to assist schools of radiography in Afghanistan and Thailand; similar assistance to India has been planned. A specialist in electro-medical techniques and equipment assisted the development of a school for electro-medical technicians in Indonesia. Following an agreement between the International Atomic Energy Agency and Afghanistan on the supply of therapeutic irradiation equipment, WHO advised the Government of Afghanistan on the feasibility and requirements of a radiotherapy centre for Kabul.

Assistance was continued to a training course in radiation physics at the Atomic Energy Establishment in Trombay, India, and was also given for two radiation protection courses in Ceylon.

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1 See *Off. Rec. Wild Hlth Org.* 147, 116.
Medical Education

There is a growing awareness that post-graduate education to produce the specialists and teachers needed to remedy the severe shortage of experienced medical teachers must very largely be provided in national centres. In Thailand, the Bangkok Faculty of Medical Sciences is designed to undertake undergraduate and post-graduate teaching in the basic medical sciences, with the aim of producing eventually the teachers so badly needed in these non-clinical fields. In India, it is planned to establish three more university institutes of basic medical sciences (in addition to the one already existing in Calcutta) at Madras, Bombay and Chandigarh. Progress has also been made in India towards the establishment of six new post-graduate institutes to provide opportunities for a higher level of post-graduate study.

In view of the difficulty of recruiting medical teachers to work for long periods away from their substantive posts, a new programme was started; teams of WHO teachers in various disciplines are assigned to individual medical schools for short periods of up to three months. The members of the teams, usually three, assist in strengthening their departments and also, collectively, promote the introduction of improved teaching methods. In its initial stages this programme has met with some success, but it is as yet too early for assessment. It is envisaged that the team visits should be repeated for the same medical schools in subsequent years.

WHO assistance to the medical education project in Gujarat state, India, is reported in some detail on page 122. In addition, short meetings of working groups on teaching methodology and medical education were held in Rangoon and Bangkok, and a seminar on the teaching of preventive and social medicine took place in Colombo.

Assistance was given to the Government of India’s Curriculum Committee on the Undergraduate Teaching of Psychiatry. Teaching of psychiatry to undergraduates has been making some headway in a few medical colleges in India, and the University of Ceylon has established a chair of psychiatry.

Quality Control of Pharmaceuticals

To help to meet the need to control the quality of drugs, both imported and locally manufactured, WHO has provided Ceylon with advice on setting up a drug quality control laboratory, and on the administration of medical stores and pharmaceutical services. In India, where an organization for drug control is already in existence, a programme for further strengthening drug control laboratories is being initiated.

Co-operation with other Organizations

Close contact was maintained with the resident representatives of the United Nations Development Programme. Co-operation in sanitation projects financed under the Special Fund component of the Programme is mentioned above (see page 117).

The twenty-second session of the Economic Commission for Asia and the Far East (ECAFE) in New Delhi was attended by representatives of WHO. WHO was also represented at a number of meetings sponsored by ECAFE. WHO assistance to the teaching faculty of the Asian Institute for Economic Development and Planning was maintained (see page 123). Arrangements were made for the assignment of a WHO team to the ECAFE-assisted project for development of the Lower Mekong River Basin in the four riparian countries concerned (Cambodia, Laos, Thailand and the Republic of Viet-Nam).

Continued collaboration with UNICEF included work connected with the Asian Conference on Children and Youth in National Planning and Development, held in Bangkok (see page 124).

WHO has collaborated with FAO in nutrition programmes, in assistance to drought-affected areas in India, and in projects for irrigation development (see page 117). Advice was also given on priorities for assistance under the World Food Programme. In co-operation with UNESCO, WHO has assisted in the introduction of health education into general education projects (see page 118).

Co-operation was continued with the local branches of non-governmental organizations in official relations with WHO. Three of them held their international conferences in the Region during the year: WHO participated in the Eleventh General Assembly of the International Council of Scientific Unions held in Bombay, in January, and in the Fifth World Congress of Cardiology, sponsored by the International Society of Cardiology in New Delhi in November. The Third World Conference on Medical Education, also held in New Delhi in November, was sponsored by WHO, PAHO and the World Medical Association (see page 74).

Co-operation with the United States Agency for International Development (AID) in malaria eradication programmes in India, Nepal and Thailand was maintained. WHO continued its assistance to the Indo-Norwegian health project in Kerala state, India, a project which has now been completed. There was further co-operation with the Indian Aid Mission in Nepal. WHO advised representatives of the Netherlands Government on bilateral assistance to India.
A number of fellowships under the Colombo Plan were linked to health projects in which WHO was giving assistance.

WHO and the Ford Foundation continued to cooperate in providing assistance to the Indian National Institute of Health Administration and Education. Discussions were also held on the Rockefeller Foundation's plans for supporting the research programme of the Asian Institute for Economic Development and Planning, Bangkok, and on the assistance to training of nurses at the All-India Institute of Medical Sciences, New Delhi. Fruitful collaboration with the Danish Save the Children Organization in a jointly assisted leprosy control project in India was continued.

The Regional Committee

The Regional Committee held its nineteenth session in New Delhi from 27 September to 3 October 1966. Representatives of eight of the nine Member countries in the Region were present.

The session was attended by representatives of the United Nations, the United Nations Development Programme, UNICEF, FAO, UNESCO and twelve non-governmental organizations in official relations with WHO, as well as by observers from the Ford and Rockefeller Foundations. The Director-General was represented by an Assistant Director-General. The Prime Minister of India, Mrs Indira Gandhi, inaugurated the session, and the Union Minister of Health and Family Planning, Dr Sushila Nayar, also addressed the opening meeting.

The Committee reviewed the Regional Director's eighteenth annual report on WHO's work in the Region—from 1 August 1965 to 1 August 1966—and approved for transmission to the Director-General the proposed programme and budget estimates for the Region for 1968, which were examined both by a special sub-committee and in plenary session.

In the discussions on the annual report, particular attention was paid to the serious financial difficulties still hampering major advances in the Region. The progress made by governments in developing long-term plans for health services, despite these difficulties, was noted. The Regional Committee gave special attention to the planning of health services, and recommended that WHO should organize a seminar on the manpower requirements of the health services and the utilization of health personnel.

The severe shortage of all categories of health personnel, and the need to establish standards for certain categories and to induce trained personnel to work in rural areas, were among the problems raised. Associated with these problems was the continued shortage of medical teachers; the value of international assistance in post-graduate training was endorsed. The Regional Committee recorded its appreciation of the establishment of the WHO Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training. It was urged that WHO should assist in providing cheap textbooks. The training of health education personnel was also discussed.

It was agreed that communicable disease control and eradication remained problems of overwhelming importance to the Region. The Committee welcomed the adoption by the Nineteenth World Health Assembly of resolution WHA19.16, which would lead to an intensification of the smallpox eradication programmes. The Committee recommended that a study should be made on the measurement of the socio-economic benefits derived from control and eradication programmes. It also considered the assessment of malaria eradication programmes. The need for greater efforts to develop epidemiological and statistical services was emphasized: the reporting and recording of health activities, with special attention to the simplification of the forms in use, was one of the aspects considered.

The Committee urged Member countries to achieve self-sufficiency in the production of materials necessary for control programmes, including vaccines, and stressed the need for WHO's help in developing national laboratories for the quality control of drugs.

In considering resolution WHA19.43 of the Nineteenth World Health Assembly, on the health aspects of world population problems, the Committee asked the Regional Director to explore the possibilities of providing and maintaining maximum assistance for expanding basic health services and strengthening maternal and child health services, to promote training facilities, and to encourage research programmes in neglected areas.

An amendment to the Rules of Procedure of the Regional Committee was adopted, providing for advance notification to Member governments of the names of candidates for the post of Regional Director. Regional representation on the Executive Board was also studied, and a resolution was approved recommending that governments in the Region propose to the Assembly that each region should be represented by at least three Members.

The technical discussions on "Health laboratory services" gave rise to useful recommendations and conclusions. "Maternal and child health, with special
LEPROSY CONTROL IN MEXICO

In Mexico a national leprosy control programme, using modern methods and techniques, is being developed with assistance from UNICEF and technical advice from the Pan American Health Organization.

1. A leprosy patient is given an intramuscular injection of DDS (diphenylsulfone) in the health centre at Celaya, in the State of Guanajuato.

2. A doctor takes the clinical history of a leprosy patient at the centre.

3. The doctor prescribes DDS tablets and explains to a patient how they should be taken.

4. Case-finding is carried out at health centres and by mobile units. Examination for symptoms of leprosy during regular house-to-house visits in a village.
GHANA

In the Accra-Tema programme, assistance is being given to the recently established Ghana Water Supply and Sewerage Corporation during the first two years of its operation.

1. The entrance to the Accra reservoir site, showing the excavation for the delivery main, and steel pipes ready for laying.
2. Welding steel pipes for the delivery main.
3. Application of a bituminous coating to steel pipes as a protection from corrosion.

COMMUNITY WATER SUPPLY PROGRAMME

WHO action for the improvement of community water supplies includes assistance to Member States in the planning of long-term programmes, in dealing with the problem of their financing, and in training personnel. The water supply and sewerage schemes for the metropolitan areas of Accra-Tema and Calcutta are among those receiving assistance from the Special Fund component of the United Nations Development Programme, with WHO as executing agency.

INDIA

Assistance given to the new Calcutta Metropolitan Water and Sanitation Authority during its first two years will include engineering and training aspects.

4. An Indian drilling crew, with the assistance of a WHO expert, explores groundwater resources.
5. A successful well-drilling operation.
6. An elevated tank under construction for the improved metropolitan water supply.

AFGHANISTAN

In Darogai, Paktia Province, the villagers are participating in the installation of their community water supply, which will play a vital role in the development of rural health services.

7. Loading sand and gravel into trucks supplied by UNICEF for transport to a nearby worksite.
8 and 9. The pipes which will carry water to the village are unloaded and laid beside the trench.
NUTRITIONAL REHABILITATION CENTRES IN COLOMBIA

In areas where protein-calorie malnutrition of young children is prevalent, the Organization is encouraging the establishment of nutritional rehabilitation centres, where under-nourished children are given a specially enriched diet and where their mothers are taught to make the best use of the local foodstuffs.

1 and 2. A child suffering from malnutrition is examined on admission to a nutritional rehabilitation centre at Pereira, Colombia.

3. Treatment at the centre soon restores the children to health. After discharge, they receive supplementary milk rations and are visited regularly by a member of the centre's staff.

MALARIA ERADICATION IN BRAZIL

In the malaria eradication programme in Brazil, new areas entered the attack phase during the year.

A spraying squad embarks, for house-to-house spraying operations in Bahia State.

A surveillance agent takes a blood slide during routine house-to-house surveillance operations.

Mixing the insecticide for use in a compression sprayer.
reference to its integration into the general health services” was selected as the topic for the discussions in 1967.

It was confirmed that the twentieth session would take place in Ulan Bator in August 1967, at the invitation of the Government of Mongolia. The Regional Committee decided to hold its twenty-first session in New Delhi in September 1968.

Some Aspects of Work in the Region

A list of projects current during the year will be found in Part III. The following have been selected for fuller description.

Institute of Public Health, Kabul

In 1956 the Government of Afghanistan decided to establish, as an integral part of its health development plan, an Institute of Public Health in Kabul, for investigatory and advisory services and for the training of health workers. It had been recognized that it was important to identify and define the epidemiological patterns of the prevailing mortality and morbidity, due mainly to communicable diseases. Moreover, while a number of institutions for training professional and auxiliary health personnel had already been developed with the help of WHO, the further extension and co-ordination of training were necessary to help to produce the staff required for health programmes throughout the country.

These objectives and the organization of the Institute were discussed and a programme of development was evolved with WHO assistance. The Institute’s building, with extensive accommodation for its varied functions, was completed by the end of 1962. Since 1963 WHO has assigned a public health officer, a microbiologist, a laboratory technician, a statistician/epidemiologist, and a sanitary engineer to the Institute. UNICEF has provided laboratory equipment and supplies, teaching equipment, library books and periodicals, and transport. Thirteen fellowships—four to study the organization of public health institutes, four in epidemiology and health statistics, four in laboratory services and one for a medical librarian—have been awarded to the Institute’s staff by WHO in the past five years.

The following departments or sections of the Institute were developed with the help of WHO: public health administration; microbiology (covering bacteriology, serology, haematology, parasitology and entomology); biochemistry; epidemiology; and statistics. A blood bank and virological diagnostic services were started under a bilateral agreement with the Federal Republic of Germany, and WHO assisted in co-ordinating their development with the overall development of the Institute. In addition the health education section and the school for sanitarians, which are being assisted by WHO under two other projects, are located in the Institute.

In the microbiology department, methods and procedures for isolation of enteropathogens (salmonella, shigella, cholera) were established. The cholera El Tor strain was, for example, identified during the 1965 cholera outbreak. Laboratory support was given to surveys of diphtheria and other respiratory infections carried out by the epidemiological section. Serological examinations for enteric infections and treponematoses were made. Tuberculosis culture work was started in association with the Chaman Tuberculosis Centre, and a survey of resistance of tuberculosis agents to drugs was initiated. A preliminary study of provincial health laboratory facilities and of their requirements was undertaken, and the Institute, which is to be a central reference laboratory, is to help in developing health laboratories at the provincial and peripheral levels.

In addition to assisting in epidemiological surveys, the epidemiological and statistical sections were engaged in improving statistical returns from in-patient and out-patient departments of hospitals, and devised a practicable notification system for communicable diseases. A hospital records and reports system was also designed.

The WHO sanitary engineer has advised on the syllabi of courses for sanitarians given at the Institute, which also conducts orientation courses in public health for doctors and for auxiliary health personnel who are to work in rural health services, courses for laboratory assistants and technicians, and refresher courses for vaccinators. The latter include training in health education, as do the courses for sanitarians.

Instruction in sanitary engineering was given to civil engineering students at the University of Kabul by the WHO sanitary engineer, who co-operated closely with the Central Authority for Housing and Town Planning (established in Kabul with assistance from the Special Fund component of the United Nations Development Programme), the Faculty of Civil Engineering at the University of Kabul, and the municipal health authorities of Kabul.

Advice was provided on the organization of the Institute’s library, and a fellowship was awarded for training the librarian.
The Institute is still in a formative stage and is only beginning to make a contribution to the health of the people. As experience is gained and more national staff are trained to work in the various sections of the Institute, it should be possible to expand considerably its epidemiological support to the health services. Its activities are related to the work being done in several other projects assisted by WHO, covering rural health services, provincial maternal and child health services, environmental health, malaria eradication, communicable diseases, tuberculosis advisory services and health education.

Leprosy Control, Burma

Leprosy is widespread throughout Burma, as confirmed by a WHO survey in 1951, and about 20 per cent. of the cases are lepromatous. A central leprosy clinic, the Special Skin Clinic, was established in Rangoon in that year. In 1952 a WHO leprologist was assigned for two years to assist in launching a national leprosy control programme, with transport, equipment and drugs provided by UNICEF.

The programme is based on ambulatory treatment of cases in rural areas, domiciliary visits to examine contacts of known cases, school surveys, and a survey of the entire population of the villages once in three years. This last feature of the programme has proved successful in securing early detection of cases.

In 1952 only 4600 leprosy patients were registered in Burma. By 1960 the programme was operating in three pilot districts, and was then greatly accelerated as a result of the experience gained. WHO assigned two leprologists to the project; one was withdrawn on termination of contract in 1962, but a second leprologist was again provided in 1963. By 1961 there were 77,815 registered cases, of which 67,413 were under treatment. In 1963 a WHO leprosy advisory team estimated that 30 per cent. of the cases in the surveyed areas were yet to be detected.

By the end of 1965 the programme had covered an estimated population of 9.8 million in 27,268 villages, out of 15.7 million in all areas of high endemicity. Early in 1966 the total number of persons under treatment was 144,670, of whom 136,737 were from the project areas, and the control programme was in operation in thirty-six districts. By 1968 all the forty-eight districts where leprosy is endemic should be covered, with the number of leprosy patients registered rising to about 250,000.

By planned training, the national staff was increased to 39 team leaders, 99 leprosy inspectors and assistant leprosy inspectors, 435 leprosy auxiliaries, and 45 laboratory assistants and laboratory attendants. A twelve-month fellowship was awarded to a national medical officer in December 1963, for the study of reconstructive surgery in leprosy in India.

This project is also being assisted by three voluntary agencies (the Order of Malta, Emmäus Suisse, and Deutsches Hilfswerk für Aussätzige), which made grants totalling $150,000 over a five-year period, in collaboration with WHO, to help to cover the salaries of additional auxiliary health workers needed for the intensification of the programme.

Medical Education, Gujarat State, India

The aim of this project is to improve undergraduate and post-graduate teaching in Baroda Medical College. WHO, in agreement with the Faculty of Medicine of the University of Edinburgh, undertook to assign senior teaching staff to the College for a total period of six years. The first team started work in mid-1963: since then, twenty-one teachers, of physiology, biochemistry, microbiology, preventive and social medicine, hospital administration, surgery, internal medicine, obstetrics and gynaecology, paediatrics, psychiatry and psychological medicine, orthopaedics, anaesthesiology, radiology, and clinical chemistry, as well as three laboratory technicians and one X-ray technician, have been successively assigned. A team of teachers in different basic and clinical disciplines has therefore always been present in Baroda.

Provision is made for heads of department of the Faculty of Medicine at Edinburgh to visit Baroda from time to time and assess progress in the various departments: nine advisers have been provided for periods of between three weeks and three months. WHO also awarded fellowships to enable faculty members from Baroda to go to Edinburgh for training.

The visiting teachers work as a team, with one designated as team leader, in close co-operation with national counterparts. They participate in undergraduate and post-graduate teaching activities, and advise on the strengthening of teaching and research in the respective departments. Emphasis is laid on the use of modern teaching methods and integrated instruction for undergraduates, rather than on the formal lecture. A course of lectures was introduced into the clinical part of the curriculum, in which all clinical and paraclinical disciplines participate, and in which the preventive aspects of modern medicine are emphasized. This has resulted in a reduction of almost a third in the number of formal lectures and in more ward teaching; junior staff are given practical and bedside teaching.

Post-graduate training in various specialties has also been improved. A committee was formed to advise
on improvements in training, and a number of research projects were started as part of the training.

Rural and urban public health centres used as training areas have been improved. A primary health centre in Padra village, which is attached to the College as a rural training area, to give consultant services and to guide the students, is visited periodically. The maternal and child health service of Baroda Municipality has benefited by association with the departments of paediatrics and obstetrics, and is used for training.

Interdepartmental collaboration was promoted by arranging for seminars and clinical conferences; for the professors to participate in a committee on therapy; for new tests to be introduced in the services offered by paraclinical departments; and for the paediatricians to give neonatal services in the obstetrics department.

Departments of microbiology and clinical chemistry were established, and preparations for a department of biochemistry are under way. A psychiatric department, with a ward of twelve beds and out-patient facilities, was established.

With regard to the improvement of physical facilities, advice was given on the plans for two new buildings—a paediatric wing and a surgical block—including the layout and technical installations. A design was prepared for a radiology department, incorporated in the surgical block. Plans were drawn up for a central sterile supplies department and for a rehydration centre in the department of paediatrics.

Advice was given on hospital administration. A medical records system was introduced and equipment for its services supplied.

WHO also provided some supplies and equipment for the teaching laboratories and research, and a considerable number of reference books and subscriptions to medical journals.

Asian Institute for Economic Development and Planning, Bangkok

WHO has increasingly laid stress on integrating plans for health development into overall national plans for economic and social development: planning in each sector must be related to the other sectors, and general and public health administrators must be well acquainted with the basic concepts and techniques of social planning for economic development. The Organization therefore provided the Asian Institute for Economic Development and Planning with an adviser on health administration and planning, as one of the members of its Faculty, from the very start of its activities in January 1964. The Institute serves as a development staff college for the ECAFE region, with training, research, and advisory responsibilities.

The Institute is financed by the Special Fund component of the United Nations Development Programme and by twenty-eight governments, twenty-two of which are in the ECAFE region. ECAFE is the executing agency for the project, assisted by UNICEF, ILO, FAO, UNESCO, the International Monetary Fund, and the International Bank for Reconstruction and Development, as well as the Ford Foundation.

The training at the Institute covers a variety of subjects, including economic development, planning techniques, problems relating to fiscal and monetary policy, agriculture and transport planning, project appraisal, and social planning, including planning for education and health. Considerable emphasis is placed on the understanding of social problems in fields such as health, housing, environmental sanitation, education and community development—social problems which are closely linked with (and the solution of which is dependent on the solution of) the basic economic problems. Throughout, the following aspects of health in planning for social and economic development have been stressed: the role of health promotion in a developing community; health sector strategy in social development; health considerations in agricultural development; and health planning for rural and urban areas. All these aspects are illustrated by examples from the Member countries, and by their experience.

General and advanced courses are conducted annually at the Institute, and short courses at country level have so far been held in China (Taiwan), Indonesia, Iran, Singapore and Thailand. In addition, field study tours have been organized for the trainees in Australia, China (Taiwan), Japan and Singapore under WHO leadership. From 1964 until the end of 1966, about 425 trainees had received instruction at the Institute. WHO has emphasized that important social and economic values can be derived from paying due regard, in development planning, to measures benefiting health.

In addition to its teaching activities, the Institute has started a programme of research. This includes a country-by-country study of development and of the
problems and techniques of planning, with a view to supporting a teaching programme closely related to the specific needs of economic development in Asia. Preparations are also being made for a short course in health planning suited to the needs of senior health administrators with planning responsibilities.

Early in 1966, WHO assisted in the planning and conduct of the Asian Conference on Children and Youth in National Planning and Development which was held in Bangkok in March, and sponsored by UNICEF, ECAFE and the Institute.

The development of the Institute's advisory functions will depend to a large extent on the success of the research programme.

During the first three years' work of the Institute, it has become evident that there is abundant need for the training it offers and the research it is carrying out, to enable Asian countries to exploit their available resources and to organize their development with skill and with understanding of modern technology, which implies careful planning in the economic, social and health fields.
CHAPTER 17

EUROPEAN REGION

The different stages of development of the health services in the various countries of the Region and the diversity of their health problems have again made it necessary for the Organization's assistance to be provided through a wide range of activities.

Tuberculosis remains an important public health problem in most countries. While the mortality rate shows a general decline, the number of new cases and relapses recorded each year is still high, and in some countries tuberculosis control work has been slow to give the expected results. These problems were discussed at a meeting on tuberculosis control held in Copenhagen in May, when participants from twenty-two countries in the Region considered ways of improving tuberculosis control through the use of epidemiological methods and the application of the latest knowledge concerning means of prevention, diagnosis and treatment.

With a view to improving the accuracy and comparability of tuberculosis morbidity data, a WHO-assisted long-term regional study on the effectiveness of tuberculosis control services was started during the year. The Organization also continued to assist countries in carrying out tuberculosis control programmes—for example, Poland and Turkey. The WHO-assisted study on tuberculosis epidemiology and control in Czechoslovakia is described on page 129.

Chronic and Degenerative Diseases

Special attention has been paid to work on chronic and degenerative diseases and, in particular, to the co-ordination of efforts to control cardiovascular diseases. A meeting was held in London in June to review the study on the prevalence of ischaemic heart disease, in which a number of countries in the Region have been collaborating with WHO for several years. The methodology used in this study since 1963 was evaluated from the point of view of international comparability, and the findings were discussed in relation to differences in disease rates in different countries. Future plans were also reviewed.

The Organization has continued its efforts to develop suitable methods for use in studies on the prevalence of chronic rheumatoid arthritis so as to ensure comparability of the results obtained in different countries, and in this connexion a working group met in Copenhagen in September. It urged that efforts be continued to establish standard criteria, that training facilities for staff be further developed, preferably at a single centre, and that a suitable data-processing centre be found to collaborate with existing survey centres. It also approved a standardized form for the submission of data.

Development of Public Health Services

Economic considerations must be taken into account in the planning of integrated health services, and WHO can play a useful part in promoting an understanding of the role of the economist in health planning, and in training medical health planners to think in economic as well as technical terms. In this connexion, a symposium on the efficiency of medical care was organized in Copenhagen in July. Research workers and senior public health officials from fifteen countries in the Region discussed economic problems relating to public health, and a number of countries have since taken steps to implement the proposals made at the symposium.

The Organization continued to provide assistance to governments in the improvement of their public health services. The effectiveness of co-ordinated public health activities has been demonstrated in a number of projects. Good progress has been made in the integrated multidisciplinary public health project in Algeria, for example, where the team supplied by WHO was strengthened during the year by the inclusion of a specialist in maternal and child health, and a nurse midwife.

In Turkey also good results have been achieved in a similar project for the development of health services and training of personnel. Progress has been made in the integration of the malaria eradication programme into the public health services, preparations have been made for the integration of other specialized services, and maternal and child health services have been established in the province of Muş. A demonstration area set up at Etimesgut will serve to train personnel to run the nationalized health services in the provinces.

The training of staff constitutes an important aspect of the programme for the development of public
health services in Morocco, where WHO has continued to provide assistance in nursing education (see page 130) and in the training of health auxiliaries. These activities have been closely co-ordinated with the malaria pre-eradication programme.

Reliable statistical data are essential for the planning and evaluation of health services, and WHO has continued to promote the development of health statistical methodology and to provide assistance to a number of countries in the Region in advanced training in health statistics. It also organized a regional symposium on the use of electronic computers in health statistics and medical research, held in Stockholm in June (see page 128).

With the rapid growth of universities and similar institutions in Europe, problems of medical care and social welfare of students have arisen, and these are often accentuated by the large number of foreign students in the Region. With a view to considering some of these problems, WHO organized a regional symposium on student health services in Cracow during April. Participants discussed the structure of the health services already available to students—which vary considerably in the different countries. They considered various health problems of students, including the treatment of long-term disorders; sports medicine and the promotion of physical health; and, in particular, mental health.

Environmental Health

Environmental health again retained an important place in the work of WHO in the Region, and emphasis was laid on the control of environmental pollution. In October WHO organized a conference in Budapest on water pollution control, in order to discuss the application to specific problems in Europe of the recommendations 1 made by an expert committee in 1965, and to review recent developments. Participants from twenty countries in the Region discussed such subjects as the regional planning of water pollution control and the organization of authorities to administer complete control programmes for a river basin or region; quality standards of raw water in relation to its intended use; the treatment of waste waters, its limitations and its significance for public health aspects of water pollution; demography, industrialization, agriculture and recreation, and their interdependence with water pollution.

The Organization provided assistance for some twenty projects in the Region in connexion with air and water pollution control, sewage treatment, sanitation, and the training of personnel; examples are the projects for community water supply and environmental sanitation in Algeria and those for water pollution control and environmental sanitation in Morocco. The projects being carried out with the assistance of the Special Fund component of the United Nations Development Programme in Malta (for wastes disposal and water supply) and Turkey (for water supply and sewerage for the city of Istanbul and surrounding area) are described on page 64. The Organization is also executing agency for a project in Poland, assisted by the Special Fund component of the United Nations Development Programme, for the protection of river waters against pollution. This project was started in February. Under a national scheme for water economy and control, studies and research work are being carried out to combat pollution of the Oder and Vistula rivers in the south-west of Poland. Pilot purification plants are being established for combined treatment of municipal and industrial wastes, for perfecting methods of salt extraction from mine water, and for the elimination of damage caused by heated effluents from thermal power plants and industries. The project includes the provision of training.

Education and Training

Education and training activities continued to form a major part of the Organization's work in the Region. Increased assistance was given to teaching institutions in various countries through the provision of teaching staff, the review of teaching programmes and the training of teachers.

A symposium on the education of the public health physician in relation to his work in the community was organized by WHO in Lisbon in February. Senior public health officials and teaching staff of schools of public health in twenty-four countries in the Region discussed the content and methods of teaching required for post-graduate courses in public health for doctors intending to work as public health specialists.

The international schools of advanced nursing education at Edinburgh and Lyons continued to provide specialized training for nurses from both the European and other regions. At the school at Lyons, opened towards the end of 1965, nine students completed the first year of the two-year course on the administration of nursing education programmes, and at the beginning of the 1966 school year a new course was started for the training of nurses who will be responsible for organizing teaching programmes in public health nursing.

In Algeria, the Organization continued to assist in the planning and organization of training for medical

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assistants, and a study is being made of the possibility of improving and extending the training of middle-level medical personnel.

The number of fellowships for post-graduate studies in the Region was higher than in 1965, about half of them being awarded to fellows from other regions.

As in the past, aid from the Danish Special Contribution to the Technical Assistance component of the United Nations Development Programme enabled WHO to organize courses in various specialized medical and paramedical fields. An example is the course on human genetics for teachers in medical schools, described on page 128. During 1966, 163 fellows from the various regions received training in ten courses.

The first two numbers of an information bulletin on medical education were prepared and distributed to governments, medical schools and other training institutes. It is planned to prepare two issues each year in English, French and Russian.

Collaboration with other Organizations

WHO continued to collaborate in the Region with the United Nations and related agencies—for example, through the United Nations Development Programme, particularly in connexion with environmental health, as in the projects in Malta, Poland and Turkey mentioned above. Another example of co-operation with the United Nations Development Programme was the preparatory work done during the year in connexion with the establishment of a central institute of public health in Bulgaria (see also page 57).

In the field of nutrition, the Organization has maintained close collaboration with FAO and the World Food Programme, and the latter has also been providing support for the WHO-assisted malaria eradication project in Turkey.

Close co-operation was maintained with UNICEF in various programmes for the development of health services (for example, in Algeria, Morocco and Turkey); for the improvement of maternal and child health and social services for children (for example, in Yugoslavia); in the control of tuberculosis (in Turkey) and of communicable eye diseases (in Algeria and Turkey).

In addition, the Organization continued to collaborate with a number of intergovernmental and non-governmental bodies. A case in point was the co-operation with the League of Red Cross Societies in earthquake relief to Turkey (see also page 90).

The Regional Committee

The sixteenth session of the Regional Committee for Europe was held in Rabat, Morocco, from 6 to 10 September 1966. Thirty of the thirty-one active Member States in the Region were represented, as well as the United Nations and the United Nations Development Programme, UNICEF, the International Children's Centre and eleven non-governmental organizations. The Director-General attended the session. H. M. Hassan II, King of Morocco, delivered an address at the opening of the session.

In the discussion on the Regional Director's annual report for the period 1 July 1965 to 30 June 1966, emphasis was placed on work on cardiovascular diseases and on education and training problems. Several representatives considered that the time had come to reorientate the work of the Regional Office, suggesting that activities should be planned ahead for a period longer than one year, and that programmes should be more thoroughly evaluated.

In examining the programme and budget proposals for 1968, the Committee decided that a concentrated effort should be made in the field of research on cardiovascular diseases. It subsequently endorsed the proposals for the programme and budget for 1968 for transmission to the Director-General.

The Committee reviewed the possibilities and limitations of mass treatment of trachoma. It also discussed questions arising from decisions of the Executive Board and the Nineteenth World Health Assembly, and the construction of the future Regional Office premises.

Nominations for the post of Regional Director were considered by the Committee, which proposed the name of a candidate for submission to the Executive Board.

The subject of the technical discussions was "The causes and prevention of perinatal mortality". The Committee confirmed that the subject of the technical discussions at its seventeenth session would be "The pattern of active immunization against communicable diseases in Europe".

The Committee also confirmed that its seventeenth session would be held in Dublin, in September 1967, and accepted the invitation of the Government of Bulgaria to hold the eighteenth session in 1968 in that country.

Finally, the Committee paid tribute to the high quality of the services rendered to the Region by the Regional Director, Dr P. van de Calseyde, and his constant devotion to the interests of the Member States.
Some Aspects of Work in the Region

A list of projects current during the year will be found in Part III. The following have been selected for fuller description.

Courses on Human Genetics for Teachers in Medical Schools, Copenhagen

The importance of genetics as a basic biomedical science and its significance to practical health work were stressed by the Expert Committee on Human Genetics at its meeting in 1962. The Committee also emphasized the necessity of ensuring the best possible teaching in genetics for all students of medicine. This is rendered difficult, however, by the shortage of trained geneticists. As an interim measure WHO has helped to organize courses in human genetics for teachers who are qualified in other branches of medicine and are responsible for the planning and integration of teaching in human genetics in undergraduate medical schools. The main objective is to give paediatricians, ophthalmologists, pathologists and other clinicians an opportunity of developing instruction in human genetics within the medical curriculum. The three courses held were organized in Copenhagen in 1962, 1964 and 1966 in collaboration with the University and with assistance from the Danish Special Contribution to the Technical Assistance component of the United Nations Development Programme. In all, thirty-four teachers have so far attended the courses; they came from thirty-two medical schools in twenty-four countries of all six Regions. Staff of medical schools in many more countries have applied for admission, but the number of fellows has been restricted to ensure efficient instruction. So far the courses have been given in English; but many requests have been received for similar courses in French.

Each course lasted three months and consisted of lectures, group discussions, seminars and laboratory work, including population genetics, cytogenetics, human biochemical genetics, and methods of study in human genetics. Experts from various centres and institutes for human genetics assisted with the instruction, so that fellows had an opportunity to learn about work being carried out in many countries.

The courses have been followed up in various ways. In some countries—Hungary and Turkey, for example—former fellows have organized intensive courses in human genetics with support from WHO. The aim is to create a broader interest in this discipline among staff and authorities of medical schools and universities, to provide the medical profession with information about the subject, and to develop an understanding of the importance of genetics in medicine today. These national courses, for which WHO provided visiting lecturers, have prepared the way for the development of work on population and clinical genetics in the countries concerned. WHO has also supported work in this field by allocating grants to former fellows and their collaborators for further education or practical training.

Since the start of these activities five years ago, work in human genetics has been developed and expanded in some twenty countries. Teaching in the subject has been introduced in training centres where it was not previously part of the curriculum—for example, in medical schools in Poland (at Cracow and Poznan), Yugoslavia (at Ljubljana), and at Bangkok, Manila, Taipei and Teheran.

Symposium on the Use of Electronic Computers in Health Statistics and Medical Research, Stockholm

WHO has given increasing attention during recent years to the potential uses of electronic computers in the field of health. At several regional meetings concerned with epidemiology and health statistics, the implications of the availability of means for electronic data-processing, and the possibilities of applying these new methods have been discussed. In November 1964 WHO sponsored a conference in Copenhagen on the application of automatic data-processing systems in health administration. It was decided to follow up this conference, which was attended mainly by public health administrators, with a meeting of a more specialized nature, devoted to the discussion of the possible uses of computers in the field of epidemiology and health statistics.

In June 1966, therefore, WHO organized in Stockholm a symposium on the use of electronic computers in health statistics and medical research. The twenty participants—epidemiologists, health statisticians and workers in medical research with practical knowledge of the use of computers—came from sixteen countries in the Region.

Since mortality statistics are comparatively easily adapted to computer analysis, discussions concentrated on morbidity statistics: which data to collect and the best method of collection, methods of feeding data to
the computer, and the presentation and use of its output. In epidemiological studies, the computer's power to apply complex mathematical processing to quantities of data and the recent developments in pattern recognition would make it possible to undertake investigations that were previously impracticable. Within the broad field of medical research, consideration was given to the application of mathematical methods—especially the increasing use of mathematical models of biological phenomena—and to the general problems of data analysis, with particular reference to the computer as an aid in diagnosis.

The technical aspects of electronic data-processing were discussed. The recent development of “interactive” computer systems, with the possibility of communicating through a typewriter keyboard, was considered promising for work in the medical field.

Administrative arrangements were discussed, including the implications of owning or sharing a computer, and the equipment required for a typical installation. Stress was laid on the importance of training for computer personnel and on the necessity of using qualified manpower efficiently and economically. It was agreed that training would also be necessary to reorientate health service personnel towards the use of the computer, and record-keeping systems might need considerable revision.

Finally, national and international co-operation in the use of electronic computers was considered. Some steps had already been taken to make different types of equipment compatible, so that magnetic tapes could be exchanged among research workers in various countries; international agreement would encourage manufacturers to modify their products in order to meet users' demands. There was scope for international co-operation in developing suitable programming “languages” for medical use and a new approach to disease classification. WHO could play an important role in this field. The computer at WHO headquarters was described, and some of the plans for its use in medical research were discussed.

**Study on Tuberculosis Epidemiology and Control, Czechoslovakia**

In the years immediately following the Second World War, the epidemiological situation in regard to tuberculosis in Czechoslovakia, as in many other countries of Europe, was alarming. Though incomplete, the available statistics for 1946 showed a tuberculosis mortality rate of 127 per 100,000 population, the rate for children under 15 years of age being 46.6 per 100,000. The infection rate (tuberculin index) determined in the course of a large-scale BCG vaccination campaign conducted in 1948 and 1949 was 40 per cent. in children aged 15.

A large-scale national tuberculosis control programme was started in 1948, comprising a mass BCG vaccination campaign and periodic radiographic examinations, the treatment of the cases found being provided by the State. By 1960 the tuberculosis mortality rate had fallen to 25.2 per 100,000; the prevalence of bacillary pulmonary tuberculosis was 116.6 per 100,000, and the incidence of new cases and relapses 170.5 per 100,000. Among children under 15 years of age, the mortality rate had been reduced to 0.8 per 100,000; the prevalence of bacillary pulmonary tuberculosis was 1.7 per 100,000, and the incidence of tubercular meningitis was 0.8 per 100,000.

The changes in the pattern of tuberculosis epidemiology raised new problems with regard to the application of case-finding and treatment methods, the prevention of new cases and of relapses, and the possibilities of obtaining a clearer picture of trends in endemic prevalence. A study on tuberculosis epidemiology and control measures, covering a population of 100,000, was therefore started in the district of Kolin, near Prague. WHO assisted in this study from 1961 until the end of 1966 by providing technical advice and certain laboratory supplies; fellowships were also awarded to a number of Czechoslovak doctors.

The main objectives of the project were to study the epidemiological characteristics of tuberculosis, the trends among the different population groups, and the influence of control measures on the epidemiological aspects of the disease within the community; to evaluate the epidemiological effects of tuberculosis treatment applied on a mass scale; and to identify the high-risk population groups and indicate the measures to be applied to them.

The methods employed were mass radiographic examination of all persons over 15 years of age, carried out in 1961, 1963 and 1966; standardized tuberculin tests; thorough bacteriological examination of all persons whose lung X-rays showed anomalies; BCG vaccination and re-vaccination; hospital and ambulatory treatment of all old and newly diagnosed cases; and regular radiographic and bacteriological examination of persons registered as having fibrous lesions of the lungs.

After five years it was possible to draw the following conclusions. In the zone surveyed, tuberculosis is a major problem, particularly among the older population, the highest incidence of bacteriologically confirmed new cases of pulmonary tuberculosis occurring in the over-65 age group. The number of patients discharging tubercle bacilli, as determined by direct microscopic examination of sputum, constitutes the
best index for evaluating the epidemiological importance of tuberculosis. Mass radiographic examinations, carried out at two-year intervals, lead to the detection of about 50 per cent. of bacteriologically positive cases of active pulmonary tuberculosis, the rest being discovered in the course of random examinations requested by individuals with symptoms. A large proportion of new cases of pulmonary tuberculosis are detected among persons who showed pathological signs during previous radiographic examinations, the incidence of cases confirmed by bacteriological examination (0.8 per cent.) being ten times as high in this group as among the population showing a normal radiographic picture; they therefore constitute a high-risk group and should be followed up by regular radiographic and bacteriological examinations. The families of bacteriologically confirmed pulmonary tuberculosis patients constitute another high-risk group, with an incidence of new cases four times as high as in the general population. Proper treatment of new cases of pulmonary tuberculosis can prevent relapses and the development of resistance to chemotherapy, and can reduce the number of chronic tuberculosis cases; by combined chemotherapy continued over a long period, it is possible to obtain bacteriological quiescence even in chronic patients, thus eliminating a substantial proportion of such sources of infection. In view of the fact that BCG vaccination and revaccination are compulsory in the Kolin area, difficulties were encountered in the use of tuberculin tests to determine the incidence of tuberculous infection, as well as in attempts to evaluate the role of BCG vaccination in the tuberculosis control programme.

The results obtained so far have prompted the Government to adopt a new classification of tuberculosis cases, and have helped in the implementation of a pilot project in a district of Slovakia.

The study is to be continued with WHO assistance, one of the main objectives being to provide information on the methods to be applied in a tuberculosis eradication programme.

**Nursing Education, Morocco**

In Morocco the already acute shortage of nursing and midwifery personnel at all levels has been accentuated by increasing demands on health services from a rapidly growing population. In 1959 a WHO-assisted programme was started to organize and develop nursing education services generally and, in particular, to expand and improve basic nursing education programmes and establish a post-basic school which would train nurses for teaching and administrative responsibilities and give courses in specialized branches of nursing.

The project was designed in the context of general plans and activities for the development of health services in Morocco, and has been carried out in close association with the programme, started in 1960, for training auxiliary health personnel, particularly nursing auxiliaries.

Within the framework of these co-ordinated programmes, a plan of action has been developed whereby the numbers of nursing personnel of various categories have been greatly increased, in line with the social and economic evolution of the country and its material and human resources.

The Organization provided one nursing adviser during the first two years of the project and since 1962 two advisers on general and public health nursing education. Moroccan nurses have received fellowships for advanced studies abroad. The WHO nursing advisers, besides collaborating in all the activities of the Education Bureau, have participated in every phase of the development of the programme.

Within the Ministry of Health the Education Bureau, staffed by four Moroccan nurses, is responsible for preparing the legislation and regulations concerning the training, work and promotion of nursing personnel, the establishment, implementation and control of training programmes, and the supervision of schools for nurses and auxiliary nursing personnel. It also organizes periodic meetings for the directors and teaching staff of nursing schools in order to plan training programmes and to discuss their implementation and the most appropriate methods of teaching.

A state nursing diploma was created in 1960, when six students qualified from the only school then existing. At present three schools provide a comprehensive nursing education programme, and in 1965 sixty-three nurses completed their basic nursing studies and qualified for the state diploma.

The post-basic school of nursing, which admitted its first students in October 1963, provides two courses: one to train nurse educators, and the other to train public health nursing supervisors. Courses for training nurses in midwifery and social work were started in October 1965, and there are plans for a nursing service administration programme. Sixteen nurses completed their studies at the post-basic school in 1964, eleven in 1965, and seventeen in 1966. They have since been appointed to key positions as nursing administrators in public health and hospital nursing services, and as teachers of nursing: two of them have received WHO fellowships for study at the International School of Advanced Nursing Education, in Lyons, France.

The necessary facilities for students' field experience, in both clinical and public health fields, have been organized at the different levels of training. The edu-
cation programmes now established for the various categories of nursing personnel in Morocco aim at providing comprehensive preparation and at equipping the nurse and the nursing auxiliary for preventive, curative and rehabilitative work and thus for full participation in the country's health services.

For the organization and improvement of the nursing services it has been necessary to analyse modern concepts of patient care and the scope of nursing, to define the functions of the different categories of nursing personnel, and to devise a system of nursing service administration.

The recruitment of suitable candidates for the schools of nursing has proved a serious problem. Efforts have been made to attract to nursing young people with the required basic education and also to increase the number of female recruits: at present about two-thirds of the students in the basic and post-basic schools of nursing are men.

Moroccan nurses are, however, gradually and increasingly assuming responsibility for all aspects of the development of nursing education and services.
CHAPTER 18

EASTERN MEDITERRANEAN REGION

A noteworthy development in the Eastern Mediterranean Region is the interest being shown in national health planning and the increasing number of requests received for assistance in the preparation and implementation of national health plans, within the broad context of orderly economic and social development. In Libya, for example, the Organization has provided a team to help the Government to formulate a long-term health plan; and assistance in national health planning has been requested by Ethiopia, Saudi Arabia and Yemen.

The education and training of technical and professional personnel—an essential element in health planning—must, however, remain a priority for many years to come, for the dearth of such personnel, including physicians with post-graduate education in public health, is still the main obstacle to the adequate development of health services and facilities.

There is a growing interest in medical research in the Region. A group meeting on the subject was organized in February 1966 in collaboration with the Medical Research Institute in Alexandria.

Education and Training

Countries in the Region are taking action to expand existing medical education facilities and establish new medical schools. WHO assistance has been provided, for instance, in planning the development of the new medical faculty in Addis Ababa, and in connexion with the further training of health officers who have graduated from the Gondar Public Health College and Training Centre in Ethiopia. A consultative group visited Kuwait to examine the possibility of establishing a medical faculty there. Plans for the proposed medical faculty in Aleppo, Syria, were reviewed.

The Organization is assisting in the teaching, mainly of basic medical sciences and of social and preventive medicine, in the medical faculties of Ethiopia and Tunisia.

Post-graduate education, especially in public health, is also receiving the attention of several countries in the Region. WHO has assisted four public health schools—the School of Public Health, University of Teheran, the High Institute of Public Health, University of Alexandria, the Institute of Hygiene and Preventive Medicine, Lahore, and the School of Public Health of the American University of Beirut—providing them with advice, fellowships, teaching supplies and equipment.

The third WHO training course in medical librarianship, for librarians from the Eastern Mediterranean Region, was held in Geneva.

The fellowships programme has continued to play an important role in the development of national health services. For several countries within the Region, including Libya, Saudi Arabia, Somalia and Yemen, undergraduate studies in medicine and pharmacy constitute an important area for the award of fellowships. In other countries there has been growing emphasis on post-basic and post-graduate studies. Continued evaluation of the programme has shown where improvements might still be made, as well as how effective the programme has been over the years.

Nursing

WHO nurses have given assistance in forty-one projects, some concerned essentially with general nursing and others mainly concerned with such subjects as basic health, tuberculosis, or communicable eye diseases. In every case the responsibilities of the nurses included educational activities. In many of the countries of the Region, attention is being paid to the development of an organized nursing association, the establishment of a nursing section at the central level in government administrations, and the post-basic preparation of nurses who will take a leading part in evaluating nursing resources, determining nursing needs, and planning future programmes. Field practice areas for nursing students was among the subjects discussed at a seminar, held in Teheran in November 1966, for administrators and nurse educators.

Environmental Health

WHO has assisted in the development of community water supplies in Pakistan, Saudi Arabia, Somalia, Sudan (see page 136), Syria and Tunisia. The Organization has also given advice on wastes disposal,
including, for example, sewage and solid wastes disposal in the coastal area of Lebanon; and sewerage and sewage disposal in Nicosia (see page 68). In Lebanon, a preliminary study was carried out in connexion with a proposal to build regional sewerage networks for the coastal area of the country, where, with an increasingly dense population, the discharge of waste water on ground with underlying limestone formations threatens to pollute groundwater supplies and to create other problems.

The Government of Iran was assisted in the preparation of a request to the Special Fund component of the United Nations Development Programme for pre-investment engineering studies for sewerage and sewage disposal in Teheran.

In Iran the training of sanitary engineers is continuing at Teheran University, and courses in sanitary engineering for civil engineers were started at the Pahlavi University, Shiraz. Courses at the university level for sanitarians were inaugurated at the American University of Beirut. Advanced training for experienced sanitary aides was started with assistance from WHO in Damascus at the end of 1966, using Arabic as the language of instruction. Continued WHO assistance was given in the basic training of sanitary aides in Iraq, Somalia, Syria, Tunisia, and Yemen.

Studies of air pollution were carried out with WHO assistance in Iran and Lebanon. "The health aspects of industrialization with special reference to air pollution" was the subject of the technical discussions at the sixteenth session of the Regional Committee.

Malaria Eradication

WHO provided advisory services for the nine eradication programmes and four pre-eradication programmes which were in operation during the year, and for the inter-country malaria eradication evaluation team, stationed in Beirut, which served Cyprus, Iran, Iraq, Jordan, Lebanon, and Syria. In addition to the routine annual assessment of each individual programme, special assessments were carried out in Iraq, Libya, Pakistan, Somalia and Syria (see page 136), to obtain information necessary for the solution of particular problems.

WHO continued to assist the malaria eradication training centres in East and West Pakistan and in Ethiopia and Sudan. Twenty-eight fellowships for study at the WHO-assisted international malaria eradication training centres at Lagos (Nigeria), Lomé (Togo), and Manila (Philippines) were made available for candidates from eight countries of the Region. Malaria workers from Iran, Iraq, Israel, Jordan, Lebanon and Syria also received assistance to study the malaria programmes in other countries.

The Malaria Eradication Co-ordination Board, instituted in June 1965 with Jordan, Lebanon and Syria as members, met at Amman in January 1966 and at Damascus in July. Other co-ordination meetings included those between Iran and Iraq; Syria and Turkey; India, Burma and Pakistan; and Tunisia, Algeria, Morocco and Spain.

Cholera

Following the outbreaks of cholera El Tor in some areas of the Region in the summer of 1965 and the threat of its further spread to the west the Organization sent cholera experts to assist the governments concerned. A regional advisory team on cholera, composed of an epidemiologist and a bacteriologist, visited Saudi Arabia in March. The epidemiologist subsequently visited Iran, Iraq, Jordan, Kuwait, Lebanon and Syria.

The preventive measures taken by the countries concerned with the Mecca Pilgrimage were again effective, and the Pilgrimage was declared free from cholera or any other quarantinable disease. However, in August 1966 new cases of cholera El Tor were officially reported, this time in Iraq. WHO immediately sent an epidemiologist, a bacteriologist and a clinician to assist the Government of Iraq in the control of the outbreak. One million doses of cholera vaccine donated by Iran were supplied through WHO.

A course was conducted at Beirut in March, attended by twelve participants from the Region, to give practical training to qualified laboratory personnel in recent techniques of cholera bacteriology; and a regional training course on the clinical aspects, epidemiology and control of cholera was held in Dacca, East Pakistan, in December, with participants from the Region and from the South-East Asia Region. Participants in inter-regional courses on cholera control in Calcutta, in March and April, and in Beirut, in November, included a number from the Eastern Mediterranean Region (see also page 230).

Smallpox Eradication

The number of smallpox cases reported in the Region as a whole has been decreasing. In East Pakistan, however, a significant increase was recorded; the Organization gave assistance to the Dacca Public Health Institute in the production of smallpox vaccine and in the preparation and evaluation of vaccination programmes.
Following the adoption by the Nineteenth World Health Assembly of resolution WHA19.16, on the smallpox eradication programme, countries of the Region initiated preparations for the co-ordinated and strengthened action recommended (see page 10).

Other Communicable Diseases

Most countries of the Region now have national tuberculosis control programmes, covering rural as well as urban areas, with provision for their eventual integration within the overall health services of the country. Among the countries that are developing pilot areas for tuberculosis control, with the assistance of WHO, are Ethiopia, Libya, Pakistan, Saudi Arabia and Somalia. Other countries, including Jordan and Syria, have received advice from WHO on the development of such areas, where practical methodology can be tested taking into consideration the social and economic resources available in the country. A BCG campaign combined with trachoma control was developed in Ethiopia and is progressing satisfactorily.

Technical advice on trachoma control was given to several countries; in Kuwait, the results of the trachoma control programme in schools were assessed, and in Saudi Arabia, the conditions of trachoma control were investigated. In Syria, a communicable eye disease control project was started in the autumn, following a morbidity survey of trachoma in Deir-ez-Zor, carried out in April and May. The progress of the communicable eye disease control project in Iraq was evaluated, and WHO assistance was continued in Sudan.

WHO-assisted bilharziasis control projects in Iran, Iraq and the United Arab Republic (see also page 138) covered a number of aspects, including epidemiology, malacology, health education and sanitation. In trials on the molluscidal and herbicidal effects of chemicals, Bayluscide was found to be a highly effective molluscicide, easy to handle and comparatively low in cost. Results of work being carried out in the United Arab Republic were published.¹

Health Statistics and Epidemiology

Countries in the Region are showing an increasing interest in health statistics, and further requests for assistance were received. Teachers of biostatistics were provided by WHO for the School of Public Health, University of Teheran, and the College of Medicine, Baghdad. Statistical advice was given in the tuberculosis control projects in Ethiopia and Libya, and in the basic public health and medical care services project in Saudi Arabia. An inter-country medical records advisory service project has been initiated, in order to assist countries to establish proper recording procedures, to train national medical records officers, and to develop coding of morbidity and mortality records according to the International Classification of Diseases.

Advisory services in epidemiological methods were provided in Iraq and Pakistan.

Health Laboratory Services

The Organization's assistance to laboratories is steadily increasing and becoming more specialized—in virology, vaccine and sera production and nutrition, for example; fifteen projects were assisted by WHO. Following advice from WHO, Cyprus, Iran, Iraq, Lebanon and Saudi Arabia are now actively engaged in developing their blood bank and transfusion services. The blood bank in the Public Health Central Laboratory in Riyadh, Saudi Arabia, began to function. Advice was given on a plan for central national blood services in Iran and Iraq. A course for tutors of laboratory technicians, held in Beirut, was completed successfully by twelve trainees from eight countries in the Region.

With the steady increase in the number of pharmaceutical preparations, both locally manufactured and imported, the establishment of pharmaceutical quality control laboratories has become, for many countries in the Region, more necessary than ever. WHO is assisting a laboratory in Iran, and requests for assistance have been received from the Governments of Cyprus, Lebanon and Pakistan.

Health Education

Health education is gaining wider recognition as an important element in health activities, and the Organization provided advisory services to a number of countries.

In the WHO-assisted public health and training projects in Ethiopia, Libya, Saudi Arabia, Sudan, Tunisia, the United Arab Republic and Yemen, particular attention has been given to the health education of mothers and of local midwives.

Health and education officials from sixteen countries of the Region participated in a seminar on school health education, held in Kuwait in March (see page 137). They emphasized the importance of health education in primary schools, where the proportion of children attending is about four times that in secondary schools.

Maternal and Child Health

In Sudan, a paediatric department was created at the School of Medicine, Khartoum University; a

WHO professor of paediatrics is assisting in the teaching.

In the United Arab Republic, a refresher course on social paediatrics was organized by the Government, with WHO assistance, for 150 paediatricians and medical officers working in the maternal and child health centres of the country. WHO also assisted the Government of Jordan in the organization and development of school health services.

Nutrition

WHO assistance in nutrition was given to Iran, Jordan, Libya, Pakistan and Sudan, and has now been incorporated into several further projects. In Iran and Libya suitable information material was prepared, and in Ethiopia a manual on nutrition was produced for national medical, nursing and other health personnel.

A seminar on nutrition, food hygiene and technology was held in May in the Nutrition Institute, Teheran, with WHO assistance.

Co-operation with other Organizations

WHO has continued to co-operate in the Region with other agencies working in the health field, particularly with UNICEF, and with FAO, ILO and UNESCO in joint projects in nutrition, occupational health and health education. It also collaborated with the United Nations with regard to the health aspects of community development projects, and maintained close working relationships with the United Nations Development Programme, the Economic Commission for Africa, and the Economic Commission for Asia and the Far East.

The Regional Committee

Sub-Committee A of the Regional Committee met in Karachi from 19 to 23 September, and Sub-Committee B met in Geneva on 30 and 31 August. Sub-Committee A was attended by representatives of Cyprus, Ethiopia, France, Iran, Iraq, Jordan, Kuwait, Lebanon, Libya, Pakistan, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, the United Arab Republic, the United Kingdom of Great Britain and Northern Ireland, and Yemen. Sub-Committee B was attended by representatives of Ethiopia, France, Israel and the United Kingdom of Great Britain and Northern Ireland. The United Nations, the United Nations Development Programme, UNICEF, and the United Nations Relief and Works Agency for Palestine Refugees in the Near East were represented at Sub-Committee A, and representatives of eight international non-governmental and intergovernmental organizations were present. At Sub-Committee B the United Nations and the United Nations Development Programme were represented, as well as eight international non-governmental organizations. The Director-General attended Sub-Committee B and was represented at Sub-Committee A by the Deputy Director-General.

In pursuance of resolution WHA7.33, Sub-Committee A designated a representative to meet with the Regional Director to harmonize the decisions and prepare the final report on the session. Sub-Committee B requested the Regional Director to act on its behalf in the same connexion. The resolutions adopted by the sub-committees on subjects common to both agendas were either identical or the same in substance.

In the discussion of the Regional Director's annual report emphasis was laid on the need for education and training activities and for continuous evaluation of mass campaigns and other health programmes and their future integration in basic health services. The need for attention to other health problems, such as mental health, urbanization and growth of population, was also stressed. The outbreaks of cholera El Tor in the summers of 1965 and 1966 were given particular attention: and it was suggested that the time had come to review the International Sanitary Regulations and their application, and that this view should be conveyed to the Director-General. A wish was expressed that more countries in the Region should be engaged in the malaria eradication programme. National health planning was recognized as an important element of the general socio-economic development plan in every country.

Other subjects considered included the technical problems met in malaria eradication programmes of the Region, smallpox eradication, and hospital records and their importance for health administration.

The proposed programme and budget estimates for the Region for 1968 were considered and were endorsed, as presented, for transmission to the Director-General.

"Health aspects of industrialization with special reference to air pollution" was the subject of the technical discussions. "Review of the education and training of nurses to meet the needs of the region" had previously been chosen by Sub-Committee A, and was also selected by Sub-Committee B at its sixteenth session, as the theme for the technical discussions in 1967. Sub-Committee A further selected "Integration of mass campaigns in the national basic health services" as the theme for the technical discussions in 1968.

Sub-Committee A had previously accepted the invitation of the Government of Iran to hold its seven-
teenth session in that country in 1967. During the sixteenth session, it accepted the invitations of the Governments of Somalia and Cyprus to meet in those countries in 1968 and 1969 respectively.

The Regional Committee recommended to the Executive Board that Dr A. H. Taba should be reappointed as Regional Director for another term on the expiry of his present term of office in September 1967.

**Administrative Developments in the Regional Office**

The progress of the field programme has been affected by the difficulty of recruiting project staff with the required technical and linguistic qualifications and with suitable practical experience, while maintaining equitable geographical distribution of staff. As a result, the number of field staff at the end of 1966 barely corresponded to the strength at the beginning of the year, and more than forty vacancies remained in spite of many posts having been filled by the transfer of existing technical staff, on the completion of one assignment, to other assignments within the Region.

The demand for WHO assistance in the form of equipment and supplies, including reimbursable purchases for governments, has increased gradually over the last few years.

A survey of local employment conditions in Alexandria took place early in 1966, and a revision of the local salary scale was found necessary and approved.

**Some Aspects of Work in the Region**

A list of projects current during the year will be found in Part III. The following have been selected for fuller description.

**Community Water Supplies, Sudan**

Except in those areas of the Sudan which have deep underground supplies of naturally potable water, the people of the country are in urgent need of an adequate supply that can be made suitable for drinking. Some areas, such as the Upper Nile Province, have water in abundance, and the only problem is that of treatment. Others, however, are almost devoid of water, and conservation and improvement of the meagre supplies are major problems.

The Sudanese Government has recently started on a three-year plan to improve rural water supplies at an estimated cost of £ Sd 15 million (over US $40 million). This involves the construction of 350 artificial ponds (hafirs) and small dams, 500 new boreholes and numerous open hand-dug wells. Work to improve the present supplies, both urban and rural, will continue through repair and extension of the installations and training of the personnel to operate them.

It is in this context that WHO assistance needs to be viewed. The Organization provided a sanitary engineer to advise on community water supplies in general, and on particular water supplies. In the first specific project begun, in 1965, assistance was given in improving the operation of over a hundred small treated supplies drawn from irrigation canals in the Gezira and Managil areas and manned largely by unskilled operators. These supplies have now been improved by attention especially to better maintenance and operation, and certain plants manned by the more skilled operators will soon be provided with chlorinators. The first member of a team, to consist of a water engineer, a water treatment expert and a mechanical superintendent, arrived towards the end of 1966, to assist in establishing a continuous training programme for waterworks operators and for drillers to operate the new rotary rigs which have been ordered.

Assistance is also provided in organizing the treatment of water obtained from small artificial ponds (hafirs), a programme being developed by FAO.

**Malaria Eradication Programme, Syria**

Malaria control measures were organized on a limited scale as early as 1949, and by 1952 a specific demonstration and control project was established with WHO assistance along the Orontes River.

Antimalaria measures were expanded to all the known malarious areas; between 1956 and 1960 the regression of malaria coincided with a three-year period of exceptional drought, and with the successful completion of a number of agricultural land reclamation schemes through the construction of dams and the drainage of marshes. These circumstances, added to the insufficient statistical data on the malaria situation, probably provided a false sense of security and led to a more relaxed attitude in planning and implementing the malaria eradication programme.

Between 1961 and 1963 spraying operations were restricted to foci where transmission was continuing, covering in 1963 approximately 60 000 inhabitants. The rest of the population initially at risk was covered by surveillance operations, entrusted to a network of voluntary collaborators rather than to surveillance agents.
The epidemiological picture during the period 1961-1963, with the appearance of new foci and disappearance of old ones, called attention to the surveillance operations and indicated the weaknesses of the malaria eradication programme, particularly the inadequacy of geographical reconnaissance and delimitation of the originally malarious areas. Although certain improvements were made, the results obtained in 1964 confirmed the continuation of transmission and even indicated the appearance of new foci in the so-called non-malarious areas. In maintenance phase areas vigilance operations carried out by personnel of the general health services were inadequate, and there was an outbreak of malaria in the Kisweh area south of Damascus in 1965.

This situation called for a complete review of the programme in 1966, the whole population except that of the five large main cities of the country being considered as exposed to the risk of malaria—a total estimated at almost four million.

In 1966, the Government considerably increased the budget for the programme and reorganized the malaria services. Its aims include not only the extension of active case-detection to 2.3 million inhabitants and spraying operations to almost one million, but also the decentralization of the laboratory service for the microscopic diagnosis of malaria.

Co-ordination of the malaria eradication programme in Syria with the neighbouring countries of Jordan, Lebanon and Turkey is maintained through WHO assistance in the form of inter-regional and inter-country border meetings (see page 133).

Seminar on School Health Education, Kuwait

The growing attention given to education in the Region, and the regulations for compulsory education, have resulted in a fairly substantial attendance at educational institutions. According to United Nations estimates, in 1960-1961 nearly seventeen million students in the Region attended primary or higher schools in more than 95,000 institutions staffed by over half a million teachers. For such a large population in the formative years of life, the need for, and value of, health education cannot be over-emphasized.

It thus became necessary to focus attention on health education activities in schools by bringing together the health and education authorities responsible for planning and conducting school health education, and in most countries of the Region seminars, in which those authorities co-operated, were held.

In March 1966 WHO, in close co-operation with the Government of Kuwait, organized a regional seminar on school health education. It was attended by forty-two health and school administrators, teachers and health educators from sixteen countries of the Region, together with representatives of the United Nations Development Programme, UNICEF, UNESCO, FAO and UNRWA. There were also a number of observers including those from the United States Agency for International Development (AID), the League of Red Cross Societies and the American University of Beirut. The topics included the nature and scope of school health education; problems and programmes in school health education in the Region; school health education in the context of health and education; mental health of the school child; planning for school and community health education; strengthening of health education in the curricula of elementary and secondary schools and teacher-training institutions; methods and materials in health education; evaluation and research in school health education; and school sanitation.

The seminar not only made possible the exchange of views and experience, but reached certain conclusions as to desirable further action. They relate to the establishment of a joint standing committee, linking ministries of health and of education, to plan, co-ordinate and evaluate all aspects of school health education; and the need to give more emphasis to health teaching in primary schools (since compulsory education in some countries of the Region does not cover more than six years, and thirteen million out of sixteen million pupils are in primary schools). It was considered that curricula approved centrally should allow for attention to health problems of local importance, and that school curricula in general should be reviewed regularly, say every five years, to take account of social change within the Region and to introduce priority subjects of common interest; that all teachers should be directly involved in the promotion of the health of their pupils, and health education should be emphasized in the 286 teacher-training institutions of the Region; that methods and materials for health education should be selected for their suitability to the needs of the schoolchildren, taking into account local environmental conditions; that due attention should be given to mental health and to nutrition, with special collaborative effort among authorities for education, health and agriculture; and
that health education activities in the school should be linked with others carried out in the home and in the community.

Bilharziasis Control Pilot Project and Training Centre, United Arab Republic

In 1961 the Government of the United Arab Republic, with assistance from UNICEF and WHO, started a pilot project for bilharziasis control and the establishment of a training centre in the north-western part of the Nile delta. The project area covered the irrigation districts of El Ramle and Kafr El Dawar in Beheira Province—an area of 422 sq. km. with a population of about a quarter of a million and a comparatively high prevalence of both Schistosoma haematobium and S. mansoni infections (over 35 per cent.). WHO provided an epidemiologist, a malacologist and a sanitary engineer. Transport, equipment and supplies were provided by UNICEF for this project, the first bilharziasis control project to receive assistance from UNICEF.

Preliminary surveys revealed that infection spread rapidly among children under 15 years of age (forming 35 per cent. of the population in the area); those between 10 and 14 years of age (forming 13.25 per cent. of the total population) had particularly frequent contact with polluted water, and were the most affected. With a view to establishing priorities in the control programme, the population exposed to the risk of bilharziasis was classified according to the location of their villages on different types of watercourses. Information was also gathered on the prevalence of other helminthic infections in the area.

In order to determine the pattern of transmission of the disease and detect any subsequent changes, information was obtained not only on the distribution of infection according to age, but also on incidence rates of new infections among pre-school children. A clinical gradient was adopted in certain “index areas” having different epidemiological situations.

Studies were made on the ecology of transmission sites and the exposure pattern in relation to domestic, recreational, agricultural and other occupational activities, and on the impact of the disease on the community.

In order to evaluate the WHO reference antigen and compare it with other antigens, skin test surveys were made in 1964 in two areas having respectively a high and a comparatively low degree of endemicity.

Ecological studies on the molluscan hosts, Bulinus truncatus and Biomphalaria alexandrina, have yielded valuable data on the population dynamics and infection rates of the snail hosts. They have revealed that over 80 per cent. of transmission takes place during the four summer months; application of molluscicides in the period immediately preceding this peak should therefore produce best results.

Studies on snail distribution and its relationship to transmission have indicated that the smaller canals are of primary importance, and that the main canal (Mahmoudia), which supplies the entire area, is not a particularly good habitat and contributes relatively few snails to canals that have been brought under control. A direct association has been found between the snail host and certain species of aquatic plants, and the efficacy of various herbicides has been tested on weeds and grasses which provide attachment and food for snails.

Field trials of a number of promising molluscicides have been undertaken as part of the WHO-co-ordinated research programme on molluscicides. Periodic determination of snail densities in canals treated with these molluscicides has been continued in order to assess the recovery of the breeding potentials of Bulinus and Biomphalaria and the time required for them to attain pre-treatment densities, and thus to determine the effective cycle of molluscidic applications required for snail control. Following a number of initial field trials and an area-wide application of Bayluscide and NaPCP (Sodium pentachlorophenate) in 1963 in two adjacent sections of the project area—Kom Ishu and Kom El Birka—Bayluscide was selected as the molluscicide of choice.

Although little can be done to alter water management and canal design in an established irrigation system, it is essential that those who are directing molluscicide operations have a thorough knowledge of irrigation engineering and complete control of the water flow for the duration of the operations. To this end close co-ordination has been maintained with the irrigation engineers in the project area.

From the beginning the project has included a health education programme, directed mainly to school-children, and stressing the importance of preventing pollution of watercourses.

In-service training—covering rational planning, basic study of the problems involved and methods of snail control—has been provided for professional and auxiliary personnel in the various phases of the work undertaken, and the project has been developed into a field demonstration centre for bilharziasis control.

In October 1966 an epidemiological research team, consisting of an epidemiologist, two parasitologists and a biologist, began to gather epidemiological data in three villages with different rates of transmission of
S. haematobium and S. mansoni. It is hoped that the data collected on human and snail hosts in areas of different endemicity will not only point to the gaps in existing knowledge and thereby guide further enquiry, but also permit the calculation of threshold values relating to the two hosts, and indicate the optimum combination and duration of interventions required under local conditions in order to interrupt transmission of bilharziasis.

Final assessment of the project is scheduled to begin by the end of 1967, but an interim evaluation in 1965 in Kom Ishu (population 6890) and Kom El Birka (population 8506) provided the first scientifically acceptable evidence of the interruption of transmission of bilharziasis in the Nile valley or delta.

During the five years in which the project has been in operation, a balanced programme of research, control and training has thus been developed. Procedures are to be tested with a view to extending the bilharziasis control programme, which might eventually be integrated within the broader programme of rural development.
CHAPTER 19

WESTERN PACIFIC REGION

Strengthening of National Health Services

In the Western Pacific Region WHO continued to stimulate the development of general health services in a number of countries. In some cases, as in China (Taiwan), assistance was directed to the strengthening of peripheral basic health services to provide a basis for disease control programmes. In others, efforts were made to develop the existing health services by upgrading performance standards and improving supervision—in Malaysia, for example, through a project to improve the organization and administration of rural health services and to expand facilities for training the necessary staff. In yet others, demonstration projects have been used to improve the health services at provincial, county and district levels: in the Republic of Korea, a project to improve the organization of the health services at various levels in the province of Chungchong Namdo has the ultimate objective of strengthening the country's local health services (see page 144). In many countries specialized units are being set up at the central level to give technical guidance in the field operations of the general health services. In many of these projects, a major difficulty is the frequent change in national counterpart staff, so that progress is handicapped by inadequate supervision. This means that international assistance sometimes has to be continued longer than planned.

More countries are developing national health plans as part of their general economic and social development. WHO assistance has been given to the Republic of Korea in the development of a health programme in the second five-year plan. The Governments of Laos and of the Republic of Viet-Nam have requested similar assistance.

Hospital administration and the organization of medical care services were given more attention. A number of hospitals have started to develop their potential preventive functions, and some countries envisage the widening of their concept of medical care organization to include the improvement of outpatient departments, the provision of rehabilitation and ambulatory care, and the establishment of referral services between the hospitals and the health centres.

Countries were helped in the organization of health laboratories, emphasis being given to the development of professional leadership as well as to the training of laboratory technicians.

Communicable Diseases

Steps have been taken to improve the means of controlling diseases by establishing epidemiological and health statistics services which will be responsible for planning and guiding national control programmes.

A malaria eradication programme was started in January in Brunei, following the conclusion of the pre-eradication programme. Case-detection was organized and epidemiological and entomological data confirmed the absence of malaria transmission except in a very few foci. In East Malaysia, the incidence in Sabah continued to be high, not only in the late attack phase areas, but also in the areas described as being in the consolidation phase. As field operations cover more of the hinterland, transportation and communications become more difficult, hindering supervision. The Government is therefore giving priority to the development of a rural health service network throughout Sabah. The greater part of Sarawak has reached the consolidation and maintenance phases and malaria activities are well integrated with the health services. However, a large buffer zone along the Kalimantan (Indonesia) border must still be kept under spraying.

Plans have been made for a malaria eradication programme covering the eleven states of West Malaysia and including a national malaria eradication training centre in Kuala Lumpur.

In the Philippines, a complete reorganization of the programme was undertaken. Legislative action was taken to re-centralize the malaria eradication service. The pre-eradication programme in Cambodia was faced with the problem of a chloroquine-resistant strain of Plasmodium falciparum in certain areas. In the Republic of Korea, the case-detection programme was intensified and a campaign for the treatment of confirmed parasite carriers was undertaken.
Most countries are carrying out regular smallpox vaccination programmes, but effective surveillance seems necessary to prevent the spread of the infection should a case occur: seven cases were reported in Sarawak, East Malaysia, in October.

Concern has grown over the more frequent occurrence of diseases such as Japanese encephalitis and haemorrhagic fever. Research to establish the true value of the control methods now being used, and to discover new ones, was intensified in China (Taiwan), Japan and the Republic of Korea.

Environmental Health

Although the overall problems in environmental health remain substantially the same as those recorded in past years, WHO-assisted activities have expanded considerably, and work is proceeding in Cambodia, China (Taiwan), Laos, Malaysia, the Philippines, the Republic of Korea, the Republic of Viet-Nam, and Tonga. Advice was given to a number of countries on air and water pollution and waste disposal, and assistance was given in the arrangement of special courses on water treatment works design. A project financed under the Special Fund component of the United Nations Development Programme provides for assistance in the preparation of a master plan for sewerage for metropolitan Manila (see page 68). Assistance was also given to China (Taiwan) in the preparation of a request for similar assistance in connexion with the planning of a sewerage system for the metropolitan area of Taipei.

Under the inter-country project for the provision of advisory services in environmental health in the South Pacific area, assistance has already been given to five island territories. A course on environmental sanitation, in which WHO, the South Pacific Commission and the Government of the Kingdom of Tonga co-operated, was given in May for inspectors, health officers, and public works and local government officers in the South Pacific area. The practical aspects of planning and constructing sanitary facilities, and the health education approach to the implementation of a sanitation programme, were discussed in detail, and field exercises were arranged.

Occupational Health

Assistance was given to China (Taiwan) in the assessment of the present and potential health hazards of industrialization, and in the preparation of plans for future activities including the development of a division of occupational health in the Provincial
Health Department. Similar assistance is planned for Singapore and Malaysia. Plans were made for a seminar in 1967, to identify occupational health hazards and problems, particularly those related to rapid industrialization, and to consider the state of occupational health services in the Region and the possibility of improving them within the general health services.

Education and Training

In almost all WHO-assisted programmes, the major problems relate not only to a shortage of doctors, nurses and other health workers, but to a lack of staff able to carry out the teaching and supervisory duties required. The low level of general education in a number of countries still limits the possibilities of higher professional education, and existing training programmes are not always geared to actual manpower requirements.

A seminar on the training of auxiliary health personnel was held in Manila towards the end of the year (see page 145). Another problem related to the staff shortage is the drain of technical manpower from the developing to the developed countries. In the long run, this can be solved only by proper planning, the development of adequate health services and institutions, and better employment conditions.

Nursing

Developments in the field of nursing illustrate some of the educational activities assisted by WHO. Nursing education programmes at the university (Master's degree) level are now well established in the Philippines. Plans to develop a programme in public health nursing leading to a Master's degree are under consideration in China (Taiwan) and in the Republic of Korea. In Australia, Malaysia, New Zealand and Singapore, the trend is also toward the introduction of a nursing education programme at university degree level. The first associate degree programme in nursing has been established in the College of Guam.

WHO assistance for the development of paediatric nursing in the Philippines was completed and national counterparts are continuing the work (see page 145). The nursing department of the Ministry of Health, Malaysia, was further strengthened and the staff are assuming more responsibility for developing and coordinating nursing education services and education programmes at national, state and local levels. In Singapore, national staff have received fellowships for study abroad to enable them to take over responsibility for the post-basic courses in paediatric nursing, theatre nursing and public health nursing. In Laos, the first in-service course for hospital chief nurses was completed.

Health Education

More governments have established health education services at the national level, making a total of fifteen governments in the Region who have now done so. The regional seminar on health education, held in Manila in January, reached agreement on guidelines for the development of qualified leadership and the organization and administration of health education services in ministries and departments of health.

At national health education seminars organized with the assistance of WHO in China (Taiwan) and the Philippines, plans for the development of health education leadership and services were discussed, and the role of individuals and agencies defined.

The feasibility of establishing a post-graduate health education specialist course in the Institute of Public Health, National Taiwan University, was studied with WHO assistance. The University of the Philippines has approved a post-graduate programme in health education.

Maternal and Child Health

Projects for the protection and promotion of maternal and child health can attain fully effective and lasting results only within the context of a well developed comprehensive health service. The South Pacific area provides an instance where the development of peripheral health services is being stimulated by the expansion of maternal and child health services at the local level, with assistance from WHO and UNICEF.

The completed jointly assisted project in Cambodia (see page 219) has contributed not only to maternal and child health, but also to making the people, particularly those in rural areas, aware of the importance of general health services; it has shown the need for the development of an adequate infrastructure of general health services throughout the country.

School health services continued to expand. With WHO assistance, the integration under one general school health programme of health services for primary and secondary schools and for universities was effected in the Republic of Viet-Nam. Progress was made in planning school health services in Laos and in the Republic of Korea. In Cambodia, the school health service was reorganized and steps were taken to extend its activities to the provinces.

The health of the pre-school child, the causes of maternal mortality, and the promotion of the optimum
physical and mental health of children, are some of the aspects to which it is hoped more attention will be given in the future. There is a trend towards including more specialized activities, such as family planning, in the maternal and child health services.

Nutrition

In nutrition, WHO has co-operated with FAO and UNICEF in programmes designed to secure long-term improvement in nutritional standards, experience having shown that a combined interdisciplinary approach is most likely to have effective and lasting results. Often such programmes start with a pilot project. An example is the inter-agency assisted applied nutrition project in the Philippines which was started in 1964 in a pilot area. FAO has provided a horticulturist and nutrition educator, WHO a medical officer and fellowships for medical nutritionists, and UNICEF supplies and equipment. The Philippines/UNESCO National Community School Training Centre is located in the area chosen. Government departments for health, agriculture and community development and various government agencies are concerned in the implementation of the project.

With FAO and UNICEF, efforts have been made to plan assistance to Cambodia, Malaysia and the Republic of Korea. Again with FAO and UNICEF, WHO will assist in the integrated programme of short, medium-level nutrition courses sponsored by the South Pacific Commission and the longer, higher-level courses proposed by the Department of Nutrition and Dietetics of the Fiji School of Medicine.

Co-operation with other Organizations

Co-operation with the United Nations has continued in the rural development project in Laos, in which ILO, FAO and UNESCO are also participating. At the request of the Government of Laos, WHO agreed to contribute to the work at the National Orthopaedic Rehabilitation Centre, which is also to receive assistance from the Technical Assistance component of the United Nations Development Programme.

Plans were completed for WHO to survey the health implications of the Lower Mekong Basin Development Programme in Cambodia, Laos, Thailand, and the Republic of Viet-Nam. WHO will also carry out a bilharziasis survey in Laos. In these two projects, WHO will work closely with the ECAFE Committee for the Development of the Lower Mekong Basin.

Examples have already been mentioned of joint work with UNICEF, which again provided supplies and equipment for many WHO-assisted projects in the Region, and with FAO. WHO maintained its close collaboration with the South Pacific Commission, in particular, in relation to the joint training course on environmental health in Tonga, the maternal and child health advisory team working in the South Pacific area, the first regional seminar on health education, held in Manila, and the training course on vital and health statistics organized by the Commission in Wellington, New Zealand.

The Regional Committee

The seventeenth session of the Regional Committee for the Western Pacific was held in Manila from 21 to 27 September 1966. The meeting was attended by representatives of all Member States in the Region, and by representatives of France, Portugal, the United Kingdom of Great Britain and Northern Ireland, and the United States of America, attending on behalf of certain territories in the Region. Representatives of the United Nations and the United Nations Development Programme, UNICEF, the International Committee of Military Medicine and Pharmacy, the South Pacific Commission, and eleven non-governmental organizations in official relations with WHO were also present. The Director-General was represented by an Assistant Director-General.

The Committee examined the report of the Regional Director covering the period 1 July 1965 to 30 June 1966. During the discussion, considerable attention was given to the importance of education and training programmes, the departure of trained personnel from the developing countries to other parts of the world, and the measures taken by governments to intensify national communicable disease programmes and to extend mental health programmes. With regard to family planning, a resolution was adopted recommending that Member governments who were interested should consider requesting fellowships to observe operational programmes within the Region or for training in the health aspects of family planning.

The Committee discussed the proposed programme and budget estimates for the Western Pacific Region for 1968 and requested the Regional Director to transmit them to the Director-General.

A review was made of a report presented by the Regional Director containing proposals for a regional smallpox eradication programme and a suggested plan of action. Concern was expressed at reports that vaccination certificates were in some cases being issued to people who had not been vaccinated, and the Committee drew this question to the attention of Member governments.
The Committee noted the action taken in connexion with the resolution on cholera adopted at its previous session. Governments were urged to take advantage of the services of the inter-regional cholera team stationed in Manila.

At the request of the Government of Singapore, an item proposing the establishment of a regional registry on poisoning was discussed. The Committee noted that WHO did not have the resources to tackle this problem in any substantive manner but that the Organization would do its best to disseminate information or to assist any governments to set up their own poison control information services.

Two items proposed by the Government of Portugal were discussed—one on the epidemiology of filariasis, and the other on the epidemiology of endemic goitre in the Western Pacific Region. A resolution was adopted urging governments to continue to study the problem of filariasis and to find more effective ways of controlling the infection.

"The role of the health department in environmental health activities" was the subject of the technical discussions. "The integration of maternal and child health and family planning activities in the general health services" was selected as the subject for the technical discussions in 1967.

An announcement that the Government of Malaysia was no longer able to invite the Committee to hold its eighteenth session in Kuala Lumpur was received with regret. The Committee noted that an invitation might be extended by the Government of China to hold the session in Taipei, and authorized the Regional Director to accept this invitation, should it be offered. It was also agreed that no decision would be made as to the place of the nineteenth session until the Committee met again.

Some Aspects of Work in the Region

A list of projects current during the year will be found in Part III. The following have been selected for fuller description.

Local Health Services, Republic of Korea

A UNICEF/WHO-assisted project to strengthen the network of peripheral health services in the Republic of Korea was begun in 1963, based in the province of Chungchong Namdo. WHO has provided a medical officer, a public health nurse/midwife, a sanitarian and a health educator who, with their national counterparts, comprise the team. UNICEF is providing supplies and equipment to assist work in the health centres and laboratory and sanitation activities, as well as stipends and honoraria for training. In addition, fellowships abroad have been awarded to nationals who will later assume supervisory posts.

In Chungchong Namdo the project has concentrated its assistance on the strengthening of the provincial health administration and of the two county and one city demonstration health centres, with their sub-centres. The team is collaborating with the National Institute of Health in the public health training of staff for peripheral health services and providing advice to the other local health services in the province.

One of the aims of the project is to develop, in the province, health services at different levels (i.e., provincial health administration, health centres and sub-centres) with emphasis on maternal and child health, and to use these services for training health personnel. A provincial advisory committee on health has been created. The provincial hygienic laboratory in Taejon has been reorganized and strengthened to enable it to function as a laboratory reference centre. The Government has accepted in principle organizational plans for provincial, county and city health services. Provision for the construction or reconstruction of the remaining health centres, with their complement of sub-centres, has been authorized.

The health centres at Taeduk, Kongju and Taejon, and their sub-centres, are being developed as field practice and demonstration areas for the training of all peripheral health personnel, and are being used by the National Institute of Health and the School of Public Health, Seoul National University.

Another aspect of the project was the planning and implementation of an integrated health programme. Such a programme for the basic health services was introduced at the demonstration centres and is being extended to the other health centres in the province. WHO-assisted activities connected with the control of malaria, leprosy and tuberculosis are being integrated into the general health services.

Work in the area includes the promotion of referrals among the various health and medical institutions. Collaboration has also been promoted between the general health services and voluntary organizations, and co-operation has been maintained with the Department of Education and with other authorities responsible for particular health activities.

Studies on public health methods included a trial scheme on vital and health statistics, worked out in the demonstration health centres; surveys on mortalities...
amongst pregnant women, infants and children in Taeduk, epidemiological investigations of typhoid cases, and parasite control studies.

A health survey of the other provinces will form the basis for an expanded programme to begin in 1967. Under this project, assistance is also given to studies of specific health problems and methods of work.

The problems encountered in connexion with this work have been primarily administrative, including a meagre health budget, lack of adequately trained technical staff and shortage of equipment and transport.

Action is being taken gradually to overcome these problems. For example, local governments in the province have increased the budgetary allotment for health. However, health activities have low priority in present national policies and collaborative effort is required between government ministries to improve the situation, particularly with regard to health personnel.

It is hoped that, when the national health plan is officially adopted as part of the second five-year overall development plan, it will be possible for the development of local health services to be accelerated in the other provinces.

Seminar on Training of Auxiliary Health Personnel, Manila

A regional seminar on education and training, which took place in Manila in October 1966, was devoted to the training of auxiliary health personnel. The twenty-one participants came from sixteen countries and territories in the Region, and UNICEF, the South Pacific Commission and the United States Agency for International Development were represented by observers. Three advisers provided by WHO were also present.

The group recognized the nature of the health problems of the Region, the efforts of governments to improve the health of the people, notably in rural areas, and the shortage of all categories of health workers. A review of training programmes for auxiliary health personnel in the Region, and of the various factors involved, led to conclusions on the future training, utilization, supervision and guidance of such personnel.

It was agreed that training and utilization of auxiliary health workers should be included in national plans for health development, and that relevant legislation should provide for the establishment of a body at highest national health administration level to be responsible for that training and utilization. Organized training—through permanent schools, "on-the-job" training, and refresher courses—was considered essential, and it was emphasized that the training should be given in an environment and under conditions as close as possible to those in which the auxiliary health personnel would have to work.

It was suggested that the planning of the curriculum for the training programme should be the responsibility of the teaching staff of the discipline concerned, and that the curriculum should be revised and evaluated periodically to ensure correspondence with the needs of the services employing the trainees. The entrance requirements for auxiliary health workers should be related to the prevailing educational level of the country and should be lower than professional entrance requirements. Auxiliaries' activities should be limited to those functions for which they had been trained.

The group stressed the need for special consideration of the problem of securing teaching staff of the requisite quality, and considered that most of the teaching should be carried out by professionals possessing teaching qualifications in the relevant discipline. The principle was accepted that schools for professional health workers should have responsibility for training teaching staff to work in schools for auxiliary health workers. It was thought that a travelling seminar might be helpful, in view of the geographical, economic and social problems of scattered island territories.

Paediatric Nursing, Philippines

The aims of this project were to extend and improve existing health services with particular reference to the promotion of health, prevention of disease and provision of adequate care for children, and to establish closer co-ordination and integration of services in these fields. The project comprised the following activities: the development of comprehensive training programmes for nursing personnel; the establishment of closer working relations between the relevant institutions and agencies, and the development of comprehensive services for mothers and children.

WHO provided a nurse educator (paediatrics) from March 1962 to August 1966, and a twelve-month fellowship. UNICEF provided supplies and equipment.

Three training centres participated in the project: the National Children's Hospital, with 150 beds, offering medical and surgical services to infants and children from birth to twelve years; the poliomyelitis and diphtheria units of the San Lazaro Hospital; and the central formula and central supply services, the out-patient department and the paediatric ward of the Maternity and Children's Hospital.
The nursing personnel at the National Children's Hospital received in-service training in 1962 and 1963. National training started in January 1964, after a survey had been conducted to determine the needs of the government schools of nursing and the training hospitals in Manila and its suburbs. Sixteen instructors in paediatric nursing and public health nursing from the above schools and hospitals participated in a four-month course on current trends in child care. These instructors subsequently contributed towards improving the theory and clinical practice of courses in paediatric nursing and public health for basic nursing students. Courses were also offered for public health nursing supervisors and other paediatric nursing personnel from government and private institutions, and a total of ninety-five nurses have been trained since the start of the national training programme.

Visits to government schools of nursing indicated the need for training in the use of audio-visual aids. A course on this subject was offered late in 1965 and repeated in 1966. Thirty-one clinical nursing instructors completed the course. All the government schools of nursing (there are now six), many of the government training hospitals, and some private institutions now have at least one qualified instructor in paediatric nursing who is trained to use audio-visual methods.

Four maternity nursing instructors participated in a five-week trial course on the care of mothers and the newborn which was held early in 1966. The course placed emphasis on the mental hygiene aspects of pregnancy and on the initial mother-infant relationship. Staff from the mental health project assisted the trainees with evaluations of their studies on family care. The four instructors now include care of the newborn in their teaching and the course is to be repeated for other instructors.

The training courses have been followed up through regular correspondence and field visits to the institutions where former trainees were assigned.

A Committee on Standards for Paediatrics and Paediatric Nursing was set up by the Secretary of Health in 1963. Members were appointed from the Maternal and Child Health Division of the Bureau of Medical Services, the Office of Health Education and Personnel Training, the National Children's Hospital, the Maternity and Children's Hospital and the Philippine Paediatric Society. A sub-committee on paediatric nursing was formed in August 1964 to expedite the formulation of standards for nursing care. Members from private schools of nursing were invited to attend. Physical standards in nurseries for the newborn, including essential equipment and supplies, were accepted by the main Committee. Procedures for general nursing care were also drawn up by the sub-committee.

Surveys in Manila and its suburbs showed that there are a number of agencies assisting handicapped and needy children. Nurse trainees gained practical experience at many of these centres, through field visits and clinical practice.

A study of hospital records suggested aspects of the work for the care of children, including follow-up after discharge, in which improvements might be made. Conferences were therefore held with the Manila Health Department and the Quezon City Health Department and a pilot referral system was started at the National Children's Hospital. Improvements have been hindered by inadequate transport for public health nurses, by a shortage of public health staff nurses, and by the fact that doctors and nurses devote most of their time to curative services (the emphasis on curative work has been an important factor delaying the establishment of sound preventive practices). However, a public health nurse has been assigned to the out-patient department of the National Children's Hospital. She is now advising mothers in the clinics, organizing parents' classes in the wards, and doing some home-visiting of discharged children.

As this is largely an educational project involving changes of attitude, results are slow and sometimes difficult to recognize and assess. However, training is creating an increasing awareness among nurses who, in spite of financial and other difficulties, are pressing for improved child care services both in the hospitals and in public health agencies. New paediatric and maternity units are being planned and constructed with a view to continuity of care for mother and child. Public health nurse trainees are being taught to ensure that their advice to mothers of infants and pre-school children meets the needs of those children and provides an incentive for mothers to ensure that their children return regularly for supervision.

**Treponematoses Team, Western Samoa**

The aim of the project was to evaluate the results of the yaws control activities which took place between 1955 and 1958; to assess the epidemiological trends of the disease by studying the prevalence of clinical manifestations and levels of transmission through specific serological testing in various age groups; and to consider on the basis of these investigations the action necessary to secure eradication of yaws, as
defined by the WHO Expert Committee on Venereal Infections and Treponematoses. In addition, the Government requested surveys on the prevalence of pterygium and complicating pannus, and parasitological surveys of soil-transmitted helminthiasis. WHO provided a medical officer and a serologist from August 1964 to March 1966.

The time between the arrival of the WHO staff and the yaws survey was used to organize a multipurpose public health survey on Fakaofu (Tokelau Islands), to carry out parasitological investigations, to initiate work in the field of mycology, and to prepare a laboratory manual covering special mycological and parasitological methods as well as diagnostic keys.

The project was limited to the two main islands of Western Samoa, Upolu and Savai'i, inhabited (according to the 1961 census) by 82,479 and 31,984 persons respectively. A statistically planned sample survey of the population combined with a serological examination by the fluorescent treponemal antibody (FTA) test was carried out. The size of the sample was 8000 persons (about 6.7 per cent. of the population in the project area), who were examined at 32 sampling points of 250 persons each (21 in Upolu and 11 in Savai'i). Since the prevalence of yaws in Western Samoa was fairly uniform at the time of the initial treatment survey (infectious yaws cases: 12.6 per cent. in Upolu and 12.2 per cent. in Savai'i), it was decided to take the medical areas (or groups of medical areas) as units of stratification, and to select sampling points within each stratum with approximately the same sampling fraction.


Capillary blood specimens for serological testing were collected on blotting paper "rondelles" from children under fourteen years and from one-third of those over fifteen, and venous blood specimens were collected from children aged from five to fourteen years and from one-third of those over fifteen. The VDRL, FTA-100 and FTA tests were performed in the field. Duplicate samples of the rondelles and sera were sent to a reference laboratory in Paris, for a study of (i) the proficiency of field performance; (ii) the feasibility of using rondelle specimens for serological surveys; and (iii) the keeping qualities of specimens sent to a distant reference laboratory. Rondelle specimens were also sent to the WHO Regional Serum Reference Bank in Prague for investigation of antibodies against polioviruses, some influenza viruses, and possibly other conditions.

During the survey, which proceeded smoothly, no case of active yaws was seen although six cases, reported by the district nurses, came to the attention of the team.

A complete analysis has not yet been made of the material collected but it is clear that yaws has been suppressed to a level close to eradication. Continued surveillance and case-finding surveys will have to be carried out to eliminate the last cases. The most adequate method appears to be the reintroduction of the annual "Yaws week". Case-finding and treatment can be done by the nurses and medical officers of the medical areas without any special additional expense. Particular attention will have to be given to the isolated plantation areas, since it is there that yaws still seems to exist. It is proposed that mass treatment should be given in these areas, since they are sometimes difficult to reach.
PART III

PROJECT LIST
PROJECTS IN OPERATION IN 1966

This part of the report contains a list of the projects—country, inter-country and inter-regional—that were in operation during the whole or part of the period from 1 December 1965 to 30 November 1966. Continuing projects for which the only assistance given during the period was technical advice from headquarters or regional offices are not normally shown.

In country projects, the purpose for which the government or governments undertook the project is stated. Details of the assistance provided by the Organization and of the work done are given for completed projects and refer to the whole period over which the project was assisted by the Organization. Such details are not given for continuing projects.

As in former Annual Reports, an attempt has been made to summarize the immediate results of projects for which the Organization’s assistance terminated in the period under review and, where the nature of the work has permitted, to assess or evaluate how far the project has succeeded in the purposes for which it was undertaken. It has not been possible to do this for all completed projects; there has not been time, for example, to assess those that ended late in the period covered.

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 give a balanced account of the health programme in the Americas, the list for that region includes the projects assisted by PAHO in addition to those assisted by WHO. For each region, projects in individual countries are given in the alphabetical order of countries; the projects that concern more than one country follow, and are lettered AFRO, AMRO, SEARO, EURO, EMRO or WPRO. Inter-regional projects are given at the end of the list.

Under the heading “Fellowships” are shown those fellowships awarded during the period 1 December 1965 to 30 November 1966 that do not form part of assistance to a larger project. A table showing all the fellowships awarded during the same period, by subject of study, is given in Annex 11.

The starting date of each project is shown, between brackets, after its title, the finishing date being also shown for completed projects and, where possible, indicated in italics for uncompleted projects. Names of co-operating agencies, whether or not they have contributed funds, are given, between brackets, after the source of funds.

The abbreviations used include the following: R—regular budget; MESA—Malaria Eradication Special Account; UNDP/TA—Technical Assistance component of the United Nations Development Programme; UNDP/SF—Special Fund component of the United Nations Development Programme; AID—United States Agency for International Development. Other abbreviations are explained in the list on page II.
AFRICA

*Botswana 0002  Trypanosomiasis Control
(1955 - ) UNDP/TA

To study the trypanosomiasis problem and to advise on control measures.

Burundi 0002  Public Health Advisory Services
(June 1962 - 1969) UNDP/TA

To plan and organize a national health service and to train auxiliary health personnel.

Burundi 0003  Maternal and Child Health Services

To develop rural health services, with special emphasis on maternal and child health, and to train staff at all levels.

Burundi 0005  Environmental Sanitation Training

A total of thirty-five health assistants were trained during the operation of this project. The WHO engineer assigned to project Burundi 0002 assumed also the responsibility for this project. Supplies and equipment for the demonstration zone at Mpanda, where students were given practical field training, were provided by UNICEF.

Burundi 0200  Fellowships R: Nursing (twelve months), para-medical training (twelve months), surgery (twelve months).

Cameroon 0002  Malaria Pre-eradication Programme
(Dec. 1962 - 1972) R UNDP/TA

To develop a network of basic health services based on experience gained in one or more demonstration areas and which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to undertake a general survey of malaria epidemiology and to develop facilities for improving the diagnosis of malaria and for increasing the availability of antimalarial drugs.

From 1958 to 1962 a malaria pilot project and pre-eradication survey were undertaken.

Cameroon 0016  Nursing Advisory Services
(1962 - 1969) UNDP/TA

To develop programmes for the education of midwifery and nursing personnel and to strengthen nursing services.

Cameroon 0019  Medical School, Yaoundé (July 1966 - 1970) R

To set up a medical school in Yaoundé.

Cameroon 0200  Fellowships R: Child health (one month), Diploma in Child Health course (twelve months), nursing (one for twelve months, one for two years), public health nursing (twelve months), surgery related to leprosy (three months), undergraduate medical studies (two for six years).

Cameroon 0201  Fellowships UNDP/TA: Kinesitherapy and rehabilitation (twelve months), obstetrics and gynaecology (twelve months).

Central African Republic 0007  Environmental Sanitation
(1964 - 1970) UNDP/TA UNICEF

To set up a sanitation unit in the Ministry of Health; to train sanitation personnel, and to develop a long-term sanitation programme.

Central African Republic 0010  Nursing Education
(Aug. 1966 - ) UNDP/TA

To upgrade and develop the programme for basic nursing education at the School of Nursing in Bangui.

Central African Republic 0200  Fellowships R: Child health (one month).

Central African Republic 0201  Fellowships UNDP/TA: Undergraduate medical studies (four for twelve months).

Chad 0003  Maternal and Child Health
(Feb. 1965 - 1968) UNDP/TA UNICEF

To improve maternal and child health services and to train staff for maternal and child health centres in rural areas.

Chad 0010  Environmental Sanitation
(Jan. 1964 - 1968) UNDP/TA UNICEF

To set up a sanitation unit in the Ministry of Public Health and Social Affairs; to train sanitation personnel and to carry out a sanitation programme covering the whole country.

* Formerly Bechuanaland.
Chad 0014 Nursing Education (Jan. 1962 - 1970) R
To establish a basic school of nursing and to raise the standard of nursing education to the state-diploma level.

Chad 0200 Fellowships R: Statistics (two for nine months).

Comoro 0200 Fellowships R: Child health (three weeks), undergraduate medical studies (twelve months).

Congo (Brazzaville) 0018 Rural Health Services (Feb. 1965 - 1969) UNDP/TA UNICEF
To organize health services, with emphasis on maternal and child health, tuberculosis control, environmental health, health education and nutrition, and to train staff.

Congo (Brazzaville) 0021 Training in Laboratory Techniques, Brazzaville (1965 - 1969) R
To organize a course on laboratory techniques in collaboration with the Pasteur Institute and to train auxiliary staff.

Congo (Brazzaville) 0200 Fellowships R: Surgery (twelve months).

Congo (Democratic Republic of) 0200 Fellowships R: Undergraduate medical studies (twelve months).

Dahomey 0001 Malaria Pre-eradication Programme (Dec. 1963 - 1972) R MESA
To develop a network of basic health services which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to undertake a general survey of malaria epidemiology and to develop facilities for improving the diagnosis of malaria and for increasing the availability of antimalarial drugs.

To organize sanitation services.

WHO provided a consultant who advised on the organization and development of statistical services in the Ministry of Public Health.

Dahomey 0020 Study of Solid Wastes Disposal (May - Aug. 1966) UNDP/TA
WHO provided a consultant for three months to make a survey of the waste disposal situation in Cotonou.

Dahomey 0200 Fellowships R: Child health (one month), laboratory techniques and biochemistry (two for one year), public health (twelve months), surgery (twenty-two months), undergraduate medical studies (twelve months).

To develop the maternal and child health services and to train staff.

To set up a sanitation unit in the Ministry of Public Health and Population; to train sanitation personnel, and to develop a long-term sanitation programme.

Gabon 0008 National Health Laboratory (April 1965 - 1971) UNDP/TA
To set up a national health laboratory and to train laboratory technical personnel.

Gabon 0016 Nursing Education (1961 - 1969) R
To organize basic programmes for the training of professional and auxiliary nurses.

Gabon 0200 Fellowships R: Child health (one month).

To organize programmes for training professional and auxiliary nurses and midwives.

Ghana 0021 Malaria Pre-eradication Programme (Jan. 1963 - 1972) R UNDP/TA
To prepare a long-term plan for the further development of basic health services which can provide support for a future malaria eradication programme; to train staff needed for the programme and to develop a supervisory mechanism for these services at the periphery; to intensify studies on malaria epidemiology in the Volta region and to evaluate the malaria hazards associated with the artificial lake which will result from the Volta dam; and to carry out further epidemiological studies in areas representative of the country. This programme supersedes the pilot project that was carried out from 1958 to 1962.

To develop the maternal and child health services and to train personnel.

Ghana 0005 Bilharziasis Control (1957; 1960 - 1969) UNDP/TA
To carry out a pilot project for the control of bilharziasis, based on studies of the distribution and biology of the snail intermediate hosts.

To organize a pilot area project in order to determine the best procedures, under local conditions, for case-finding, treatment and follow-up of tuberculosis cases and suspected contacts; and to train national personnel.

Ghana 0025 Training of Community Health Nurses (1962 - 1967) UNDP/TA

To train community health nurses who will supplement the work of the public health nurses in organizing a domiciliary health service as part of an overall plan for rural health.

Ghana 0027 Post-basic Nursing Education (1963 - 1969) R UNICEF

To set up a school for post-basic nursing education programmes in the University of Ghana.


To prepare a water supply and sewerage plan for the metropolitan area of Accra-Tema; to establish the Ghana Water Supply and Sewerage Corporation; to draw up the detailed design for construction and development of the water supply and sewerage system, and to train personnel.

Ghana 0030 Health Aspects of Land and Water Survey, Upper and Northern Regions (June - Aug. 1966) UNDP/SF (FAO)

A WHO consultant made a study of the health aspects of the land and water survey being carried out in the upper and northern regions of Ghana with assistance from the United Nations Development Programme (Special Fund component) with FAO as the executing agency.

Ghana 0070 Fellowships R: Clinical uses of radioisotopes (five weeks), nursing administration (two months), nursing education (twelve months).

Guinea 0014 Malaria Pre-eradication Programme (March 1966 - 1972) R MESA

To undertake a preliminary inventory of and to evaluate the existing basic health services; and to assess malaria as a public health problem, in order to estimate government commitments for the full implementation of a malaria pre-eradication programme.

Guinea 0025 Study of the Health Aspects of a Programme for the Reclamation of Rice-growing Land in the Coastal Belt (Jan. - Feb. 1966) UNDP/SF (FAO)

WHO provided a consultant for five weeks to study the risks of spread of parasitic diseases associated with the programme for the reclamation of rice-growing land in the coastal region of lower Guinea that is being undertaken with assistance from the United Nations Development Programme (Special Fund component), with FAO as the executing agency. Special attention was paid to bilharziasis, but the study was concerned also with malaria, onchocerciasis, trypanosomiasis, ancylostomiasis and strongyloidiasis. Recommendations were submitted on methods of limiting or avoiding the spread of parasitic diseases during the designing, construction and operation of the reclamation structures.

Guinea 0020 Fellowships R: Sanitary inspection (eight months).

Guinea 0021 Fellowships UNDP/TA: Pharmacology (six months), undergraduate medical studies (eight for six months).

Ivory Coast 0004 Maternal and Child Health Services (March 1964 - 1970) R UNICEF

To develop the maternal and child health services and to train personnel.

Ivory Coast 0008 Vital and Health Statistics (Nov. 1963 - 1970) UNDP/TA

To organize a vital and health statistics section in the Ministry of Public Health and Population; to improve the collection and analysis of vital and health statistical data, and to train medical and statistical personnel.

Ivory Coast 0012 Environmental Sanitation (1963 - 1968) UNDP/TA UNICEF

To set up a sanitary engineering section in the Ministry of Public Health and Population; to train sanitation staff and develop a long-term sanitation programme.

Ivory Coast 0200 Fellowships R: Health statistics (four months).

Kenya 0002 Environmental Sanitation (Sept. 1960 - 1968) R UNICEF

To improve water supplies and excreta disposal systems; to train sanitation personnel; and to plan an environmental health unit in the Ministry of Health and Housing.

Kenya 0004 Tuberculosis Control (1957 - 1970) UNDP/TA

To establish, in the Murang'a District, a pilot area for testing standardized and simplified tuberculosis control measures, and to carry out a country-wide BCG vaccination campaign.

Kenya 0009 Nutritional Survey and Control of Deficiency Diseases (1961 - 1968) R UNICEF (FAO)

To ascertain the main deficiency diseases in Kenya; to study their nature, frequency, severity and distribution; to determine the place of malnutrition in relation to health and socio-economic conditions; and to train local personnel for a national nutrition centre.

Kenya 0016 Rural Health Services (1962 - 1968) R UNICEF

To strengthen and develop rural health services, with emphasis on maternal and child health, and to train auxiliary personnel.
Kenya 0034 Medical School, Nairobi (Nov. 1965 - 1970) R
To set up a medical school in Nairobi.

Kenya 0036 National Health Planning (April 1966 - 1968) UNDP/TA
To plan and co-ordinate the health programme as a part of the national development plan.

Kenya 0200 Fellowships R: Diploma in Public Health course (twelve months).

Kenya 0201 Fellowships UNDP/TA: Medical care (two for six months), parasitology and entomology (four months), radiology (twelve months), teaching of health inspectors (two for nine months).

Lesotho 0002 Tuberculosis Control (1962 - 1967) UNDP/TA UNICEF
To build up tuberculosis control measures, based on existing health facilities, and to expand them gradually.

Lesotho 0201 Fellowships UNDP/TA: Laboratory techniques (two for twelve months).

Liberia 0015 Environmental Sanitation Programme (1958 - 1968) R UNICEF
To set up a sanitary engineering unit in the National Public Health Service; to formulate a long-term sanitation programme, and to train personnel.

Liberia 0020 Malaria Pre-eradication Programme (Dec. 1962 - 1967) R
To develop a network of basic health services which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to make a general survey of malaria epidemiology, and to develop facilities for improving the diagnosis of malaria and for increasing the availability of antimalarial drugs.

From 1958 to 1961 a malaria eradication pilot project was undertaken.

Liberia 0200 Fellowships R: Master of Public Health course, with emphasis on health education (twelve months).

Liberia 0201 Fellowships UNDP/TA: Undergraduate medical studies (twelve months).

To develop nutrition work and to organize a nutrition section in the Ministry of Health.

To develop basic health services, with emphasis on maternal and child health.

Madagascar 0019 Environmental Sanitation (Jan. 1965 - 1968) UNDP/TA UNICEF
To train sanitation personnel; to carry out a nation-wide sanitation programme, and to establish a sanitary engineering unit in the Ministry of Health.

Madagascar 0201 Fellowships UNDP/TA: Bacteriology and haematology (twelve months), hospital administration (five for twelve months), stomatology (twelve months), surgery (two for twelve months), undergraduate medical studies (twelve months).

Malawi 0201 Fellowships UNDP/TA: Medical studies (one for ten and a half months, one for twelve months).

Mali 0009 Environmental Health (1963 - 1970) R UNICEF
To carry out a programme for training assistant health inspectors; to set up a environmental health unit in the Ministry of Public Health and Social Affairs, and to plan and develop a national sanitation programme.

Mali 0014 Nursing Advisory Services (Nov. 1964 - 1970) R
To organize nursing services and to improve nursing education.

Mali 0022 Smallpox Eradication (Feb. 1965 - 1969) UNDP/TA
To carry out a smallpox eradication programme.

Mali 0200 Fellowships R: Child health (one month).

Mali 0201 Fellowships UNDP/TA: Nursing (twelve months), public health administration (twelve months).

To organize maternal and child health services and to train staff.

Mauritania 0008 Nursing Advisory Services (Nov. 1963 - 1970) R UNICEF
To organize nursing services and develop nursing education.

Mauritania 0009 Malaria Pre-eradication Programme (Oct. 1962 - 1972) R MESA
To develop a network of basic health services which can provide support for a future malaria eradication programme; to study the socio-economic condition of the population and the manpower potential for such a service; to train personnel to...
form the nucleus of a national malaria service which will collect epidemiological base-line data; to improve facilities for the diagnosis of malaria, and to increase the availability of antimalarial drugs.

**Mauritania 0201** Fellowship UNDP/TA: Nursing (two for twelve months).

**Mauritius 0002** Tuberculosis Control
To strengthen the tuberculosis services and in particular to re-orient the present national programme towards integration into the health services and adaptation to general health principles.

**Mauritius 0003** Maternal and Child Health Services
(March - June 1966) R
WHO provided a consultant paediatrician specialized in nutrition for four months. He made a survey of the maternal and child health services, including their structure and administration, and submitted recommendations on how they might be expanded and better adapted to the needs of mothers and children.

**Mauritius 0007** Malaria Eradication Programme (1960 - 1968) R
To eliminate the remaining focus of transmission in the Black River district on the west coast; to extend the consolidation phase to cover the whole coastal area; to continue vigilance in the central plateau area under maintenance; to institute measures for preventing the re-establishment of malaria and to begin compilation of data on which a request for certification of malaria eradication can be based. (See page 99.)

**Mauritius 0015** National Environmental Sanitation Programme
(March 1965 - 1968) UNDP/TA
To organize a central division of environmental health, elaborate a training programme for sanitation personnel and set up demonstration areas. This project is linked with a project for a land and water survey, financed by the United Nations Development Programme (Special Fund component).

**Mauritius 0016** Laboratory Services (Oct. 1966) R
WHO provided a consultant for one month to survey the situation as regards laboratory services and to make recommendations for reorganization and future development.

**Mauritius 0017** Industrial Health (May - July 1966) R
WHO provided a consultant for three months to advise on the development of an occupational health programme.

**Mauritius 0019** Nutrition Advisory Services (1965 - ) R
To improve the nutritional status of the population; to study nutritional anaemias, and to evaluate the programme of enrichment of food with iron.

**Mauritius 0200** Fellowships R: Health education (twelve months), nursing (two for eight months), vital and health statistics (five and a half months).

**Niger 0005** Tuberculosis Control (1964 - 1968) UNDP/TA
To build up integrated tuberculosis control services, with special emphasis on BCG vaccination.

**Niger 0018** Environmental Sanitation
(March 1966 - 1971) R UNICEF
To develop a comprehensive water supply programme; to conduct a general survey of environmental sanitation conditions, and to plan a long-term sanitation programme, including training of personnel.

**Niger 0023** School of Nursing, Niamey (1966 - ) UNDP/SA
To reorganize and develop the School of Nursing in Niamey. This project is a continuation of the former projects Niger 11 (Nursing Education) and Niger 21 (Nursing Advisory Services) which started in 1963 and 1964 respectively.

**Nigeria 0001** Yaws Control
(July 1954 - ) UNDP/TA UNICEF
To implement the consolidation phase of a yaws control campaign.

**Nigeria 0010** Rural Health Services, Eastern Nigeria
(Nov. 1957 - 1969) UNDP/TA UNICEF
To improve rural health services, particularly with regard to maternal and child health; and to train paramedical and auxiliary staff.

**Nigeria 0014** Tuberculosis Control, Western Nigeria
To establish, in a rural district of Western Nigeria, a pilot area where an integrated tuberculosis control programme, based on BCG vaccination and simplified and standardized case-finding and treatment measures, will be introduced.

**Nigeria 0021** Basic Health Services, Western Nigeria
(1961 - 1968) UNDP/TA UNICEF
To establish a centre for the practical training of sanitation staff and organize a sanitary engineering unit in the Ministry of Health; to develop a network of health centres to provide integrated public health services, and to train auxiliary health staff.
**Nigeria 0023** Environmental Sanitation, Northern Nigeria  
(May 1963 - 1968) R UNICEF

To carry out environmental sanitation work, including the provision of rural public water supplies and the training of sanitation personnel, in the Igala and Idoma divisions.

**Nigeria 0024** Health Laboratory Services  
(1962; 1963; Feb. 1966 - 1971) UNDP/TA

To organize and develop health laboratory services.

**Nigeria 0026** Malaria Pre-eradication Programme, Western Nigeria (Oct. 1964 - 1972) R

To develop the basic health services in order to provide support for a future malaria eradication programme; to assess the malaria situation and develop facilities for improving the diagnosis and treatment of malaria; and to train personnel to form the nucleus of a national malaria service.

**Nigeria 0028** Health Education (1962 - 1969) UNDP/TA

To extend the use of health education services in the health programme.

**Nigeria 0032** Malaria Pre-eradication Programme, Northern Nigeria (Nov. 1962 - 1972) R

To develop a network of basic health services which can support a future malaria eradication programme, and to set up a demonstration area with a view to establishing a staffing pattern and determining field activities applicable under local conditions; to continue the spraying operations in the Birnin Kebbi malaria demonstration area and to make a careful epidemiological evaluation of the results, in order to ascertain the feasibility of interrupting malaria transmission under savanna conditions; to develop facilities for improving the diagnosis of malaria and for increasing the availability of antimalarial drugs; and to train personnel.

From 1954 to 1961 a malaria eradication pilot project was undertaken.

**Nigeria 0037** Malaria Pre-eradication Programme, Eastern Nigeria (March 1963 - 1972) R

To develop a network of basic health services that can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to make a general survey of malaria epidemiology, and to develop facilities for improving the diagnosis of malaria and for increasing the availability of antimalarial drugs.

**Nigeria 0044** Leprosy Control, Western and Mid-west Nigeria (1966 - ) UNDP/TA

To carry out, in a pilot area, the control of leprosy and other diseases, using the available personnel and public health institutions.

**Nigeria 0048** Public Health Administration, Northern Nigeria (1965 - 1968) UNDP/TA

To plan health services, within the framework of a national plan of socio-economic development, and to improve health administration.

**Nigeria 0056** Public Health Advisory Services, Mid-west Nigeria (Sept. 1965 - 1968) R

To develop the health services within the regional socio-economic development plan.

**Nigeria 0068** Dental School, Lagos  
(Sept. - Oct. 1966) UNDP/TA

WHO provided a consultant for approximately one month to advise on the Dental School in Lagos.

**Nigeria 0200** Fellowships R: DPH course (twelve months), environmental health (two months), health education (eleven months), laboratory techniques (eighteen months), leprosy control (three for three months), midwifery (three months), midwifery education (fourteen months), nutrition (three for eight months), pharmaceutical administration (six months), port sanitation (two months), sanitation (eleven months), sanitary engineering (two for twelve months), tropical public health (twelve months), virology (twelve months).

**Portugal - Mozambique 0001** Malaria Pre-eradication Programme (Nov. 1962 - )

Réunion 0007 Malaria Pre-eradication Survey  

To assess the prevalence of malaria and the risks of its re-establishment; to prepare a plan of operation for an eradication programme, and to train personnel.

**Rwanda 0001** Tuberculosis Control  
(1965 - 1969) UNDP/TA UNICEF

To reinstate tuberculosis control services, with emphasis on BCG vaccination, starting in a pilot area having its centre in Rwamagana; to train national personnel, and to extend activities after a trial period.

**Rwanda 0003** Maternal and Child Health Services  
(Feb. 1964 - ) R UNICEF

To expand the maternal and child health services and to train personnel.

* Suspended: see p. 86.
Senegal 0004  Environmental Health in Rural Areas  
(1962 - ) UNDP/TA UNICEF

To improve environmental sanitation conditions in rural areas; to set up a sanitation unit in the Ministry of Health and Social Affairs, and to train sanitation personnel.


To organize a statistical unit in the Ministry of Health and Social Affairs; to develop the collection, compilation, presentation and use of statistical material, and to train the necessary statistical personnel.

Senegal 0012  Nursing Advisory Services (May 1964 - 1969) R

To develop nursing and midwifery education programmes that will include the teaching of public health.

Senegal 0013  Malaria Pre-eradication Programme  
(Jan. 1966 - 1972) R MESA

To develop a network of basic health services which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; and to develop facilities for improving the diagnosis of malaria and for reducing malaria morbidity and mortality.

Senegal 0016  Nutrition Training (June 1964 - 1970) R

To develop the teaching of nutrition in the Faculty of Medicine, University of Dakar, and in the various institutes attached to it.

Senegal 0022  Water Supply and Sewerage, Dakar  
(1966 - 1969) UNDP/SF

To prepare a master plan for the water supply and sewerage system for Dakar and the surrounding districts.

Senegal 0200  Fellowships R: Bacteriology and immunology (twelve months), public health administration (three for fifteen months).

Sierra Leone 0001  Yaws Control (1958 - 1970) UNDP/TA

To consolidate the yaws control programme and to plan a programme for the control of certain other communicable diseases. (See page 100.)

Sierra Leone 0007  Nursing Education (1961 - 1967) R

To establish a school of nursing and midwifery which will provide teaching in public health as part of the curriculum.

Sierra Leone 0011  Health Laboratory Services (1960 - 1971) R

To organize a national health laboratory service and to train personnel.

Sierra Leone 0014  Environmental Sanitation Training  
(Nov. 1961 - 1968) R UNICEF

To train health inspectors; to establish a sanitary engineering unit in the Ministry of Health, and to plan a nation-wide sanitation programme.

Sierra Leone 0018  Health Education Advisory Services  
(Jan. - May 1966) R

WHO provided a consultant for four months to assist the Government in determining its needs in health education and in drawing up plans for the establishment of a health education service.

Sierra Leone 0019  Malaria Pre-eradication Programme  
(Nov. 1963 - 1972) R

To develop a network of basic health services based on experience gained in a demonstration area and which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to continue studies on the epidemiology of malaria; to develop, on a pilot scale, a system for increasing the availability of antimalarial drugs; and to provide advisory and evaluation services to the Malaria (Mosquito) Control Unit in Freetown.

Sierra Leone 0026  Public Health Advisory Services  
(June 1965 - ) R

To implement the national health plan and to prepare a programme for the forthcoming operational phases.

Swaziland 0002  Tuberculosis Control  

To introduce integrated tuberculosis control methods in an administrative district of the country, where their applicability under prevailing conditions will be studied, with a view to their use throughout the country, and where national personnel will be trained.

Tanzania 0004  Malaria Eradication Programme, Zanzibar  
(June 1957 - 1971) R MESA UNDP/TA UNICEF

To eradicate malaria from the islands of Zanzibar and Pemba.

Tanzania 0010  Control of Communicable Eye Diseases, Tanganyika (Aug. 1965 - 1969) R

To make a survey of communicable eye diseases, find the best methods of prevention and treatment, and establish a control programme.

Tanzania 0012  Midwifery Education, Zanzibar  
(May 1965 - 1970) UNDP/TA

To develop midwifery education programmes, and to integrate public health concepts, with emphasis on domiciliary care and the needs of rural areas, into midwifery teaching and practice.
Tanzania 0022 Medical School, Dar-es-Salaam, Tanganyika (Sept. 1965 - 1970) UNDP/TA

To develop the medical school in Dar-es-Salaam.


To study the nutritional status of the population, in particular in the pilot area of Dodoma; to train staff in nutrition so as to launch a programme to control the main deficiency diseases.

Tanzania 0036 Survey and Plan for Irrigation Development in the Pangani and Wami River Basins (July - Sept. 1966) UNDP/FAO (FAO)

A WHO consultant made a study of the health hazards connected with the plan for irrigation development in the Pangani and Wami river basins that is being implemented with assistance from the United Nations Development Programme (Special Fund component), with FAO as the executing agency.

Tanzania 0200 Fellowships R: Industrial health (three months), nursing (three for nine weeks), nutrition (eight months), radiography (two for nine months, one for twelve months).

Togo 0001 Treponematoses Control (Dec. 1961 - June 1966) R UNICEF

The aim was to carry out a treponematoses control campaign and at the same time to undertake smallpox and leprosy control and a sample serological survey. WHO provided a medical officer and a laboratory technician.

An anti-yaws campaign in the villages was carried out by mobile teams, each consisting of four to five nurses who at the same time vaccinated the population against smallpox and undertook leprosy case-finding. In the coastal area of the south—a region of moderate yaws endemicity, with some hyperendemic foci—in addition to the initial campaign, one or two follow-up surveys were made. In part of this area, special yaws teams continued work after the completion of the project, whereas elsewhere surveillance activities have been entrusted to the general health services. In most of the rest of the country, where yaws is hyperendemic, the initial campaign was believed to be sufficient. Of a total population of about 1 600 000, nearly 1 300 000 were examined and, where necessary, treated. In all, 8172 cases of infectious yaws and 6102 cases of leprosy were found, and over 1 100 000 smallpox vaccinations were performed. The coverage varied considerably from place to place, the average exceeding 70 per cent.

As regards yaws, the aim of reducing the prevalence of active yaws to a level where surveillance operations by the general health services are sufficient to maintain control has been achieved. The basic health services set up in connexion with the malaria pre-eradication programme (Togo 0003) are in a position to carry out this work. The number of cases of smallpox notified fell from 575 in 1962 to nine in 1965; however, the objective of total coverage of the population by smallpox vaccination was not attained. In the case of leprosy, owing to transport difficulties, it was not possible to ensure regular treatment and follow-up of the cases discovered.

Togo 0003 Malaria Pre-eradication Programme (Feb. 1962 - 1972) R MESA UNDP/TA

To develop a network of basic health services which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to undertake a general survey of malaria epidemiology; and to develop facilities for improving the diagnosis of malaria and increasing the availability of antimalarial drugs.


To organize nursing and midwifery education.

Togo 0015 Environmental Sanitation Programme (March 1962 - 1968) R UNICEF

To train sanitation personnel; to set up a sanitation unit in the Ministry of Health and to plan a long-term environmental sanitation programme, starting with a pilot project.

Togo 0024 Epidemiological Services (March 1966 - 1968) UNDP/TA

To organize an epidemiological unit in the Ministry of Health, with a view to co-ordinating activities for the control of yaws, leprosy, smallpox and other communicable diseases.

Togo 0200 Fellowships R: Child health (one month), environmental sanitation techniques (twelve months), hospital administration (twelve months), nursing (two for twelve months), sanitary engineering (eighteen months), undergraduate medical studies (twelve months).

Togo 0201 Fellowships UNDP/TA: Chemistry and biology (twelve months), maternal and child health services (thirty months), midwifery and nursing education.

Uganda 0007 Maternal and Child Health Services (1964 - 1968) R

To expand maternal and child health services and to train staff.

Uganda 0012 Malaria Pre-eradication Programme (Nov. 1962 - 1972) R

To develop a network of basic health services which can provide support for a future malaria eradication programme; to train personnel to form the nucleus of a national malaria service; to continue studies on the epidemiology of malaria and to provide advisory and supervisory services for antimalarial work in the former Kigezi malaria pilot project area, where a programme was carried out from 1957 to 1962.


To develop the health education unit in the Ministry of Health, extend the use of health education methods and expand health education training at the University of East Africa.
To establish, in the Bugisu District, a pilot area where integrated and simplified tuberculosis control measures will be introduced, and, if practicable under prevailing conditions, to extend them to other parts of the country.

To plan the development of health services as part of the socio-economic development plan.

WHO provided a consultant to make a further study of the public health implications of the Kafue River Basin development scheme, which is being carried out with assistance from the United Nations Development Programme (Special Fund component) and for which FAO is the executing agency. A previous study was made by the same consultant in November-December 1963, primarily for the purpose of evaluating the risk of spread of bilharziasis.

WHO provided a team consisting of a medical officer, a statistician and a nurse, who made an epidemiological study of the basic health services, and to improve environmental sanitation conditions in urban and rural areas.

The team also made a technical and administrative evaluation of the tuberculosis control measures in the countries visited and submitted recommendations for the further development of the tuberculosis situation in nearly every country of the Region. The team also made a technical and administrative evaluation of the tuberculosis control measures in the countries visited and submitted recommendations for the further development of the tuberculosis control measures in the countries visited.

AFRO 0053 Epidemiological Centre, Nairobi (June 1960 - 1970) R

To assist in technical planning and in the evaluation and analysis of epidemiological and statistical data collected from all countries of the Region. (See page 100.)

AFRO 0087 Centre for Post-basic Nursing Education, University of Ibadan (April 1962 - 1970) R UNICEF

To develop the Department of Nursing at the University of Ibadan, which is providing post-basic nursing education facilities, leading to a Bachelor of Science in Nursing degree, for English-speaking nurses from the countries of the Region.

AFRO 0101 Cerebrospinal Meningitis Control (1960 - 1968) R

To assist in controlling epidemics of cerebrospinal meningitis in countries of the Region.

AFRO 0105 Malaria Eradication Training Centre (English Language) Lagos (Oct. 1961 - 1972) R

To teach professional and technical national personnel techniques and methods currently recommended for malaria eradication and eradication programmes, with increased emphasis on the public health aspects of such programmes.

AFRO 0115 Tuberculosis Advisory Team (Feb. 1964 - March 1966) UNDP/TA

WHO provided a team consisting of a medical officer, a statistician and a nurse, who made an epidemiological study of tuberculosis in Cameroon, Central African Republic, Guinea, Togo and Upper Volta. The team spent from three to four months in each country. They carried out tuberculin surveys on random samples of representative groups of the population. These surveys, together with those carried out between 1962 and 1964 by two other tuberculosis advisory teams and the data collected by the tuberculosis survey teams that worked in Africa between 1958 and 1961, have provided an outline of the tuberculosis situation in nearly every country of the Region.

The team also made a technical and administrative evaluation of the tuberculosis control measures in the countries visited and submitted recommendations for the further development of tuberculosis programmes, taking into account the situation in each country.

AFRO 0125 Treponematoses Advisory Team (Sept. 1965 - 1970) UNDP/TA

A mobile team to evaluate treponematoses control projects and advise governments on further control measures to secure the eventual eradication of the disease. The team will also carry out epidemiological/serological surveys for certain other endemic communicable diseases, as may be required.

AFRO 0128 Malaria Eradication Training Centre (French Language) Lomé (1962 - 1972) R

To teach professional and technical national personnel techniques and methods currently recommended for malaria eradication and eradication programmes, with increased emphasis on the public health aspects of such programmes.
AFRO 0130 Department of Paediatrics and Child Health, Makerere College, University of East Africa, Kampala (1956 - June 1966) R UNICEF

The aim was to strengthen and expand the facilities for the teaching of paediatrics at Makerere College, and thereby to improve paediatric and child health services in the East African countries.

WHO provided the salaries of a senior lecturer and a lecturer in paediatrics for five years, beginning July 1961, for the Department of Paediatrics and Child Health, which is in the charge of a full-time professor. Training in paediatrics for medical students extends over four years; it is comprehensive and closely related to the needs of the country. The students do family studies and are given practical experience in a rural health centre. As a result of the close working relationships established between the Department and the Departments of Obstetrics and Gynaecology and of Social and Preventive Medicine, the teaching of the curative, preventive and social aspects of the care of mothers and children is well integrated. The Department has made plans for a three-year programme of post-graduate training in paediatrics.

The Department has also provided training in paediatrics to other types of health personnel and a number of seminars and refresher courses have been held for medical officers, medical assistants, nurse/midwives etc.

AFRO 0131 Epidemiological Advisory Team on Onchocerciasis (1966 - 1970) UNDP/TA

To assist governments in assessing the problem of onchocerciasis and in drawing up control programmes.

AFRO 0134 Department of Paediatrics, University of Ibadan (Oct. 1961 - Dec. 1966) R UNICEF

To assist in strengthening the facilities for teaching paediatrics at the University of Ibadan.


The Commission jointly sponsored by FAO, WHO and the Scientific, Technical and Research Commission of the Organization of African Unity (which has taken over the responsibilities previously assumed by the Commission for Technical Cooperation in Africa) facilitates contacts between specialists interested in nutrition problems in Africa. The Commission is also responsible for the preparation and distribution in two languages of bulletins concerning all nutrition work in Africa.


To assist in planning and/or initiating smallpox control projects leading to full-scale eradication programmes.

AFRO 0166 Department of Preventive Medicine, Makerere College, University of East Africa, Kampala (1966 - 1968) R

To assist the Department of Preventive Medicine of Makerere College.

AFRO 0167 Nutrition Advisory Services (April 1965 - 1970) R

To assist and advise on the development of nutrition work in national public health services; to organize nutrition units, train local staff and develop nutrition education and rehabilitation programmes in health centres.


To assist with courses for training middle grade personnel in vital and health statistics which are being held at the Centre international de Formation statistique, Yaoundé, established by the Economic Commission for Africa and the Government of Cameroon.

AFRO 179 Trypanosomiasis Course, Kaduna, Nigeria (7 Nov. - 18 Dec. 1965) UNDP/TA

The course was held at the Nigerian Institute for Trypanosomiasis Research in Kaduna and was attended by twenty-one participants (physicians, veterinarians, entomologists, parasitologists, an agriculturist, a microbiologist and a haematologist) from Ghana, Kenya, Liberia, Nigeria, Sudan, United Republic of Tanzania, and Zambia. There were also two observers from the Nigerian Institute for Trypanosomiasis Research and one from the University of Ibadan. A particular effort was made to present the problem of human trypanosomiasis as a whole and to explain how and why it tended to manifest itself in different forms, according to the conditions under which the main transmission occurred on the two sides of the African continent.

WHO provided a consultant and the cost of attendance of the participants.

AFRO 0183 Advisory Services in Public Health Planning (Jan. 1966 - ) R

To assist governments in the Region in preparing plans for basic health services within the framework of national public health plans; and to assist in evaluating projects for the development of health services.

AFRO 0203 Department of Obstetrics and Gynaecology, Makerere College, University of East Africa, Kampala (1966 - 1968) R

To assist the Department of Obstetrics and Gynaecology of Makerere College in expanding research activities, and to facilitate the training of medical and paramedical personnel.
THE AMERICAS

Argentina 0200 Malaria Eradication Programme  
(1951 - 1970) PAHO Special Malaria Fund UNICEF
To eradicate malaria from the country by stages.

Argentina 0400 Tuberculosis Control  
(March 1960 - 1968) R PAHO
To organize and develop, in the demonstration area of the Province of Santa Fé, a national tuberculosis control centre for obtaining epidemiological data, applying and evaluating tuberculosis control methods, and training personnel from Argentina and other countries.

Argentina 0500 Leprosy Control (1960 - ) R
To organize and carry out a national leprosy control programme and to lay down procedures for its evaluation.

Argentina 2200 Water Supplies  
(1961 - 1968) PAHO Community Water Supply Fund
To prepare and implement plans for the construction and expansion of water supply and sewerage systems.

Argentina 3100 National Health Services (1966 - ) R PAHO
To improve the health services. Under this project assistance will be provided to the Ministry of Welfare and Public Health in health planning, the supervision and evaluation of programmes, training and research.

Argentina 3101 Fellowships R: Clinical and social paediatrics (two for three months), ground water development (two weeks), epidemiology (one for ten months, one for twelve months), smallpox laboratory services (three for one week), medical use of radioisotopes (seven months), nutrition (one for ten weeks, one for thirteen weeks), physical medicine (three months), public health administration (two for four months), social paediatrics (two for three months), venereal disease serology (four months), yellow fever (three months).

Argentina 3102 Health Services, North-western Provinces  
(1957 - 1968) UNDP/TA
To organize regionally based health services to serve the provinces of Tucumán, Salta, Jujuy, Catamarca and Santiago del Estero.

Argentina 3103 Fellowships PAHO: Animal care facilities (four months), dental education (six weeks), maternal and child health (ten months), midwifery (two months), nursing administration and supervision (two for nine months), occupational health (ten months), orthopaedic appliances (four months), pathology (twelve months), public health administration (three for four months, two for ten months, one for eleven months), public health planning (three for fourteen weeks).

Argentina 3104 Health Services, Cuyo Region  
(1961 - 1968) PAHO
To organize regionally based health services to serve the provinces of San Juan, Mendoza, San Luis, and Neuquén.

Argentina 3107 Research in Public Health (1964 - 1968) PAHO
To promote research in planning and to co-ordinate the research conducted by the Ministry of Welfare and Public Health with that carried out by other institutions.

Argentina 3301 National Institute of Microbiology  
To expand the activities and improve the technical and scientific work of the National Institute of Microbiology.

Argentina 3500 Health Statistics (1960 - ) PAHO
To improve the collection and publication of health statistical information and to reorganize the central statistical unit in the Ministry of Welfare and Public Health.

Argentina 4100 Maternal and Child Health  
(April - July 1966) PAHO UNICEF
Two consultants, a medical officer and a nurse, were provided to assist in organizing a premature infants' unit and in training auxiliary personnel.

Argentina 4102 Nursing and Midwifery (1965 - ) R PAHO
To continue the development of short- and long-term programmes for training midwives in nursing and nurses in midwifery.

Argentina 4301 Research in Psychiatry  
(1964 - 1967) PAHO/Foundations Fund for Research in Psychiatry
To conduct research on the interaction between family members of schizophrenics.

Argentina 4800 Medical Care Services (1958 - ) PAHO
To make studies on medical care problems and resources and on the organization of medical care and health establishments and their integration into the general health services; and to train personnel in hospital organization and administration.

Argentina 6100 School of Public Health (1958 - 1970) R
To strengthen the School of Public Health of the University of Buenos Aires, in order to enable it to prepare adequately professional and auxiliary health workers for the country's developing health programmes.

Argentina 6200 Medical Education (1958 - ) R
To improve the medical education programmes of the schools of medicine by planning teaching and scientific research so as to meet the country's needs for physicians and research workers; and to improve the organization and administration of the schools.
THE WORK OF WHO, 1966

Argentina 6300  Nursing Education  
(1957 - 1970) UNDP/TA PAHO  
To improve teaching in the schools of nursing of the Universities of Buenos Aires, Córdoba, Litoral and Tucumán, and the schools of nursing of the Army and of the Ministry of Welfare and Public Health.

Argentina 6301  Training of Nursing Personnel  
(1960 - 1968) PAHO  
To give courses for professional and auxiliary nursing personnel in order to improve the country’s public health services.

Argentina 6400  Sanitary Engineering Education  
(1960 - 1970) PAHO  
To strengthen the teaching at the School of Sanitary Engineering of the University of Buenos Aires.

Argentina 6700  Training of Statistical Personnel  
(1965 - ) PAHO  
To strengthen the teaching of health statistics at the School of Public Health of the University of Buenos Aires, which provides courses in health statistics for personnel of various levels in the national and provincial health administrations, including a nine-month annual course for training intermediate-level statisticians and personnel responsible for statistics offices and departments of hospital statistics.

Barbados 2200  Water Supplies  
(1964 - ) UNDP/TA  
To prepare plans for water supply systems.

Barbados 4801  Hospital Administration  
(1965 - 1968) UNDP/TA  
To organize and operate the Queen Elizabeth Hospital as the central medical care institution of Barbados and as a teaching hospital for the University of the West Indies.

Barbados 6300  Nursing Education  
(1965 - 1968) PAHO  
To strengthen basic and post-basic nursing and midwifery education, in order to improve patient care.

Bolivia 0200  Malaria Eradication Programme  
(1957 - 1969) PAHO Special Malaria Fund UNICEF (AID)  
To eradicate malaria from the country.

Bolivia 0300  Smallpox Eradication  
(1962 - 1968) UNDP/TA  
To continue the smallpox vaccination programme, begun in 1957.

Bolivia 0400  Tuberculosis Control  
(1963 - ) PAHO  
To collect epidemiological data on tuberculosis, to apply and evaluate control methods, and to train personnel for a control programme to be extended progressively to the whole country, starting in a demonstration area in the northern part of the Bolivian plateau.

Bolivia 3100  National Health Services  
(1955 - 1969) R PAHO  
To improve the national health services at the central and local levels; and to train professional and auxiliary personnel.

Bolivia 3101  National Plan for Rural Development  
(1953 - ) UNDP/TA (UN) (FAO) (ILO) (UNESCO)  
To promote the economic, social and health development of the rural populations of the Andean Highlands, so as to facilitate their integration into the national community.

Bolivia 3102  Fellowships  
R: Clinical and social paediatrics (two for three months), national health planning (one for one month, one for ten weeks), nursing education (twelve months), tuberculosis laboratory methods (one month).

Bolivia 4201  Nutrition  
(1964 - ) PAHO/Foundation for International Child Health UNICEF (FAO)  
To carry out an integrated programme of applied nutrition in an area of the country, including training of professional and auxiliary personnel, laboratory studies, and research on the extent of protein-calorie malnutrition in pre-school children.

Bolivia 4202  Nutrition  
(1965 - 1967) PAHO/Williams Waterman Fund  
To establish a pilot nutrition service for the purpose of determining standards, structures, activities, and evaluation criteria for application throughout the country.

Bolivia 6400  Sanitary Engineering Education  
(1964 - 1968) PAHO  
To increase the number of sanitary engineers and improve their training.

Brazil 0100  Epidemiology  
(Jan. 1966 - 1968) PAHO  
To develop and co-ordinate programmes for the eradication or control of communicable diseases, and to improve the application of the International Sanitary Regulations and the reporting of notifiable diseases.

Brazil 0200  Malaria Eradication Programme  
(1958 - 1971) R PAHO Special Malaria Fund (AID)  
To eradicate malaria from the country by a phased programme. (São Paulo State is covered by project Brazil 0201 - see below.)

Brazil 0201  Malaria Eradication Programme, São Paulo  
(1958 - 1968) PAHO Special Malaria Fund (AID)  
To eradicate malaria from São Paulo state.

Brazil 0202  Training Centre for Malaria Eradication  
(1958 - 1968) PAHO Special Malaria Fund  
To train professional and auxiliary personnel for the malaria eradication programmes of Brazil and other Latin American countries.
Brazil 0300 Smallpox Eradication (1956 - 1968) PAHO (AID)
   To set up laboratories to produce enough freeze-dried vaccine to meet the needs of the national smallpox eradication campaign.

Brazil 0701 Rabies Control (1959 - 1968) R
   To develop the national and state health services needed for producing antirabies vaccine and carrying out rabies control programmes.

Brazil 0900 Bilharziasis (1961 - 1970) PAHO
   To plan and carry out a pilot programme on bilharziasis and to expand research work on the disease.

Brazil 0901 Plague Research (1965 - ) 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.

Brazil 2100 Sanitary Engineering (1952 - ) PAHO
   To improve the organization of the environmental sanitation services of the Ministry of Health, and to train professional and auxiliary engineering personnel.

Brazil 2101 Air and Water Pollution Control (1963 - 1968) UNDP/TA
   To plan and carry out programmes for the control of air and surface water pollution in the state of São Paulo, its capital, and neighbouring municipalities.

Brazil 3100 National Health Planning (1966 - 1968) PAHO
   To formulate national health plans and train personnel for the purpose.

Brazil 3101 Health Services, North-eastern States (1958 - 1968) R PAHO UNICEF (AID)
   To promote the development of general health services in certain areas of nine states in the north-eastern part of Brazil.

Brazil 3103 Health Services, Mato Grosso (1959 - 1966) PAHO UNICEF
   The aim was to improve the public health services of Mato Grosso by strengthening the central organization, regionalizing health services, providing adequate technical supervision, and training personnel. The Organization provided a medical officer, a public health nurse, and two fellowships.

Work started in Dourados in 1960. This part of the project was completed at the end of 1963, by which time the objectives had to a large extent been attained. The medical officer and the nurse were transferred to Cuiabá, the state capital. The Mato Grosso Health Foundation, which includes a statistical service, was set up. Courses were held for health visitors, sanitation aides, laboratory assistants, nursing auxiliaries and midwives. A health centre, five health posts and five dispensaries were established and remain in operation.

Brazil 3105 Fellowships R: Biochemistry (five and a half months), brucellosis (three months), brucellosis and hydatidosis (two months), clinical and social paediatrics (three months), cytology (nine months), health education (twelve months), plague epidemiology (two months), public health administration (three months); PAHO: public health administration (two for four months).

Brazil 3200 Nursing (1953 - ) PAHO
   To develop basic research in nursing and the education of professional and auxiliary nursing and midwifery personnel, and to improve the organization of nursing services.

Brazil 3301 National Virus Laboratory Services (1959 - 1967) UNDP/TA PAHO
   To expand laboratory facilities for the diagnosis of virus diseases, and to develop research programmes and the production of vaccine at the Oswaldo Cruz Institute.

Brazil 3302 Yellow Fever Laboratory (1950 - 1968) PAHO
   To support the continent-wide campaign against yellow fever by providing laboratory diagnostic services and supplying yellow fever vaccine.

Brazil 3500 Health Statistics (1963 - 1968) R
   To improve the vital and health statistics services, especially those related to the notification of communicable diseases; and to train personnel in vital and health statistics and in medical records and hospital statistics.

Brazil 4200 Nutrition (1960 - 1968) R (FAO)
   To improve the nutritional status of the population of the north-eastern part of Brazil through the maximum use of locally available foods, nutrition education and the organization of nutrition courses for professional and auxiliary personnel engaged in health work, education, and agriculture.

Brazil 4201 Nutrition Courses (1963 - 1968) PAHO
   To establish courses for training physicians in public health nutrition at the Institute of Nutrition of the University of Pernambuco (formerly University of Recife).

Brazil 4202 Nutrition, São Paulo (1964 - ) PAHO
   To prepare, in co-operation with the School of Hygiene and Public Health of the University of São Paulo, nutrition personnel for the development of integrated health services.

Brazil 4203 Institute of Nutrition, Pernambuco (1964 - 1968) PAHO
   To improve nutrition services in the north-east of Brazil, through applied research and training programmes to meet the needs of the area.

Brazil 4500 High Background Radiation Areas (1964 - ) PAHO
   To define the extent to which abnormally high radiation levels exist and to determine whether biological effects can be identified in the population of the areas concerned.
Brazil 6202  Teaching of Preventive Medicine, University of Ceará (1963 - 1966) PAHO

The aim was to improve the teaching at the Institute of Preventive Medicine of the University of Ceará. The Organization provided a public health nurse from January to June 1965, a consultant in statistics, and two fellowships.

The public health nurse assisted in integrating the teaching of public health and preventive medicine into the first and third year curricula of the São Vicente School of Nursing. Courses in preventive medicine were given for fourteen nursing students, twenty-six nursing auxiliaries and thirty-three social service workers, and thirteen students received training in the medical statistics course.

Brazil 6203  Research Training (1965 - ) PAHO/Rockefeller Foundation

To develop a regional training centre for teachers and research workers in microbiology.

Brazil 6301  Nursing Education, Pernambuco (1963 - ) PAHO

To set up in the school of nursing of the University of Pernambuco (formerly University of Recife) a centre for post-graduate nursing education to serve the northern and north-eastern parts of Brazil.

Brazil 6302  Training of Nursing Auxiliaries (April 1963 - 1968) PAHO UNICEF

To increase the number and improve the quality of the training of nursing auxiliaries.

Brazil 6303  Nursing Education, British Honduras (1964 - 1968) PAHO

To improve the training given by the School of Nursing in British Honduras.

British Honduras 0200  Malaria Eradication Programme (1956 - 1968) PAHO Special Malaria Fund UNICEF

To eradicate malaria from the country.

British Honduras 3100  Health Services (1962 - 1968) PAHO UNICEF

To reorganize, expand, and improve the general health services, including environmental sanitation.

British Honduras 3101  Fellowships PAHO: Laboratory services (twelve months).

British Honduras 6300  Nursing Education (1964 - 1968) R

To study the country's nursing needs and resources, in order to provide at the school of nursing an education programme that will include teacher-training and integration of preventive and curative medicine concepts as well as social and community development aspects of nursing practice.
Canada 3101 Fellowships R: Maternal and child health (nine months), medical care administration (nine weeks), nursing education (three months).

Chile 0400 Tuberculosis Control (1964 - 1968) PAHO UNICEF
To organize, in La Cisterna (Province of Santiago), a demonstration area in order to obtain epidemiological information on tuberculosis, apply and evaluate practical methods of tuberculosis control, and train medical and auxiliary personnel for the gradual extension of the tuberculosis control programme to other areas.

Chile 0600 Venereal Disease Control (Nov. 1965 - 1968) PAHO
To intensify the programme for the control of venereal diseases in the light of a rising incidence in recent years. Emphasis will be on new laboratory methods and epidemiological surveys, and integration of control activities into the regular health centres' work.

Chile 0700 Veterinary Public Health (1965 - ) PAHO
To prepare a national five-year plan for the control of foot-and-mouth disease.

Chile 3100 Health Services (1961 - 1968) R PAHO UNICEF
To strengthen the health services in the southern part of the country in order to meet the needs of the population of the area devastated by an earthquake in 1960 (34 per cent. of the total population); and to provide water supply and sewerage services to the 960,000 rural inhabitants of the area.

Chile 3101 Fellowships R: Maternal and child health (one for ten weeks, one for fourteen weeks), medical education (one for five months, one for twelve months), radiochemistry (twelve months), smallpox laboratory services (one week).

Chile 3102 Fellowships PAHO: Bacteriology (twelve months), health statistics (two for three months), microbiology (six months), paediatric education (ten weeks).

Chile 3200 National Planning for Nursing (1960 - 1969) R
To improve the quality of the nursing care given by the health services, and to train professional and auxiliary personnel.

Chile 3301 Microbiology Centre (1966 - 1968) R
To set up in the Bacteriological Institute of the national health services a microbiology centre that will promote basic and applied microbiological research, especially in communicable diseases, train personnel, and provide advisory and reference services.

Chile 4200 Nutrition (1960 - ) R (FAO)
To develop a co-ordinated programme for improving the nutritional status of the population of the provinces of Atacama, Coquimbo and Linares.

Chile 4300 Mental Health (1965 - 1968) R
To conduct epidemiological studies on mental diseases and to develop methods and procedures for psychiatric care in the communities.

Chile 4601 Institute of Occupational Health and Air Pollution Research (1961 - 1967) UNDP/SF
To contribute to the solution of problems of industrial hygiene and occupational health. The Institute trains personnel, carries out research, advises the Government and private organizations on subjects within its competence, and assists in matters relating to labour legislation.

Chile 4801 Rehabilitation (1960 - 1968) UNDP/TA
To plan a medical rehabilitation programme for the whole country, co-ordinating all available resources; to organize a rehabilitation centre in Santiago, with a prosthesis workshop and facilities for training personnel; and to establish rehabilitation services in certain provincial cities.

Chile 4802 Cancer (1965 - 1968) R PAHO
To organize a department of cytology for screening and detection of cancer of the uterine cervix as a first step in a programme of control of this type of tumour.

Chile 6100 School of Public Health (1963 - 1968) R
To strengthen the teaching at the school of public health of the University of Chile, and to expand its facilities for training students from other countries of the Americas.

Chile 6200 Medical Education (1962 - 1968) PAHO
To provide courses in medical teaching methodology at the School of Medicine of the University of Chile, Santiago.

Chile 6201 Training in the Medical Use of Radioisotopes (1962 - 1968) PAHO (Kellogg Foundation)
To set up at Salvador Hospital, in connexion with the University of Chile, a Latin American centre for training physicians in the medical uses of radioisotopes.

Chile 6400 Sanitary Engineering Education (1964 - 1968) R
To strengthen the teaching of sanitary engineering in the School of Engineering of the University of Chile.

Chile 6600 Dental Education (1966 - 1971) R
To strengthen the department of preventive and social medicine, in order to add the teaching of preventive and social aspects of dentistry to the curriculum of the school of dentistry of the University of Concepción.

Colombia 0200 Malaria Eradication Programme (1959 - 1969) PAHO Special Malaria Fund UNICEF
To eradicate malaria from the country.

Colombia 0500 Leprosy Control (1958 - ) PAHO
To organize and carry out a leprosy control programme.

To plan and carry out a national water supply programme, and to make a study of the planning, design, financing, construction and operation of municipal water supply services.

Colombia 2300 Aedes aegypti Eradication (1951 - 1967) PAHO

To eradicate Aedes aegypti.

Colombia 3100 National Health Services (Sept. 1951 - 1969) R UNDP/TA PAHO UNICEF (AID)

To prepare a national health plan; to strengthen the Ministry of Public Health and the departmental and local services; to extend integrated health services to the entire population; and to train professional and auxiliary personnel.

Colombia 3101 Fellowships PAHO: Bacteriology of enteric diseases (two for three weeks), dental care (four and a half months), dental care and hygiene (ten weeks), epidemiology (two for six and a half months), orthopaedic appliances (four months), public health administration (three for six weeks, two for four months) sanitary engineering (two for three months, one for nine months, one for eleven months).

Colombia 3102 Fellowships R: Clinical and social paediatrics (three months), hospital administration (sixteen months), nursing services (ten months), orthopaedic appliances (four months), public health nursing administration and supervision (ten months), sanitary engineering (eleven months), tuberculosis laboratory methods (five weeks).

Colombia 3301 National Institute of Health (Carlos Finlay) (1950 - ) PAHO

To strengthen the services (research, laboratory diagnosis, and vaccine preparation) which the yellow fever department of the National Institute of Health provides to other countries in connexion with the yellow fever eradication campaign in the Americas.

Colombia 4200 Nutrition (1961 - 1968) PAHO (FAO)

To improve the level of nutrition in the Departments of Caldas, Cauca and Norte de Santander by means of a cooperative programme involving health, education and agricultural services at the local level.


To develop and improve the organization of the school of public health of the University of Antioquia.

Colombia 6200 Health Manpower Studies (1964 - end of 1966) PAHO/Milbank Memorial Fund

To carry out a pilot study of health manpower requirements, taking the available resources into account, and to determine how to plan for increasing these resources in Colombia and other Latin American countries, as recommended by the Charter of Punta del Este.

Colombia 6201 Medical Education (1965 - 1972) R

To provide continuous training to physicians from rural areas.

Colombia 6400 Sanitary Engineering Education (1964 - 1968) PAHO PAHO Community Water Supply Fund (UNESCO)

To improve the technical training of engineers working in sanitary engineering, and to promote the development of a sanitary engineering research centre in the National University of Colombia.

Colombia 6600 Teaching of Preventive Dentistry (1961 - 1968) PAHO (Kellogg Foundation)

To include preventive dentistry in the courses of the School of Dentistry of the University of Antioquia; and to establish a centre for research on dentistry, in which particular attention will be paid to the public health aspects.

Costa Rica 0200 Malaria Eradication Programme (1956 - 1971) MESA PAHO Special Malaria Fund UNICEF

To eradicate malaria from the country.

Costa Rica 2200 Water Supplies (1960 - 1968) PAHO Community Water Supply Fund

To draw up programmes for providing public water supply and sewerage systems to urban and rural communities; and to establish a national water supply and sewerage service.


To prepare and implement a national health plan as part of the national economic and social development plan; to expand and improve the administration of the health services, including the medical care services; to train professional and auxiliary personnel; and to carry out an extensive rural sanitation programme.

Costa Rica 3101 Fellowships R: Dental public health (two for eleven months), drug analysis and control (six months), food control (three months), health statistics (six and a quarter months), hospital administration (fifteen months), industrial hygiene (two weeks), maternal and child health (ten and a half months), nursing administration and supervision (two for six weeks), nursing education (twelve months), nutrition (ten weeks), public health administration (one for ten months, two for eleven months, one for eleven and a half months), radiation protection in industry (two weeks), smallpox laboratory services (one week), tuberculosis epidemiology (nine weeks).

Costa Rica 3200 Laboratory for Diagnosis of Virus Diseases (1962 - 1966) PAHO/Lederle Laboratories

The aim was to organize in the National Health Laboratory a section for the diagnosis of virus diseases. The Organization provided laboratory reagents, as well as advisory services by PASB/Regional Office personnel.

Work on the viral etiology of respiratory infections in children, begun in 1965, was continued, and haemagglutinating agents were isolated in 30 per cent. of the specimens studied. The health units of Hatillo, Pavas, Sán Pedro and Tibás, located in
the metropolitan area of San José, co-operated in this undertaking. Two new members of the laboratory were given training in virus isolation and typing techniques.

Costa Rica 6200 Medical Education (1965) PAHO
A consultant discussed teaching programmes in anatomy with the authorities of the School of Medicine.

Costa Rica 6300 Advanced Nursing Education (1959 - 1968) PAHO
To set up, at the school of nursing of Costa Rica, an advanced education centre to train nurses in teaching, in supervision, and in other specialities; and to evaluate the work of the school.

Cuba 0200 Malaria Eradication Programme (1959 - 1969) R UNICEF
To eradicate malaria from the country and prevent the re-establishment of transmission.

Cuba 2300 Aedes aegypti Eradication (1953 - 1968) PAHO
To eradicate Aedes aegypti.

Cuba 3100 Public Health Services (June 1959 - 1969) UNDP/TA PAHO
To improve the organization of health services at the national, intermediate, and local levels, and to set up a demonstration and training area.

Cuba 3101 Fellowships R: Bacteriology of enteric diseases (three weeks), dental public health (ten and a half months), hospital administration (two for ten and a half months), nursing—programmed instruction (four for one month), obstetrics (four months), paediatrics (twelve months), premature infant care (one for four months, one for six months), public health administration (three for ten months, one for ten and a half months).

Cuba 4200 Nutrition (1965 - 1968) UNDP/TA
To improve the nutritional status of the population.

Cuba 6300 Nursing Education (1961 - 1966) UNDP/TA PAHO UNICEF
The aim was to strengthen the schools of nursing of the country and to prepare nursing instructors. The Organization provided consultant services by the nursing advisers assigned to projects Cuba 3100, Mexico 6300 and AMRO 3202. A post-basic course in nursing education and administration was organized at the Carlos J. Finlay Institute, from which fifty-six instructors graduated. A number of general nursing and paediatric nursing auxiliaries were trained. The Government intends to enable some of these auxiliaries to complete general nursing studies and for this purpose has set up six schools of obstetrical nursing and one school of paediatric nursing which will admit nursing auxiliaries with nine years of general education and two years' experience.

Dominican Republic 2200 Water Supplies (1961 - 1969) PAHO PAHO Community Water Supply Fund
To organize a central water supply and sewerage authority; to design water supply and sewerage systems and to obtain loans for constructing them from international credit agencies.

Dominican Republic 3100 Public Health Services (1953 - 1968) R UNDP/TA PAHO UNICEF
To improve the organization of health services at the national and intermediate levels; and to expand the local services in order to provide integrated services to the whole country.

Dominican Republic 4200 Nutrition (1965 - 1968) R
To develop a programme of nutrition education in order to improve the production, distribution, and use of foods.

Dominican Republic 4800 Medical Care (March - July 1966) PAHO
The Organization provided two consultants in hospital administration to assist in improving the administration of the medical care services and in setting up an organization for their extension. An analysis of the hospital services was made, the general administration of some hospitals was reorganized, with special emphasis on the expansion of integrated health services, accounting services were organized and control and evaluation systems for administration were set up. The consultants also assisted with two one-week courses in hospital administration.

Dominican Republic 6300 Nursing Education (Aug. 1958 - 1968) R
To strengthen the National School of Nursing by preparing nurses for the faculty, improving physical facilities and areas for field practice, and expanding the curriculum to include public health nursing and courses in teaching and supervision.

Ecuador 0200 Malaria Eradication Programme (1956 - 1970) UNDP/TA PAHO Special Malaria Fund UNICEF (AID)
To eradicate malaria from the country.

Ecuador 0500 Leprosy Control (1964 - 1967) PAHO UNICEF
To organize a leprosy control programme in a pilot area in order to develop methods to integrate leprosy control into the regular health services. (See page 112.)

Ecuador 0900 Plague Control (1965 - 1970) UNDP/TA
To develop an effective plague control programme in the endemic areas.

Ecuador 3100 National Health Services (1953 - 1969) R UNDP/TA PAHO UNICEF
To develop integrated public health services at the national and local levels, and especially in the Province of Manabi.
Ecuador 3101 Fellowships PAHO: Bacteriology of enteric diseases (three weeks), epidemiology (one for one month, one for ten months), laboratory services (two months), laboratory services—preparation of culture media (four months), medical laboratory science (five and a quarter months), public health administration (one for ten and a half months, one for eleven months), public health planning (fourteen weeks), tuberculosis laboratory methods (one month), vaccine preparation (one for three months, one for six months).

Ecuador 3102 Rural Medical Services (1956 - 1970) PAHO UNICEF (UN) (FAO) (ILO) (UNESCO)
To promote the economic, social and health development of the rural populations of the Andean Highlands, in order to facilitate their integration into the national community.

Ecuador 3301 National Institute of Health (1952 - ) PAHO
To promote the development of various sections of the National Institute of Health.

Ecuador 6300 Nursing Education (May 1957 - 1968) R PAHO
To improve the organization and teaching at the school of nursing of the School of Medical Sciences of the University of Guayas, in Guayaquil, by preparing instructors, broadening the curriculum to include public health nursing and principles of teaching and supervision, and improving the physical facilities.

Ecuador 6400 Sanitary Engineering Education (1964 - 1968) PAHO
To improve the quality of training in sanitary engineering given in the regular courses and to organize a programme of short intensive courses on various aspects of water supplies and sewage disposal.

El Salvador 3300 Public Health Laboratory Services (1964 - ) PAHO
To carry out a public health laboratory programme covering the whole country and including the setting-up of laboratories in areas where none exist, the establishment of work regulations and techniques, and the training of professional and auxiliary personnel.

El Salvador 6200 Medical Education (1965 - 1966) PAHO
The Organization provided supplies and equipment for research in obstetric physiology to the Department of Physiology of the University of El Salvador Medical School.

El Salvador 6400 Sanitary Engineering Education (1965 - 1968) PAHO Community Water Supply Fund
To improve the training in sanitary engineering given in the regular civil engineering courses, and to establish a programme of short courses on sanitary engineering subjects of interest to the country.

El Salvador 6700 Training in Medical Records (1965) PAHO
A consultant made an evaluation of the medical record systems being used in the hospitals and health centres and submitted suggestions for their improvement.

French Antilles and Guiana 0200 Malaria Eradication Programme (1963 - 1969) PAHO Special Malaria Fund
To eradicate malaria from the departments.

Guatemala 0200 Malaria Eradication Programme (1955 - 1971) MESA PAHO Special Malaria Fund UNICEF (AID)
To eradicate malaria from the country.

Guatemala 2101 Rural Sanitation (1965 - 1967) UNDP/TA
To provide water supplies and sewerage disposal facilities for half the rural population.

To formulate and carry out a national health plan which will include the extension of health services to cover the whole population; and to train professional and auxiliary personnel.

Guatemala 3300 Public Health Laboratories (1964 - 1968) UNDP/TA
To study and evaluate the services provided by the central and local public health laboratories; to plan programmes for the Biological Institute and for all laboratories functioning at other levels; to set up local laboratories where necessary; and to train personnel.

Guatemala 6200 Medical Education (May 1966) PAHO
A consultant was provided for two weeks to advise on the strengthening of medical education.
Guatemala 6300  Nursing Education (1965) PAHO

A consultant was provided to assist the National Faculty of Nursing in evaluating its curriculum, especially with regard to its relevance to the health needs of the country. Staff and other assistance were provided for this project between 1955 and 1964.1

Guatemala 6500  Veterinary Medicine Education
(1962 - 1968) PAHO

To strengthen the School of Veterinary Medicine of the University of San Carlos, especially as regards the teaching of public health and preventive medicine.

Guyana 0200  Malaria Eradication Programme
(1961 - 1969) PAHO Special Malaria Fund  UNICEF

To eradicate malaria from the country.

Guyana 2200  Water Supplies (1965) PAHO

A consultant was provided for two weeks to assist in drafting a bill for establishing a water and sewerage corporation.

Guyana 3100  National Health Services (1963 - 1968) R

To reorganize, expand, and integrate the health and environmental sanitation services in the heavily populated coastal area and in isolated communities in the interior.

Guyana 3200  Nursing Services (1960 - 1970) UNDP /TA PAHO

To develop the nursing services and provide nurses with further training in nursing administration.

Haiti 0200  Malaria Eradication Programme
(1961 - 1971) PAHO Special Malaria Fund  UNICEF (AID)

To eradicate malaria from the country. (See page 113.)

Haiti 2200  Water Supplies (1960 - 1968) PAHO

To plan, design, and finance an extension of the water supply system of Port-au-Prince and, later, to plan systems for the rest of the country.

Haiti 3100  National Health Services

To organize integrated public health services at the central and local levels; to improve environmental health services; and to train professional and auxiliary personnel.

Haiti 3101  Fellowships PAHO: Electro-encephalography (six months).

Haiti 3102  Fellowships R: Electro-encephalography (four months).

Haiti 3103  Emergency Health Services
(1964 - 1966) UNDP /TA PAHO  UNICEF (UNESCO)

The staff of the Organization assigned to project Haiti 3100 gave advisory services in connexion with the rehabilitation and strengthening of the health services in the areas affected by a hurricane in 1963 and assisted in planning the distribution of the equipment and supplies provided by UNICEF for hospitals and health centres in the areas concerned.

Haiti 3300  Public Health Laboratory (1953 - 1967) PAHO

To strengthen the organization of the public health laboratory; to set up subsidiary laboratories in three local areas; and to improve the organization of hospital laboratories and dispensaries in the region damaged by the hurricane Flora.

Haiti 4200  Nutrition Programme
(1961 - 1969) PAHO PAHO /Williams Waterman Fund (FAO)

To carry out a nutrition programme; and to establish an agency to co-ordinate the nutrition work of the Ministries of Health, of Education, and of Agriculture.

Honduras 0200  Malaria Eradication Programme
(1956 - 1970) MESA PAHO Special Malaria Fund  UNICEF (AID)

To eradicate malaria from the country.

Honduras 2200  Water Supplies
(1960 - ) PAHO PAHO Community Water Supply Fund

To plan and carry out national programmes for the construction of water supply systems and for the improvement of existing services.

Honduras 3100  National Health Services

To organize integrated public health services at the central and local levels; to improve environmental health services; and to train professional and auxiliary personnel.

Honduras 3101  Fellowships PAHO: Dental public health (eleven months), environmental sanitation (two months), food and drug control (two months), health education (one for eleven and a half months, one for twelve months), public health administration (ten and a half months), public health nursing administration and supervision (ten months), public health planning (fourteen weeks), tuberculosis laboratory techniques (three months), veterinary public health (eleven months).

Honduras 3102  Fellowships R: Clinical and social paediatrics (two for three months), hospital administration (one for ten months, one for ten and a half months, one for twelve months), leprosy (two months), nursing services (nine months), pedagogic methods (two for two weeks), public health nursing (ten months), sanitary engineering (three for eleven months), sanitary engineering—pumps and pumping stations (two weeks).

Honduras 4400  Dental Health (1966) PAHO

A twelve-month fellowship in dentistry.

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1 See Off. Rec. Wld Hlth Org. 139, 96, 150.
Honduras 6300 Nursing Education (July 1966 - 1970) PAHO
To establish a university school of nursing in Tegucigalpa.

Honduras 6400 Sanitary Engineering Education
(1965 - 1970) PAHO Community Water Supply Fund
To organize short courses on problems related to the water supply programme.

Jamaica 2200 Rural Water Supplies (1963 - ) UNDP/TA
To improve water supply systems and construct new ones in rural areas.

Jamaica 3100 Public Health Services (1963 - 1968) R PAHO
To make an assessment of health problems, needs and resources and the cost of public health services; and to prepare and implement a national health plan as part of the plan for social and economic development of the country.

Jamaica 4300 Mental Health (1964 - 1968) PAHO
To prepare a national mental health programme, integrated into the general health services, that will include curative and preventive services and training of personnel. (See page 112.)

Jamaica 6201 Department of Preventive Medicine, University of the West Indies (Aug. 1963 - 1968) PAHO
To improve the courses given by the Department of Preventive Medicine of the University of the West Indies, and to expand the teaching of medicine in the Caribbean area.

Jamaica 6300 Nursing Education (1960 - 1966) PAHO
The aim was to improve basic education in the schools of nursing, and to organize advanced courses for instructors and supervisors. The Organization provided a nurse educator and two fellowships, one of six months and one of twelve months, in nursing education. Advisory services were also provided by the nurse assigned to project AMRO 3201.
Workshops were held for forty-five senior nurses and for twenty-four programme committee officers of health units and hospitals in order to promote the in-service training programme in the health units and hospitals. Workshops were also held for a group of instructors of schools of nursing, for the purpose of considering how to introduce psychiatric nursing into the basic nurse training programme.
A sixteen-week course in ward management and supervision was held for twelve ward sisters and a two-week orientation programme for nine newly appointed ward sisters. An orientation programme was prepared for the 120 staff nurses of the Bellevue Mental Hospital on the need for changes in nursing education.

Jamaica 6301 Advanced Nursing Education, University of the West Indies (1965 - 1968) R
To strengthen basic nursing education in the Caribbean area by training nursing instructors at the University of the West Indies.

Mexico 0200 Malaria Eradication Programme
(1956 - 1971) UNDP/TA PAHO Special Malaria Fund UNICEF
To eradicate malaria from the country.

Mexico 0201 Malaria Eradication in Problem Areas
(1965 - 1967) MESA
To study the efficacy of various combined attack measures in eliminating persistent low-level transmission in problem areas.

Mexico 0400 Tuberculosis Control
(June 1960 - 1968) R UNDP/TA UNICEF
To carry out a series of epidemiological surveys in various parts of the country; and to demonstrate the effectiveness of tuberculosis control measures in a pilot area.

Mexico 0701 Rabies Control (1966 - ) PAHO
To plan and carry out rabies control programmes at national and state levels, with emphasis on those of the United States/ Mexico border area.

Mexico 2200 Water Supplies
(1961 - ) R PAHO Community Water Supply Fund
To plan a national water supply programme.

Mexico 3101 State Health Services (1954 - 1968) R PAHO
To improve the organization and co-ordination of health services at the central, regional, and local levels.

Mexico 3102 Fellowships R: Clinical and social paediatrics (three months), smallpox laboratory services (one week), medical use of radioisotopes (seven months), public health administration (four months), vaccine production (one month).

Mexico 3103 Fellowships PAHO: Air pollution control (two months), bacteriology of enteric diseases (thirteen weeks), public health administration (six weeks), radiation protection in industry (six weeks), sanitary bacteriology (five weeks), sanitary engineering (three for one month, one for six weeks).

Mexico 4200 Nutrition (1959 - 1968) UNDP/TA (FAO)
To carry out a nutrition programme covering the whole country, using the resources of the National Institute of Nutrition. The programme includes nutrition surveys in various regions and training of professional and auxiliary personnel.

Mexico 6100 School of Public Health (May 1954 - ) R
To strengthen and expand the teaching programme of the School of Public Health of the University of Mexico.

Mexico 6200 Medical Education (1958 - ) R
To improve medical education, especially by providing teaching staff with training in the preventive and social aspects of medical practice.
Mexico 6300 Nursing Education (1958 - 1967) PAHO

To improve basic nursing education; and to prepare graduate nurses to serve as instructors, and professional nurses for the training of auxiliary nursing personnel.

Mexico 6400 Sanitary Engineering Education
(1961 - 1968) R PAHO

To organize, in the School of Sanitary Engineering of the University of Mexico and in the School of Engineering of the University of Nuevo León, courses in sanitary engineering and in public health for graduate engineers.

Mexico 6500 Veterinary Medicine Education (1958 - ) R

To strengthen the teaching of public health and preventive medicine in the schools of veterinary medicine.

Netherlands Antilles 3101 Fellowships R: Public health nursing (ten months).

Nicaragua 0200 Malaria Eradication Programme
(1957 - 1972) R PAHO Special Malaria Fund UNICEF (AID)

To eradicate malaria from the country.

Nicaragua 3100 Public Health Services

To draft a national health plan that will serve as a basis for the planning and execution of specific programmes.

Nicaragua 3101 Fellowships PAHO: Bromatology (six months), food and drug control (three weeks), industrial hygiene (six months), sanitary engineering (two for eleven months).

Nicaragua 4800 Medical Care Services
(Nov. 1965 - March 1966) PAHO

The Organization provided a consultant to study the possibility of co-ordinating the hospital resources of the National Board of Social Welfare with those of the National Institute of Social Security. He made an analysis of the administrative structure of the national hospital system, including hospitals pertaining to the social security institution, submitted recommendations on the improvement of the hospitals and on systems for co-ordinating social security services with those of other national organizations, and prepared a general regulations manual as a basis for the organization of regional hospital systems.

Nicaragua 6200 Medical Education (1965 - ) PAHO

To strengthen medical education by improving the training of teachers of basic medical sciences and of preventive and social medicine.

Nicaragua 6400 Sanitary Engineering Education
(1965 - 1968) PAHO

To organize short courses on subjects relating to the water supply programme.

Panama 0200 Malaria Eradication Programme
(1956 - 1977) MESA PAHO Special Malaria Fund UNICEF

To eradicate malaria from the country.

Panama 2200 Water Supplies
(1960 - 1968) PAHO Community Water Supply Fund

To organize a national water supply and sewerage authority, and to carry out a water supply programme.

Panama 3100 National Health Services
(Aug. 1952 - 1970) UNDP/TA

To prepare and implement a national health plan providing for reorganization, extension and improvement of the health services and to train the necessary professional and auxiliary personnel.

Panama 3101 Fellowships R: Clinical and social paediatrics (three months), epidemiology (ten months), ground water development (ten weeks), health statistics (two for six and a quarter months), maternal and child health (four for six weeks), medical librarianship (five and a quarter months), medical records (four and a quarter months), nursing services (nine months), pedagogic methods (two for two weeks), sanitary engineering (ten weeks), water supply systems (one for five weeks, one for two months).

Panama 3300 Laboratory Services (1965) PAHO

The Organization provided a short-term consultant and laboratory reagents to assist in improving and expanding the work of the health laboratory services in the country.

Panama 6400 Sanitary Engineering Education
(1965 - 1968) PAHO Community Water Supply Fund

To organize short courses on subjects relating to water supply programmes.

Paraguay 0200 Malaria Eradication Programme

To eradicate malaria from the country. The programme was delayed in the preparatory phase from 1961 to 1964, but a new eradication plan became operational in 1965.

Paraguay 3100 National Health Services

To plan a ten-year health programme as an integral part of the national plan for economic and social development; to develop integrated health services throughout the country; and to train professional and auxiliary personnel.

Paraguay 3101 Fellowships R: Food analysis (four weeks), ground water development (two weeks), microbiology (one month), public health administration (four months), public health planning (two for fourteen weeks), rural water supplies (two for two weeks), tuberculosis (three months).

Paraguay 3102 Fellowships PAHO: Microbiology (three months), public health administration (one for ten weeks, one for four months, one for ten and a half months, one for eleven months), veterinary public health (eleven months).

Paraguay 4200 Nutrition (1960 - 1968) PAHO UNICEF (FAO)

To develop, in a selected area of the country, a nutrition programme to include education and training, promotion of
the production of highly nutritious foods, and improvement of the nutritional status of pregnant women, nursing mothers, and children of pre-school and school age.

**Peru 0200**  
**Malaria Eradication Programme**  
(1956 - 1971) PAHO Special Malaria Fund  
UNICEF  
To eradicate malaria from the country by stages.

**Peru 0402**  
**Tuberculosis Control, Junín** (1964 - 1966) PAHO  
The aim was to develop a tuberculosis control programme in the Province of Huancayo, Department of Junín, which would include the training of professional and auxiliary personnel. The Organization provided two one-month fellowships in tuberculosis laboratory methods and supplies and equipment.  
A complete review was made of the diagnosis of tuberculosis cases, the method having been adjusted to the standards established for the project, and a programme for the training of personnel in work methods was carried out.

**Peru 0900**  
**Plague Control** (1963 - 1968) PAHO  
To plan and carry out an epidemiological study of plague, and to implement a control programme.

**Peru 2200**  
**Water Supplies**  
(July 1960 - 1968) UNDP/TA PAHO Community Water Supply Fund (Inter-American Development Bank)  
To plan and implement a national programme for the construction of new water supply and sewerage services, and the extension of existing systems.

**Peru 3100**  
**National Health Services**  
(Jan. 1956 - 1968) UNDP/TA PAHO UNICEF  
To improve health services at the central, regional and local levels; and to organize health areas, beginning with one in the Department of Junín.

**Peru 3101**  
**Fellowships**  
R: Clinical and social paediatrics (two for three months), dental public health (eleven months), health education (eleven and a half months), laboratory services (one for one week, one for two weeks, one for ten weeks, one for four months), leprosy (three and a half months), nutrition (five months), pharmacy teaching (one for six and a half months, one for twelve months), public health administration (ten months), public health legislation (six weeks), public health planning (fourteen weeks), tuberculosis bacteriology (one month), veterinary public health (eleven months).

**Peru 3102**  
**Andean Region Development Programme**  
(1955 - ) UNDP/TA (UN) (FAO) (ILO) (UNESCO)  
To promote the economic, social and health development of the indigenous populations of the Andean Highlands, so as to facilitate their integration into the national community.

**Peru 3103**  
**Fellowships**  
PAHO: Bacteriology of enteric diseases (three weeks), industrial hygiene (two for two weeks), medical care administration (two months), public health administration (two for four months).

**Peru 4200**  
**Nutrition** (1965 - 1968) PAHO (FAO) (ILO)  
To improve the nutritional status of the population in the departments of Junín, Pasco, and Puno.

**Peru 6100**  
**School of Public Health** (1963 - 1968) PAHO  
To establish a school of public health in order to ensure adequate preparation of professional, technical, and auxiliary personnel for institutions that provide health services to the population.

**Peru 6200**  
**Medical Education** (1964 - ) PAHO  
To improve the medical education programmes of the country's medical schools.

**Peru 6300**  
**Nursing Education** (April 1959 - 1968) R PAHO  
To improve basic nursing education by organizing a school of nursing at the National University of San Marcos, and strengthening the existing nursing schools so that they may obtain university recognition.

**Peru 6400**  
**Sanitary Engineering Education**  
(1964 - 1968) PAHO Community Water Supply Fund  
To revise the curriculum of the School of Sanitary Engineering of the National University of Engineering, and to organize courses on subjects bearing on water supply and sewerage.

**Peru 6500**  
**Veterinary Medicine Education** (1965 - 1969) R  
To strengthen the School of Veterinary Medicine of the University of San Marcos, especially as regards the teaching of public health and preventive medicine.

**Surinam 0200**  
**Malaria Eradication Programme**  
(1957 - 1971) PAHO Special Malaria Fund  
UNICEF  
To eradicate malaria from the country.

**Surinam 2300**  
**Aedes aegypti Eradication**  
(1952 - ) UNDP/TA  
To eradicate *Aedes aegypti*.

**Surinam 3100**  
**Health Services** (1965 - 1968) PAHO  
To strengthen and integrate the health services and to extend them to rural areas.

**Trinidad and Tobago 2200**  
**Water Supplies**  
(1963 - 1968) PAHO Community Water Supply Fund  
To set up a central water supply and sewerage authority, and prepare plans for water supplies for rural populations.

**Trinidad and Tobago 3100**  
**Health Services** (1965 - 1966) PAHO  
The Organization provided a short-term consultant in administrative methods to assist in improving the administrative services in the Ministry of Health, particularly as regards supply and management and general services.
Trinidad and Tobago 3103 Fellowships R: Nursing administration and supervision (twelve for four months), public health nursing (three months); PAHO: Nutritional and metabolic diseases (twelve months), public health administration (two for eight months), water supply systems (twelve months).

Trinidad and Tobago 3200 Nursing Services (1959 - ) PAHO
To strengthen and improve the nursing services.

Trinidad and Tobago 3300 Laboratory Services (1966) PAHO
Two fellowships in microbiology—one of six months and one of twelve months—were awarded to assist the development of laboratory services.

Trinidad and Tobago 4200 Nutrition (1961 - 1966) R PAHO UNICEF (FAO)
The aim was to develop a national nutrition programme and to train professional and auxiliary personnel in nutrition. The Organization provided advisory services by the staff assigned to project AMRO 4201 and by PASB/Regional Office staff.
The plan of operations for the programme was revised in conformity with the new organizational structure of the Ministry of Health and Housing and priorities and indices for evaluation of activities were defined. Height and weight data collected from rural and urban populations were analysed and standard height and weight curves were prepared. A three-week course on food and nutrition was held for thirty-six primary school teachers, and nutrition teaching was started in thirty-six schools in which small animal stock farm projects were also begun. The personnel of ten health centres (public health nurses and inspectors) received intensive training in nutrition education. The teaching of nutrition was initiated in a teacher-training college and in public health nursing schools it was increased from eight to sixteen hours with sixteen hours of demonstrations.

Trinidad and Tobago 4201 Pathogenesis and Prevention of Anaemias (1963 - 1966) PAHO/United States National Institutes of Health
The aim was to study the pathogenesis and prevention of anaemias in Trinidad and Tobago, in order to identify the major environmental (including nutritional) and hereditary factors and qualify their relative importance, for the purpose of determining measures to reduce anaemia prevalence. The Organization provided a scientist and consultant services by the adviser assigned to project AMRO 4201.
The study, in which infants, children of pre-school and school age, pregnant women and nursing mothers were examined for anaemias, was completed and, on the basis of the findings, iron therapy for pregnant women and nursing mothers and other persons suffering from anaemia was started through the health centres. Several new methods were added to the national laboratory procedures for the investigation of nutritional anaemias and a study of the absorption of iron from four local foods was initiated.

Trinidad and Tobago 4800 Hospital Administration and Medical Records (1965 - 1967) UNDP/TA PAHO
To organize medical records departments in the hospitals, clinics, and health centres of the Ministry of Health and Housing; and to train personnel in medical record keeping.

Trinidad and Tobago 6400 Sanitary Engineering Education (1966) PAHO
The aim was to develop sanitary engineering teaching, services and research at the Faculty of Engineering of the University of the West Indies, where a one-year diploma programme of study is to be instituted and laboratories for research and service functions installed. The Organization provided a short-term consultant.
A preliminary proposal for an education programme was prepared and submitted to the Government and the Dean of the Faculty of Engineering. Nine persons attended a one-week course on training needs of water supply personnel and nine others a one-week course on technical and administrative water supply problems in the Eastern Caribbean.

United States 3100 Consultants in Specialized Fields of Public Health (March 1958 - ) R
To provide consultant services on specialized problems in public health.

United States 3101 Fellowships PAHO: Child psychiatry (six weeks), environmental health (nine weeks), forensic medicine (three months), hospital administration (two months), industrial hygiene (six weeks), meningococcal diseases (two months), nursing—administration of home care services (six weeks), pneumoconiosis (six weeks), preventive medicine teaching (ten weeks), public health nursing administration (two months), public health nursing education (six weeks), school health (three months).

United States 3102 Medical and Public Health Training (1963 - ) PAHO
To enable officers of the Division of International Health of the federal Public Health Service to obtain first-hand knowledge of health conditions and problems in the countries which send fellows to study in the United States of America.

United States 3103 Fellowships R: Environmental sanitation (three months), food microbiology (three months), geriatrics (seven weeks), hospital administration (three months), medical care administration (ten weeks), nursing education (two months), public health administration (seven weeks), public health dentistry (six weeks), public health nursing education (three months).

Uruguay 0701 Rabies Control (1965 - ) PAHO
To plan and carry out an antirabies campaign, which in its first phase will cover the departments of Montevideo, Canelones and Rivera, in order to control an outbreak of the disease.

To organize integrated health services in five departments, and later to extend such services to the whole country.

Uruguay 3101 Fellowships R: Epidemiology (ten months), hospital administration (fifteen months), maternal and child health (two months), mental health (eleven and a half months), nursing administration (ten weeks), public health planning (two for fourteen weeks), sanitary engineering—use of computers
(two for two weeks), smallpox laboratory services (one week),
trypanosomiasis (three months), water and sewage analysis (two
weeks), water pollution (two weeks).

**Uruguay 3102 Fellowships PAHO**: Bacteriology of enteric
diseases (three weeks), nutrition (fourteen weeks), sewage
treatment (two weeks).

**Uruguay 3500 Health Statistics (1965 - 1970)** R

To improve the collection of health statistical information
and to train statistical personnel through basic and intermediate-
level courses.

**Uruguay 4800 Medical Care and Hospital Administration
(1963 - 1968) UNDP/TA PAHO**

To improve the organization and administration of the
medical care services of the Ministry of Public Health.

**Uruguay 6100 Training of Health Personnel (1960 - 1968)** PAHO

To strengthen the Dr Carlos Nery School of Nursing, and
to train auxiliary personnel for the health services.

**Uruguay 6200 Medical Education (1964 - 1968)** PAHO

To organize courses on the methodology of medical teaching
at the school of medicine of the University of Uruguay.

**Venezuela 0400 Tuberculosis Control
(Nov. 1965 - March 1966)** R

The aim was to test various procedures for the bacteriological
diagnosis of tuberculosis with a view to their general use in the
country, and to organize short training courses for national
and international personnel. The Organization provided a
consultant from November 1965 to March 1966. Comparative
studies were made of various procedures for the collection
and preparation of laryngeal swab sputum samples and culture
media and an evaluation of the results was begun. The first
course on mycobacteria was given in January and February 1966.

**Venezuela 2300 Aedes aegypti Eradication (1958 - )** PAHO

To eradicate *Aedes aegypti*.

**Venezuela 2400 Rural Housing (1963 - 1968)** R

To plan rural housing programmes.

**Venezuela 3101 Fellowships PAHO**: Dental care (ten weeks),
dental public health (eleven months), epidemiology (twelve
months), ground water development (two weeks), health sta-
tistics (one month), insecticides (two months), laboratory ser-
vice (three months), public health administration (four
months), public health nursing (twelve months), veterinary
public health (twelve months).

**Venezuela 3102 Fellowships R**: Clinical and social paediatrics
(three months), laboratory services (two for three months),
public health planning (three for fourteen weeks), sanitary
engineering (ten weeks), tuberculosis control (two months).

**Venezuela 3301 National Institute of Hygiene
(1964 - 1968)** PAHO

To develop virological studies and the preparation of freeze-
dried vaccines at the National Institute of Hygiene.

**Venezuela 4200 Nutrition (1965 - 1968)** PAHO

To carry out a nutrition programme on a national scale and
to train personnel.

**Venezuela 4300 Mental Health (1954 - 1968)** PAHO

To assess mental health problems and to plan a national
mental health programme, integrated into the national health
plan, and providing for care and rehabilitation of patients,
training of personnel, research, and prevention of mental
disorders.

**Venezuela 4600 Industrial Hygiene (1962 - 1968)** PAHO

To strengthen the industrial hygiene and occupational health
services of the Ministry of Health and Welfare.

**Venezuela 4801 Rehabilitation (1963 - 1968)** R

To provide rehabilitation services, by the establishment of
a national rehabilitation institute and rehabilitation units
attached to hospitals and health centres.

**Venezuela 6100 School of Public Health (1961 - 1968)** R

To broaden the scope of the School of Public Health of the
Central University, Caracas, and improve the teaching.

**Venezuela 6200 Medical Education (1958 - 1968)** PAHO

To improve medical education in Venezuela, in particular as
regards preventive medicine and the teaching of basic sciences.

**Venezuela 6300 Nursing Education
(April 1959 - 1968)** UNDP/TA PAHO

To establish, at the School of Public Health, advanced courses
in nursing education and in administration of nursing services.

**Venezuela 6400 Sanitary Engineering Education
(1964 - 1968)** UNDP/SF PAHO Community Water Supply
Fund UNICEF

To strengthen the sanitary engineering courses within the
regular civil engineering curriculum in four universities; to
organize a course of post-graduate studies at the Central Uni-
versity of Venezuela; and to establish laboratories for research
and teaching.

**West Indies 0200 Malaria Eradication Programme
(1956 - 1966)** PAHO Special Malaria Fund UNICEF

The aim was to eradicate malaria from the three island groups
of Dominica, Grenada, and St Lucia. The Organization provided
two sanitarians from 1958 to 1962 and one from 1962 to Sep-
tember 1964, fellowships for five laboratory technicians and two
sanitarians, and supplies and equipment. Advisory services
were given by the staff of project AMRO 0201.

House spraying with DDT was carried out in Grenada and
Carriacou from February 1957 to February 1960, when malaria
surveillance activities were instituted. No case of malaria has
been found since March 1959 and Grenada and Carriacou were
placed on the WHO official register in November 1962 as having eradicated malaria.

Operations in St Lucia were begun in January 1956. House spraying with DDT was the main attack measure and, after a protracted first cycle, operations proceeded according to plan. Spraying was discontinued in September 1959 and malaria surveillance activities were instituted. No autochthonous cases were found between June 1959 and the end of 1962 and the island was placed on the WHO official register as having eradicated malaria in December 1962. In 1963, however, a focus of *Plasmodium malariae* in children (two autochthonous cases and three of uncertain origin) was discovered. Thorough measures to eliminate the focus were taken and, when intensive search failed to reveal more cases, the certification was allowed to stand. During 1964 four relapsing cases of *P. malariae* were discovered. There were no cases in 1965 or up to June 1966.

In Dominica, eradication operations began in June 1959, with DDT spraying as the principal attack measure. Apart from the slowing-down of some cycles owing to financial difficulties, the attack phase proceeded according to plan until it was discontinued in November 1962. No case of malaria has been discovered in the island, despite careful scrutiny, since November 1961. The third year of the consolidation phase terminated at the end of 1965 and the island was entered in the WHO official register as having eradicated malaria.

This programme achieved its objective of eradicating malaria from all the islands mentioned above.

**West Indies 2200 Water Supplies**
(1962 - ) PAHO Community Water Supply Fund

To plan water supply systems for several islands in the Caribbean.

**West Indies 3101 Fellowships PAHO:** Barbados—nursing education (twelve months); Bermuda—insect control (one month); Grenada—nursing education (twelve months); St Lucia—laboratory services (three months); St Vincent—laboratory services (three months).

In addition, eight ten-week fellowships were awarded for a course on administration of health services to trainees from Antigua, Barbados, Bermuda, Dominica, Grenada, St Kitts and St Lucia.

**West Indies 3102 Fellowships R:** Antigua—laboratory services (twelve months), public health nursing administration (twelve months); Barbados—health statistics (six and a half months), laboratory services (twelve months), rehabilitation (six months); Grenada—*Aedes aegypti* control (one month), laboratory services (twelve months), nursing administration (twelve months); Montserrat—health education (four months), meat inspection (fourteen weeks); St Lucia (sanitary inspection (ten and a half months).

In addition, eight three-month fellowships were awarded for a course on health statistics to trainees from Antigua, Barbados, Bermuda, Grenada and Montserrat, and fourteen four-month fellowships for a course on nursing administration and supervision to trainees from Antigua, Barbados, Dominica, Grenada Montserrat, St Kitts and St Vincent.

**West Indies 3104 Health Services, Montserrat**
(1965 - ) UNDP/TA

To develop a general health programme based on the strengthening and expansion of existing services.

**West Indies 3200 Nursing Services**
(1959 - 1968) R PAHO

To improve the nursing services in Barbados, Dominica, Montserrat, and St Lucia and, later, in other islands in the eastern Caribbean.

**West Indies 3300 Laboratory Techniques**
(1966) PAHO

Two six-month fellowships in laboratory services (medical technology) were awarded to trainees from Nassau.

**West Indies 3500 Health Statistics**
(1966) UNDP/TA

Three three-month fellowships were awarded for a health statistics course in Jamaica to trainees from the British Virgin Islands, Dominica and St Vincent.

**West Indies 4802 Training in Hospital Administration**
(1965 - ) UNDP/TA

To train hospital and nursing administrators for the hospitals of the Eastern Caribbean islands.

**AMRO 0101 Epidemiology, Zone I**
(1965 - ) PAHO

**AMRO 0102 Epidemiology, Zone II**
(1965 - ) PAHO

**AMRO 0103 Epidemiology, Zone III**
(1961 - ) PAHO

**AMRO 0104 Epidemiology, Zone IV**
(1966 - ) PAHO

**AMRO 0106 Epidemiology, Zone VI**
(1958 - ) PAHO

To stimulate the development and co-ordination of programmes for the eradication or control of communicable diseases in the countries of the zone; to advise the governments on new methods and techniques of control and on problems related to the application of the International Sanitary Regulations; and to promote better reporting of notifiable diseases.

**AMRO 0200 Malaria Technical Advisory Services, Inter-zone**
(1955 - 1966) R MESA PAHO Special Malaria Fund

To provide technical advisory services and local training in certain aspects of country programmes for which long-term appointments of advisers are not necessary.

**AMRO 0201 Malaria Technical Advisory Services, Zone I**
(1957 - 1966) PAHO Special Malaria Fund

The Organization provided a team which gave technical advice, as necessary, to the malaria eradication projects in the zone. The number of team members varied during the course of the project, the full complement being two medical officers specialized in malariology, a sanitary engineer, an administrative methods officer, a statistician, an entomologist, a laboratory adviser, a sanitary officer and an administrative assistant. Short-term consultants were also provided.

By the end of 1965 the maintenance phase of malaria eradication had been reached in Barbados, Dominica, Grenada and Carriacou, Guadeloupe, Jamaïca, Martinique, Puerto Rico, St Lucia, Trinidad and Tobago, and the United States Virgin Islands. The only areas in Zone I where malaria transmission still continued were some parts of French Guiana, Guyana, Surinam and Venezuela, where programmes continued in operation.

The necessary advisory services will in future be provided to all areas in Zone I by regional headquarters and specific country project personnel and short-term consultants.
AMRO 0203 Malaria Technical Advisory Services, Zone III (1958 - 1969) MESA

To provide technical advice to the countries of the zone and to co-ordinate their malaria eradication programmes; and to co-ordinate the research and training activities of these programmes with those of the continent-wide malaria eradication programme.

AMRO 0204 Malaria Technical Advisory Services, Zone IV (1958 - 1971) PAHO Special Malaria Fund

AMRO 0209 Insecticide Testing Team (1960 - 1968) MESA

To test insecticides and larvicides and evaluate their potentialities.

AMRO 0210 Malaria Eradication Epidemiology Teams (1960 - 1969) MESA

To determine the causes of the persistence of malaria transmission in areas regularly sprayed with residual insecticides, and to recommend remedial measures.

AMRO 0214 Advanced Courses in Malaria Epidemiology, Venezuela (1965 - 1968) PAHO Special Malaria Fund

To train epidemiologists of national malaria eradication programmes in methods of solving the difficulties encountered in problem areas.

AMRO 0216 Research in Epidemiology of Malaria Eradication in Problem Areas (1966 - 1968) PAHO Special Malaria Fund

To test various methods for expediting the eradication of malaria from areas where routine methods have not secured the interruption of transmission; and to study the epidemiology of malaria cases due to Plasmodium falciparum resistant to chloroquine.

AMRO 0217 Field Investigation of Mass Drug Treatment (1966 - 1968) PAHO Special Malaria Fund

To carry out, in pilot areas, field investigations of mass treatment with various combinations of drugs other than chloroquine-primaquine, as a means of eradicating malaria.

AMRO 0300 Smallpox Eradication, Inter-zone (1951 - ) PAHO

To co-operate with governments of the Region in the production of smallpox vaccine and advise them on the organization, conduct, and evaluation of national smallpox eradication programmes.

AMRO 0308 Courses on the Laboratory Diagnosis of Smallpox, São Paulo (21 Aug. - 3 Sept. 1966) R

Two one-week courses in the laboratory diagnosis of smallpox were held at the Instituto Adolfo Lutz, in São Paulo, for personnel of laboratories in charge of smallpox diagnosis in Latin American countries.

The Organization provided the cost of attendance of the participants and two consultants. Staff and facilities for the courses were provided by the Instituto Adolfo Lutz.

AMRO 0400 Tuberculosis Control, Inter-zone (1957 - ) R (Government of Venezuela)

To stimulate the expansion of tuberculosis control programmes in the Region by assisting governments in their planning and execution and promoting the convening of technical meetings on tuberculosis.

AMRO 0403 Tuberculosis Control, Zone III (1963 - 1968) PAHO

AMRO 0404 Tuberculosis Control, Zone IV (1962 - 1968) R

To assist countries of the zone in studying, organizing, carrying out and evaluating tuberculosis control programmes; in training professional and auxiliary personnel in modern techniques of tuberculosis control; and in integrating tuberculosis control work into the work of the general health services.

AMRO 0500 Leprosy Control, Inter-zone (1958 - ) PAHO

To determine the prevalence and characteristics of leprosy in the Americas; and to assist countries in planning and organizing leprosy control work and in training professional and auxiliary personnel.

AMRO 0504 Leprosy Control, Zone IV (1960 - ) R

AMRO 0506 Leprosy Control, Zone VI (1962 - ) R

To assist the countries of the zone in planning, organizing, carrying out and evaluating leprosy control programmes; in training professional and auxiliary personnel in leprosy control; and in integrating leprosy control work into the general health services.

AMRO 0600 Yaws Eradication and Venereal Disease Control, Inter-zone (1961 - ) R PAHO

To meet requests from countries for advisory services on yaws eradication and venereal disease control.

AMRO 0700 Pan American Zoonoses Centre, Azul, Argentina (1956 - ) UNDP/TA PAHO (Government of Argentina) (United States Public Health Service)

To advise countries of the Region on the establishment and improvement of veterinary public health services and control programmes; to carry out research on the most prevalent zoonoses; and to train technical personnel for zoonoses control work.

AMRO 0701 Rabies Control, Zone I (1965 - 1968) R

To assist countries of the zone with epidemiological studies of rabies in wild animals, in developing and testing new vaccines and other methods of rabies control, and in training personnel in new diagnostic techniques.

AMRO 0703 Veterinary Public Health, Zone III (Sept. 1957 - ) R

To assist the countries of Zone III in developing veterinary public health services and activities, especially the study and control of zoonoses and the application of protective measures in food control; to promote the teaching of veterinary public health; and to collaborate in the evaluation of veterinary public health and related programmes.
AMRO 0800 Pan American Foot-and-Mouth Disease Centre, Rio de Janeiro (1951 - 1953) PAHO/Organization of American States (AID) (Government of Brazil)

To provide countries of the Americas with technical advisory services for the control of foot-and-mouth disease, for laboratory diagnosis of the disease, and for the training of professional and auxiliary personnel; and to carry out research on the preparation of modified live-virus vaccine.

AMRO 0901 Bilharziasis Control (1960 - 1961) PAHO

To help countries to appraise their bilharziasis problem, plan and develop control programmes, and plan research projects.

AMRO 0908 Symposium on Onchocerciasis, Guatemala City (2 - 3 Dec. 1965) PAHO

The Organization provided five temporary advisers to assist in organizing the symposium, which was held by the Government of Guatemala for the purpose of co-ordinating research on onchocerciasis and onchocerciasis control or eradication programmes in the countries of the Americas.

AMRO 2101 Sanitary Engineering, Zone I (1960 - 1961) PAHO

AMRO 2102 Sanitary Engineering, Zone II (1960 - 1961) R PAHO

AMRO 2103 Sanitary Engineering, Zone III (1960 - 1961) R PAHO

AMRO 2104 Sanitary Engineering, Zone IV (1960 - 1961) PAHO

AMRO 2106 Sanitary Engineering, Zone VI (1960 - 1961) PAHO

To assist the governments of countries in the zone in improving the organization of the environmental sanitation services of the Ministry of Health; to advise the agencies responsible for water supply and sewerage services; and to co-operate with universities and other institutions in training professional and auxiliary personnel for sanitation work.

AMRO 2107 Environmental Sanitation, Caribbean Area (May 1956 - 1961) UNDP/TA PAHO

To investigate and evaluate environmental conditions and provide technical advice during the development of extensive sanitation programmes in the countries and territories of the Caribbean area.

AMRO 2108 Seminar on Sanitary Engineering, Zone III, Guatemala City (28 Nov. - 4 Dec. 1965) PAHO

The seminar discussed the status of water supply programmes in the countries of Central America and in Panama and watercourse pollution control programmes. It was attended by eighty-seven participants from Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, and by seven participants from various institutions. Thirteen officials of the Pan American Sanitary Bureau also attended.

The Organization provided the cost of attendance of ten participants.

AMRO 2109 Sewage Disposal and Water Pollution Control (1962 - 1966) PAHO

The aim was to advise governments of the Region in the planning of programmes for the construction of sewerage and sewage treatment plants and on the solution of specific problems of watercourse pollution.

The Organization provided short-term consultants who advised on problems related to sewerage systems, sewage treatment, industrial wastes and water pollution in Brazil (Porto Alegre and Rio Grande do Sul), Curaçao, Grenada, Guatemala, Peru (Lima) and Venezuela (Caracas). In January-February 1966 a consultant made an investigation and submitted a report on beach pollution in Montego Bay, Jamaica. Also in 1966 another consultant visited Mexico (March-April), Argentina, Brazil, Chile, Mexico, the United States of America, and Venezuela (July - October), and El Salvador and Guatemala (November - December) to investigate and report on possible locations for a regional water pollution centre that would carry out investigations, teaching and research for the countries of the Region. Visits to several countries of the Americas were begun in December for further consultations regarding the establishment of such a centre.

AMRO 2200 Water Supplies, Inter-zone (1959 - 1961) PAHO Community Water Supply Fund

To advise countries of the Region on the planning, financing and carrying out of national water supply programmes and on the organization and administration of central and local water supply and sewerage authorities.

AMRO 2203 Water Supplies, Zone III (1964 - 1966) R (Community Development Foundation)

To assist the countries of the zone with their water supply and sewage disposal problems.

AMRO 2208 Water Fluoridation (1961 - 1966) PAHO

To advise countries of the Region on methods of water fluoridation for the prevention of dental caries.

AMRO 2213 Studies and Investigations of Water Resources (1964 - 1968) UNDP/TA (ECLA)

To collaborate with the Economic Commission for Latin America (ECLA) in a study of Latin America's water resources, particularly with a view to the provision of adequate water supplies.

AMRO 2300 Aedes aegypti Eradication, Inter-zone (1954 - 1956) PAHO

To stimulate, co-ordinate, and evaluate Aedes aegypti eradication programmes in the countries and territories of the Region that are still infested with the mosquito.

AMRO 2301 Aedes aegypti Eradication, Caribbean Area (1950 - 1960) UNDP/TA

To advise Jamaica, Trinidad and Tobago, and the British, French and Netherlands territories in the Caribbean on Aedes aegypti eradication.

AMRO 2400 Public Health Aspects of Housing and Urbanization (1960 - 1966) PAHO

To foster the participation of health authorities in housing and city planning programmes; and to advise countries of the Region on the establishment of health standards for houses and urban areas.
ARMO 3100  National Health Planning, Inter-zone
(1961 - ) PAHO (Latin American Institute of Economic and Social Planning)

To assist governments in formulating national health plans and in training personnel for the purpose.

ARMO 3101  National Health Planning, Zone I
(1965 - ) PAHO

ARMO 3104  National Health Planning, Zone IV
(1963 - ) PAHO

ARMO 3106  National Health Planning, Zone VI
(1963 - 1967) PAHO

To assist governments of the countries of the zone in formulating national health plans and in training personnel for the purpose.

ARMO 3107  Public Health Administration, Caribbean Area
(1963 - 1968) R PAHO

To help countries and territories of the area to analyse their health problems, assess resources, and prepare plans for obtaining the maximum results with the human and material resources available; and to co-operate in implementing and evaluating public health programmes within the national socio-economic development plans.

ARMO 3110  Co-ordination of International Research
(1962 - ) PAHO

To stimulate the development of biomedical research and training of specialized personnel; and to provide for an annual meeting of the PAHO Advisory Committee on Medical Research to analyse and make recommendations on suggested projects and on those in operation.

ARMO 3114  Study on Migration of Trained People from Latin America (1965 - 1966) PAHO

The purpose of the study was to ascertain more clearly the position with regard to the emigration of physicians, scientists and engineers from Latin American countries and the extent to which it constitutes a handicap to national economic and social development, and to consider what measures could be taken to reconcile the legitimate aspirations of the individuals with the needs of the countries for highly trained manpower.

The study was undertaken by two consultants and the members of the Sub-Committee on Migration of the PAHO Advisory Committee on Medical Research. One of the consultants visited Argentina, Brazil, Chile, Mexico and Peru in September 1965 and Brazil, Colombia and Venezuela in April and May 1966. A preliminary draft report was prepared and was revised by the Sub-Committee at a meeting in Rio de Janeiro in May 1966, after which it was reviewed and discussed by the PAHO Advisory Committee on Medical Research at its fifth meeting in June 1966.

ARMO 3201  Nursing, Zone I (1959 - ) PAHO

ARMO 3202  Nursing, Zone II (1962 - ) PAHO

ARMO 3203  Nursing, Zone III (1963 - ) PAHO

ARMO 3204  Nursing, Zone IV (1952 - ) PAHO

ARMO 3206  Nursing, Zone VI (1963 - ) PAHO

To assist countries of the zone in planning and organizing nursing services, in developing educational programmes for professional and auxiliary nursing and midwifery personnel, and in promoting research in nursing.

ARMO 3207  Courses on Nursing Supervision and Administration, Zone I (1965 - 1968) PAHO

To strengthen nursing services in the Queen Elizabeth Hospital, Barbados, by holding courses in nursing administration and supervision and establishing a permanent in-service education programme.

ARMO 3300  Laboratory Services, Inter-zone
(Feb. 1955 - ) R

To assist governments of the Region in the improvement and extension of public health laboratory services; in the production and control of biological products; and the setting-up or expansion of animal colonies.

ARMO 3301  Laboratory Services, Caribbean Area
(1964 - 1968) PAHO

To develop, at the University of the West Indies, Kingston, Jamaica, a programme for training laboratory technicians for English-speaking countries and territories in the Caribbean area. Emphasis will be laid on the importance of laboratory practices in the curative and preventive aspects of medicine.

ARMO 3303  Laboratory Services, Zone III (1966 - 1968) PAHO

To assist in improving public health laboratory services in the countries of the zone.

Under the project a seminar on laboratory services in the Central American countries was held in Managua, Nicaragua, from 22 to 26 June 1966. It was attended by thirty-two participants from Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, by a representative of the Middle America Research Unit of the United States Public Health Service, and by three officials of the organization. The resolutions contained in the seminar report were approved at the X Meeting of Ministers of Public Health of Central America and Panama, held in Panama City from 16 to 17 August 1966.

ARMO 3307  Vaccine Production and Testing (July 1954 - ) R

To provide vaccine-testing services to laboratories preparing vaccines in the Americas.

ARMO 3401  Health Education, Caribbean Area
(1963 - ) UNDP/TA

To help the countries and territories of the area in developing health education work and training personnel.


To co-operate in the training of students at the Community Development Training Centre for Latin America.

ARMO 3500  Advisory Committee on Health Statistics
(1960 - ) PAHO

The fourth meeting of the regional Advisory Committee on Health Statistics was held from 6 to 10 June 1966, in Washington, D.C., to continue the Committee's work in promoting the improvement of basic statistical data over the next decade. The principal subject discussed was "mechanization and use of computers in health statistics".
AMRO 3501 Health Statistics, Zone I (1964 - ) PAHO
AMRO 3502 Health Statistics, Zone II (1958 - ) R
AMRO 3503 Health Statistics, Zone III (1955 - ) R
AMRO 3504 Health Statistics, Zone IV (1956 - ) R
AMRO 3506 Health Statistics, Zone VI (1959 - ) PAHO

To assist the countries of the zone in improving their vital and health statistics systems; and to advise them on the use of statistical data in national health planning and on the statistical aspects of projects.

AMRO 3507 Regional Development of Epidemiological Studies (1961 - ) PAHO PAHO/United States National Institutes of Health

To obtain, by special investigations, accurate and comparable data on causes of death in adults in certain cities of the Americas.

AMRO 3508 Demographic Research (1966) R

The aim was to develop epidemiological studies of natality, including abortions, live births and conditions of infants at birth. The Organization provided a temporary adviser for a week in August 1966 and two consultants for a week in October 1966.

The temporary adviser assisted with this meeting. Two consultants attended the meeting of the Inter-American Investigation of Mortality in Infancy and Childhood, held in Washington, D.C., from 17 to 21 October 1966, at which plans were formulated for questionnaires and procedures for a pilot phase of a study of causes of mortality of children under fifteen years of age in five places in the Americas. During this pilot phase retrospective information will be obtained on abortions in the families studied.

AMRO 3600 Administrative Methods and Practices in Public Health, Inter-zone (1959 - ) PAHO

To help countries of the Region to improve the administrative practices of national health services at all levels.

AMRO 3604 Administrative Methods and Practices in Public Health, Zone IV (1963 - ) PAHO
AMRO 3606 Administrative Methods and Practices in Public Health, Zone VI (1963 - ) PAHO

To help the countries of the zone to improve the administrative methods and practices of their health services.

AMRO 4100 Maternal and Child Health (1964 - 1968) PAHO

To prepare guides on the establishment of priorities and standards of service in connexion with the planning of maternal and child health programmes and on the techniques of carrying out surveys and conducting seminars.

AMRO 4108 Clinical and Social Paediatrics Courses (1961 - ) R UNICEF

To assist in organizing annual courses on social paediatrics for physicians engaged in paediatrics or paediatricians in charge of maternal and child health services in Latin America who wish to enlarge their experience.

AMRO 4109 Midwifery (1962 - 1968) PAHO

To provide countries of the Region with advisory services for improving their maternity care services and their institutions for the training of midwives.

AMRO 4200 Nutrition Advisory Services, Inter-zone (1958 - ) R PAHO

To provide advisory services in nutrition to meet specific needs of governments.

AMRO 4201 Nutrition Advisory Services, Zone I (1961 - ) R PAHO

To collaborate with the countries and territories of Zone I in the study and evaluation of nutrition problems and needs; in planning, in close co-operation with national and international agencies, nutrition education programmes and programmes to foster the production of protein-rich foods; and in integrating nutrition programmes into health services at all levels.

AMRO 4203 Institute of Nutrition of Central America and Panama, Guatemala City (1949 - ) PAHO UNICEF (INCAP Member Governments) (AID) Battelle Memorial Institute) (Esso Research and Engineering Co.) (Kellogg Foundation) (Lederle Laboratories) (United States National Institutes of Technology) (United States Army) (United States National Institutes of Health) (Williams Waterman Fund)

To co-operate in developing the Institute of Nutrition of Central America and Panama (INCAP), which trains professional and auxiliary personnel from its member countries and other countries in the Americas and carries out nutrition research for solving the urgent problems created by the inadequate nutritional status of a large part of the population of the Americas.

AMRO 4204 Nutrition Advisory Services, Zone IV (1956 - ) R
AMRO 4206 Nutrition Advisory Services, Zone VI (1956 - ) PAHO

To advise the countries of the zone on the development of nutrition programmes, especially at the level of the local health services; on applied research related to nutrition programmes; and on the training of personnel.

AMRO 4207 Nutrition, Caribbean Area (1963 - 1968) R (FAO)

To co-ordinate nutrition work in the Caribbean area, in order to develop a programme that will include training of personnel and scientific research.

AMRO 4210 Evaluation of Applied Nutrition Programmes (1964 - 1968) PAHO (FAO)

To evaluate, jointly with FAO, the applied nutrition programmes operating in sixteen countries of the Americas.
AMRO 4212 Research in Nutrition Anemias
(1965 - 1967) PAHO/Williams Waterman Fund
To establish and assist a reference laboratory and training centre for investigators and public health personnel working on nutritional anemias.

AMRO 4213 Iodine Determinations in Endemic Goitre
(1965 - 1967) PAHO/Williams Waterman Fund
To establish and assist an iodine reference laboratory and training centre for investigators and public health laboratory personnel working on the prevention of endemic goitre.

AMRO 4220 Seminar for Directors of Schools of Nutrition and Dietetics, Caracas (25 - 30 July 1966) R
Seventeen directors of schools of nutrition and dietetics from countries of the Americas discussed training in nutrition with a view to the integration of nutrition work in the public health services.
The Organization provided the cost of attendance of the participants, a consultant and services for the seminar.

AMRO 4300 Mental Health, Inter-zone (1965 - ) PAHO
To assist mental health programmes in countries of the Region.

AMRO 4308 Mental Health Information Centre of Latin America (1963 - ) PAHO/United States National Institutes of Health
To establish a centre to collect and distribute information on mental health work in Latin America, to serve as a clearing-house for the exchange of information among professionals working in this field, and to stimulate relevant scientific research.

AMRO 4400 Dental Health (1954 - ) PAHO
To assist countries of the Region in strengthening dental services by providing technical advisory services and fellowships for training in public health dentistry.

AMRO 4407 Dental Epidemiology
(1964 - 1968) PAHO (Kellogg Foundation)
To develop, at the University of Sao Paulo, Brazil, a Latin American centre for training and research in dental epidemiology.

AMRO 4500 Health Aspects of Radiation
(1958 - ) R PAHO (United States Public Health Service)
To stimulate the adoption of international standards and procedures for radiation protection in connexion with the use of X-rays and radionuclides and the development of regulations for the disposal of radioactive wastes; to promote the teaching of basic health physics, radiobiology, and radiation protection in medical, dental, veterinary public health, and other professional schools; to foster the use of radionuclides for medical diagnosis, therapy, and research; and to collaborate with countries of the Region in establishing sampling stations for determining the radioactive contamination of air, food and water.

AMRO 4507 Radiation Health Protection (1964 - ) PAHO
To provide governments with advice on protection against radiation hazards, through a consultant stationed in Lima, Peru.

AMRO 4600 Industrial Hygiene (1961 - ) PAHO
To help to organize or improve the operation of national industrial hygiene services by providing technical advice and facilities for training of personnel.

AMRO 4608 and 4609 Manganese Poisoning and Metabolic Disorders
(1964 - 1966) PAHO/United States National Institutes of Health
The aim was to co-ordinate research on the dynamics of the mental and neurological syndromes produced by chronic inhalation of dust containing manganese. The Organization provided consultants, contractual services and supplies and equipment.
Control studies were carried out by the consultants on a number of Chilean miners who had exhibited signs of manganese toxicity, and comparisons were made with another group of miners, apparently healthy, and with non-exposed persons in Chile. Further evaluation of the persons' neurological and psychological condition was made and specimens of body fluids, hair, skin, etc., were sent to the Brookhaven National Laboratories at Upton, Long Island, N.Y., for neutron activation analysis to determine manganese content. Additional studies were made in Chile to help to elucidate the uptake mechanisms involved in manganese metabolism and parallel investigations of the homeostatic mechanisms which control this metal were performed in experimental animals.

AMRO 4700 Food and Drug Control, Inter-zone
(1959 - ) PAHO
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.

AMRO 4800 Medical Care Services (1961 - ) PAHO
To assist countries of the Region with studies associated with aspects of planning, organization, training, and applied research in medical care services.

AMRO 4803 Medical Care Services, Zone III
(1962 - ) PAHO
AMRO 4804 Medical Care Services, Zone IV
(1963 - ) PAHO
AMRO 4806 Medical Care Services, Zone VI
(1961 - ) PAHO
To assist countries of the zone in integrating medical care services into the general health services and in formulating standards for medical care.

AMRO 4807 Rehabilitation, Inter-zone (1962 - ) PAHO
To advise the countries of the Region on problems of medical rehabilitation.
AMRO 6100 Schools of Public Health (1953 - ) R
To assist schools of public health in the Region, especially the newer ones, to strengthen and improve their organization, administration and teaching.

AMRO 6111 Training of Auxiliary Personnel (1965 - 1966) PAHO
A questionnaire was sent to the official agencies of various countries requesting data on auxiliary personnel engaged in public health and a consultant visited Brazil, El Salvador, Mexico, Peru and Venezuela to gather information on the subject. Subsequently a report was prepared on the basic concepts of training and of the utilization of auxiliary health workers in Latin America. It will be submitted to the 54th Meeting of the Executive Committee of PAHO.

AMRO 6200 Medical Education, Inter-zone (March 1953 - ) R PAHO
To assist countries of the Region to improve medical education, including the teaching of social medicine.

AMRO 6203 Medical Education, Zone III (1960 - 1966) PAHO
The aim was to strengthen the teaching programmes in medical education in the countries of Zone III by incorporating concepts of preventive and social medicine in the curricula, and by improving the training of medical school teachers and research workers in basic medical sciences and the pedagogical approach to the teaching of medicine. The Organization provided three short-term consultants and publications. The teaching programmes of the schools of medicine of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama were examined. A seminar on the teaching of anatomy in Central America was held in San Salvador, El Salvador, from 10 to 13 October 1965. Delegates of five Central American countries, all of them members of the Central American Association of Anatomy, participated, and several teachers of schools of medicine of Central America and a professor from the University of Mexico attended as observers. Two consultants assisted in organizing the seminar and took part in the discussions. Another consultant visited the Medical School of the University of Honduras in Tegucigalpa to assist in revising the teaching programmes.

AMRO 6210 Teaching Methods and Administrative Organization of Medical Schools (1964 - ) R PAHO
To organize group discussions and seminars for the purpose of assisting medical schools in the Region to review and improve their teaching methods and administrative procedures.

AMRO 6213 Research Training Institutions in Health Sciences (1964 - ) PAHO/AID
To establish in Latin America institutions for the training of research workers in health sciences.

AMRO 6216 Teaching of Preventive Medicine (1965 - 1968) PAHO/Milbank Memorial Fund
To make an assessment of the preventive medicine and community health teaching programmes in the medical schools in Latin America.

AMRO 6300 Schools of Nursing, Inter-zone (1962 - ) R
To provide advisory services in specialized areas of nursing education, fellowships for members of nursing faculties, and nursing texts in Spanish to schools of nursing in Latin America.

AMRO 6301 Nursing Education, Zone I (1963 - 1968) PAHO Special Fund for Health Promotion
To assist countries of the Region to improve medical education in the countries of Zone I. The Organization provided a consultant, the cost of travel, the preparation of a report and the production of the film footage needed for the teaching of nursing. Further assistance was given in revising curricula and helping to establish new schools of nursing.

AMRO 6307 Training of Sanitary Inspectors (Aug. - Nov. 1965) PAHO
A course for sanitation supervisors was held at the School of Sanitation Training of the Ministry of Public Health and Welfare, El Salvador, for sixteen students from countries of Zone III. The Organization provided a consultant, the cost of attendance of ten participants, and a grant for teaching materials. Personnel of the Zone Office took part in the teaching.

AMRO 6500 Veterinary Medicine Education (1966 - ) R
To assist schools of veterinary medicine in incorporating public health and preventive medicine into their teaching programmes and in improving teaching methods.

AMRO 6600 Dental Education (1963 - ) R
To co-operate with university authorities of countries of the Region in improving teaching in schools of dentistry.

AMRO 6607 Seminars on Dental Education (1962 - 1967) PAHO Special Fund for Health Promotion PAHO/Kellogg Foundation (Government of Mexico)
To assess the situation as regards the teaching of dentistry in the Region and formulate recommendations for the solution of problems found.
AMRO 6608 Training of Auxiliary Dental Personnel (1965 - 1968) PAHO

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.

AMRO 6700 Biostatistics Education and Population Dynamics (1952 - ) UNDP/TA

To improve vital and health statistics in the countries of the Region by training technical and professional personnel in specialized centres.

AMRO 6707 Latin American Centre for the Classification of Diseases (April 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.

AMRO 6708 Training Programme in Hospital Statistics (1961 - ) PAHO PAHO/Kellogg Foundation

To organize training courses in medical records and hospital statistics, in order to improve the collection of essential data for planning health and medical services.
SOUTH-EAST ASIA

Afghanistan 0011 Malaria Eradication Programme

To eradicate malaria from the entire country and prevent the re-establishment of endemicity.

Afghanistan 0013 Medical Education

To strengthen departments of the faculties of medicine of the Universities of Kabul and Nangarhar and to train staff.

Afghanistan 0024 Health Education

The aim was to set up a health education section in the Institute of Public Health, Kabul; to develop health education services in the country and to train teachers and health workers in health education. WHO provided a health education adviser from October 1958 to September 1959 and a health educator from May 1962 to November 1966, two fellowships—one of two weeks and one of twenty months—and supplies and equipment.

A health education section was established in the Institute of Public Health to serve all the programmes under the Directorate of Health Services. During the course of the project it was expanded and a visual aids unit was added. Classes in health education were given for various categories of health personnel, including those attached to special programmes, and to student teachers. These classes are being continued by the staff of the respective training programmes, in collaboration with the health education personnel. The project staff co-operated with UNESCO and the United States Agency for International Development in strengthening the health education component of teacher-training projects and with UNESCO in the revision of the health education aspects of science textbooks. Preliminary work has been done on a plan for establishing health education services at provincial level as part of the general health services.

Health education work has been considerably developed and an awareness of its importance has been created. There is, however, a need for follow-up and consultant services for this project are planned for 1967 and 1968.

Afghanistan 0026 Rural Health
(April 1956 - end of 1970) UNDP/TA

To further the development of rural health services, in which curative and preventive services are integrated at all levels and effectively directed and supervised, and to train personnel. This project is linked with project Afghanistan 0059, for the development of basic health services (see below).

Afghanistan 0028 School for Sanitarians, Kabul
(July 1955 - Dec. 1965) UNDP/TA UNICEF

The aim was to train sanitarians for the health services throughout the country. WHO assistance began in 1955 under project Afghanistan 4 (School for Male Nurses) and a separate school for sanitarians was started in 1956. WHO provided two sanitarian tutors—one from July 1955 to 1963 and one from March 1959 to December 1965—and supplies and equipment. Two twelve-month fellowships for national counterparts were awarded under other projects.

An effective training programme for sanitarians was established and national counterparts were trained in teaching and in the organization and administration of the programme. The first course began in April 1956 with sixteen students. In all, 145 sanitarians were trained during the period of the project. The course, in which special attention was given to subjects such as water and food hygiene, covered two years. Practical training formed an important part of the instruction and in 1963 practical demonstrations at village level were introduced. The school became a section of the Institute of Public Health, Kabul, in 1962.

Most of the sanitarians trained at the school are employed in different parts of the country and have started a sanitation programme. The school, in which teaching responsibilities have been assumed by the national counterparts, can continue to provide the sanitarians required for the programme.

Afghanistan 0031 Institute of Public Health, Kabul

To develop the Institute of Public Health for service, research and training of public health workers. (See page 121).

Afghanistan 0033 Tuberculosis Advisory Services

To expand tuberculosis control services in and around Kabul; to set a pattern for tuberculosis control in the provinces, and to train health personnel in tuberculosis control work.

Afghanistan 0035 Nursing Advisory Services
(June 1957 - end of 1971) UNDP/TA

To strengthen nursing administration; to develop nursing and midwifery training programmes; and to co-ordinate and expand nursing education and the nursing services.

Afghanistan 0044 Trachoma Control

To study the epidemiology of trachoma in Herat Province; to initiate control activities; to develop a programme of health education in communicable eye diseases, and to train staff.

Afghanistan 0051 Training of Radiographers
(Nov. 1965 - end of 1968) R

To set up a school for the training of radiographers and radiological technicians.
Afghanistan 0054 Communicable Disease Control (Smallpox Control) (July 1964 - end of 1968) UNDP/TA

To plan and carry out a smallpox control programme; to plan field epidemiological investigations of the major prevailing communicable diseases other than smallpox, and to train personnel in field epidemiology and communicable disease control.

Afghanistan 0056 Provincial Maternal and Child Health Services and Training (April 1966 - end of 1968) UNDP/TA

To develop maternal and child health services and the training of auxiliary nurse/midwives in the provinces.

Afghanistan 0057 Environmental Health (Water Supply) (June - July 1966) R

Two consultant sanitary engineers made a study of water supply and sewerage problems in Kabul and submitted recommendations for their solution. The study was carried out in collaboration with the Central Authority for Housing and Town Planning established in Kabul with the assistance of the United Nations Development Programme (Special Fund component).

Afghanistan 0059 Development of Basic Health Services (April - May 1965; March 1966 - end of 1975) R

To establish basic health services throughout the country, initially through the malaria eradication services and in coordination with the rural health project, Afghanistan 0026.

Afghanistan 0062 Radiotherapy (March 1966) R

WHO provided a consultant for ten days to study the possibilities of organizing radiotherapy in Kabul and to formulate recommendations on the type of facilities that might be provided.

Afghanistan 0063 Survey of Irrigation Possibilities in the Hari-Rud and Upper Kabul River Basins (June - Sept. 1966) UNDP/SF (FAO)

As part of a survey of irrigation possibilities in the Hari-Rud and Upper Kabul River Basins that is being undertaken with assistance from the United Nations Development Programme (Special Fund component), with FAO as the executing agency, WHO provided two consultants (a public health administrator and a sanitary engineer) to study the health and public health engineering aspects of the irrigation development envisaged in the area.

Afghanistan 0066 Rural Water Supply (Nov. 1966 - 1969) R

To study, develop and implement rural water supply and sanitation programmes.

Afghanistan 0200 Fellowships R: Cardiology (six months), nursing (three for twelve months), public health administration (ten months), radiological health inspection (five weeks), X-ray equipment maintenance (one for six months, one for twelve months).

Afghanistan 0201 Fellowships UNDP/TA: Cardiology (six months), epidemiology (nine months), pathology (twelve months), trachoma control (two for three months), vaccine production (two for six months), X-ray techniques (twelve months).


To expand and intensify the leprosy control programme to cover all endemic areas of the country and to train personnel for this purpose. (See page 122.)


To develop a system of reporting and recording health statistical data and to improve their processing, and to train staff in statistical methods.


To strengthen certain departments of the Institute of Medicine I, Rangoon; to improve the teaching of undergraduates, and to promote research and post-graduate study.

Burma 0031 Malaria Eradication Programme (Feb. 1957 - end of 1968) R

To eradicate malaria throughout the country in progressive stages.

In accordance with the Government's decision in April 1962 to continue the programme without WHO field staff, WHO assistance in the period under review was limited to fellowships.


To develop basic and post-basic programmes in mental nursing, and in-service training, in order to improve nursing care in psychiatric hospitals.

Burma 0056 Nursing Advisory Services (March 1959 - April 1966) UNDP/TA

The aim was to upgrade and co-ordinate basic and post-basic education for nurses and midwives throughout the country in order to establish satisfactory standards of nursing and midwifery training and services. WHO provided a nursing adviser, a midwife tutor and a paediatric nurse, and four fellowships—one of twelve months and three of four months.

In Rangoon, the nursing services at the Children's Hospital were improved. A national nurse was placed in charge of the nursing education programmes at the hospital; better facilities were provided for giving basic nursing students experience in clinical paediatrics, and a three-month course in paediatric nursing was held for sixteen qualified nurses from various parts of the country.

In Mandalay, the WHO paediatric nurse assisted in setting up a paediatric unit and in organizing paediatric nursing services (see Burma 0067 below). She also helped with teaching programmes for basic nursing students. Proposals were made for increasing the nursing staff, in order further to strengthen the paediatric unit.

In Moulmein, a clinical teaching programme was started for student nurses in the surgical and medical units and, for midwifery students, in the nursery.

During the period 1959 to 1961 both nursing services and nursing education were improved. From 1961 to 1964 midwifery education was consolidated in eight schools instead of being given in some twenty institutions. Assistance to paediatric...
nursing has resulted in a better standard of service in Rangoon and Mandalay. In the paediatric programme for basic nursing students greater emphasis has been placed on clinical teaching.

Burma 0060  Health Education in Schools  (Aug. 1966 - 1968) R

To develop health education in teacher-training institutions and schools.

Burma 0065  Tuberculosis Control  (Jan. 1964 - end of 1970) UNDP/TA UNICEF

To develop community-oriented tuberculosis control services, starting in Rangoon and Mandalay, and to collect epidemiological base-line data on tuberculosis for future planning and assessment.

Burma 0066  Health Education (Teacher-training)  (Nov. 1966 - end of 1968) R

To organize a course in health education for training staff from faculties of teacher-training institutions and those holding key posts in the school organization.

Burma 0067  Paediatric Education  (June 1964 - 1968) R UNICEF

To strengthen the departments of paediatrics in the three medical colleges of the country, and to improve the teaching of paediatrics, particularly its preventive aspects, by developing peripheral services for training.

Burma 0069  Trachoma Control  (March 1966; Sept. 1966) UNDP/TA

In March 1966 a WHO consultant made a study of trachoma which confirmed that the disease is highly endemic in the dry zone of central Burma. He also advised on a clinical survey of trachoma, including sampling procedures and methods of recording and analysis, and submitted recommendations concerning the further development of the control programme.

A three-month fellowship was awarded in September.


To improve undergraduate and post-graduate medical education; to train teaching staff; to develop the curricula in keeping with modern concepts, and to initiate, encourage and guide research.

Burma 0200  Fellowships  R: Community water supply and sewage disposal (twelve months), filariasis (two for ten weeks), microbiology (twelve months), radiological health inspection (five weeks).

Burma 0201  Fellowships  UNDP/TA: Anatomy (twelve months), community water supply (twelve months), leprosy control (twelve months), mental health nursing (twelve months), paediatrics (twelve months), pathology (two for twelve months), public health administration (twelve months), radiology (twelve months).

Ceylon 0005.2  Venereal Disease Control (Fluorescent Laboratory Techniques)  (Sept. 1964; Oct. 1966 - 1968) R

To develop laboratory diagnostic facilities for the national venereal disease control programme.


To strengthen the teaching of mental health in medical colleges.


To revise the system of records and reports in the health services; to establish medical record departments in the hospitals; and to train personnel in the design of documents, processing of statistical data and other advanced health statistics techniques. The project is to work in close collaboration with the hospital statistics project (SEARO 0072) located in Thailand.


To strengthen teaching in certain subjects in the faculties of medicine of the University of Ceylon at Colombo and Pera deniya.

Ceylon 0053  Nursing Advisory Services  (July 1960 - Oct. 1966) R

The aim was to develop all aspects of basic and post-basic nursing education through the Nursing Unit of the Directorate of Health Services and to strengthen paediatric nursing programmes. WHO provided a nursing adviser, a psychiatric nurse educator and a public health nurse educator, a consultant for three months from August to October 1966, a twelve-month fellowship and supplies and equipment.

Assistance was provided to the post-basic school for nurses in Colombo, where a sound programme of studies was established and courses in nursing education for nurse tutors and in nursing administration for ward sisters were organized. The course for ward sisters included paediatric nursing, psychiatric nursing and medical/surgical nursing. During 1964 and 1965 these courses were replaced by short courses in ward management and supervision for staff nurses and acting ward sisters; they were, however, resumed in 1966. A one-year post-basic programme in psychiatric nursing was started in 1963 for nurse tutors and administrators. An eighteen-month post-basic course in public health nursing, including nine months' midwifery training, given at the School of Hygiene in Kalutara, was also assisted.

The curriculum of the basic schools of nursing was revised in 1963 and further improved in 1966. A nine-month programme for training nurse auxiliaries was started in the early stages of the project, but was discontinued in 1963 and the establishment of a category of auxiliary nurse/midwife was recommended.

In August 1965 the WHO public health nurse educator was transferred from Colombo to Kandy to assist with the paediatric nursing part of the medical education project (Ceylon 0047). The paediatric content of the basic nursing curriculum was improved, preventive and curative child care were integrated in the Peradeniya Medical College Hospital and in the peripheral maternal and child health centres in Kandy, and in-service training programmes were organized for domestic and nursing personnel in the hospital paediatric unit.

In 1966 the WHO consultant assisted in re-establishing the full-length post-basic courses at the post-basic school for nurses in Colombo and in strengthening the Nursing Unit of the Directorate of Health Services.

The staff of the Colombo school has been increased, and by the time the project ended the school had a nurse tutor as principal and three nurse tutors on the staff. The development of
post-basic education programmes for sister tutors, ward sisters, public health nurses, psychiatric nurses and paediatric nurses has been accelerated and the basic nursing curriculum has been improved.

Ceylon 0056 Filariasis Control

To study the problem of filariasis control, and to strengthen the control programme, introducing such new methods as may be indicated.

Ceylon 0058 Malaria Eradication Programme

To eradicate malaria from the entire country and prevent the re-establishment of endemicity.

Ceylon 0063 Medical Rehabilitation (Poliomyelitis)
(Nov. - Dec. 1966) UNDP/TA

WHO provided two consultants to assist in the organization of a physical therapy service for poliomyelitis patients and in the training of national physical therapists and nursing staff in their treatment and rehabilitation. Supplies and equipment were also provided.

Ceylon 0064 Community Water Supply

To develop piped water supplies in major towns and other community areas.

Ceylon 0066.1 Study on Diarrhoeal Diseases
(Sept. 1963 - July 1966) R

The aim was to study the epidemiology and control of diarrhoeal diseases, to develop bacteriological diagnostic facilities for enteric diseases in the principal hospitals and in the field, and to strengthen laboratory services throughout the country. In addition, in view of the high rate of ascariasis infestation in children, it was decided to make an investigation of the results of repeated mass treatment. WHO provided a bacteriologist and a virologist, and supplies and equipment were also provided.

For the ascariasis investigation a number of pilot areas were selected in which the children were given five courses of treatment during five consecutive months. This resulted in a reduction of the prevalence rate from 67 per cent. to 11 per cent. Related investigations demonstrated the role played in the infestation of infants and young children by ova found in the floor sweepings of the houses and in the soil outside. Periodic examination of the stools of the treated children is being continued in order to determine the rate at which re-establishment of the infestation occurs.

In December 1965 the WHO virologist was assigned to assist the Medical Research Institute, Colombo, in developing the virological laboratory. She took part in diagnostic surveys and in the analysis of the data required for epidemiological purposes.

The procedure for mass treatment of ascariasis is now well established and the work can be carried out by the national personnel. Laboratory facilities in two hospitals have been expanded and plans for expansion of provincial laboratories have been drawn up (see project Ceylon 0066.3).

Two WHO consultants (a public health administrator and a sanitary engineer) assisted with studies related to the health and public health engineering aspects of the Mahaweli Ganga irrigation and hydro-power survey which is being undertaken with assistance from the United Nations Development Programme (Special Fund component) with FAO as the executing agency.

Ceylon 0200 Fellowships R: Health education in tuberculosis control (one month), laboratory services (two years), medical care and health services (three for six months), nutrition (fourteen months), radiological health inspection (five weeks), smallpox diagnosis and treatment (four for sixteen days), tuberculosis control (three for three months).

Ceylon 0201 Fellowships UNDP/TA: Epidemiology (nine months), medical laboratory technology (twelve months), oral cancer (six months), sanitary engineering (one for three months, one for twelve months), teaching of medicine (three months), transport medicine and accident prevention (three months), water supply system construction and management (three months).

India 0053 Tuberculosis Chemotherapy Centre, Madras
(Dec. 1955 - end of 1971) UNDP/TA (British Medical Research Council) (Indian Council of Medical Research)

To undertake controlled trials to find simple, effective and inexpensive methods of tuberculosis control through ambulatory chemotherapy.

India 0081.1 Leprosy Control (National Programme)

To plan and carry out a leprosy control programme.

India 0081.2 Leprosy Control, Srikakulam

To provide technical direction for a leprosy control project supported by the Danish "Save the Children" Organization, and to train leprosy auxiliary personnel.

India 0098 Short Courses for Nursing Personnel
(July 1957 - 1967) R

To train nurses in the organization, conduct and evaluation of short courses for nursing personnel, and to introduce them to modern nursing concepts and practices which were not included in their previous training.

India 0099.5 Nursing Education (Public Health Integration), Goa
(Sept. 1963 - end of 1967) UNDP/TA

To establish professional and auxiliary nursing education programmes in accordance with the pattern laid down by the Indian Nursing Council; to arrange in-service training in all teaching hospitals, and to improve methods of nursing administration in all health services.

India 0099.6 Nursing Education (Public Health Integration), Punjab
(July 1965 - end of 1967) UNDP/TA

To assist basic nursing schools that are used for post-basic nursing education; to improve the overall administration of the nursing education programme, and to provide good practical experience for student teachers and administrators.

India 0101 National Trachoma Control Programme

To implement the national trachoma control programme, which provides for (i) reduction of transmission of infection, morbidity and disabling conditions in the community to the level where trachoma and secondary bacterial infections will no longer be major public health problems in the areas under treatment; (ii) training of ophthalmologists, general physicians and field personnel in control measures; and (iii) a programme of health education at all levels. The programme is being developed and integrated in the expanding health services.

India 0103 National Tuberculosis Programme
UNICEF

To develop a national control programme by providing technical guidance, based on epidemiological and operational research; to train sufficient public health workers of various categories for the tuberculosis control centres at district and state levels, and to develop adequate methods and procedures for assessment of the programme.

India 0108.4 Health Education, Gujarat
(Dec. 1965 - end of 1967) UNDP/TA

India 0108.5 Health Education, Orissa
(July 1964 - June 1965; June 1966 - end of 1967) UNDP/TA

To set up a health education bureau in the Directorate of Health Services on the lines laid down by the Central Health Education Bureau; to provide training in health education for health workers and teachers, and to plan for health education of the public.

India 0110.3 Nursing Adviser to Punjab
(Aug. 1961 - June 1966) UNDP/TA

The aim was to organize and expand nursing education and nursing services in the state, and to co-ordinate supervisory services so as to ensure uniformly high standards of nursing and midwifery in the health programme. WHO provided a nursing adviser, a twelve-month fellowship and supplies and equipment. A study of nursing needs and resources was made and the functions of the Assistant Director of Health Services (Nursing) were defined. Records were standardized and brought up to date. Assistance was provided to a national committee in connexion with the starting of a post-basic degree course for nurses at Punjab University. A programme of guided study and practice for nursing sisters acting as tutors for the auxiliary nurse/midwife courses was introduced. In 1964 the Assistant Director of Health Services (Nursing) completed training on a WHO fellowship.

The project resulted in improvement in the administration and co-ordination of nursing services and education throughout the state, better understanding of the role and use of auxiliary nursing staff, and considerable strengthening of the supervision and guidance of nursing services. Good co-operation was established between the state nursing services and the authorities responsible for post-basic nursing education.
India 0110.4 Nursing Adviser to Orissa
(Oct. 1962 - end of 1966) UNDP/TA

India 0110.5 Nursing Adviser to Gujarat
(Sept. 1965 - Aug. 1967) UNDP/TA

India 0110.7 Nursing Adviser to Bihar
(Oct. 1966 - end of 1970) UNDP/TA

To organize and expand nursing education and nursing services in the state and to co-ordinate supervisory services so as to ensure uniformly high standards of nursing and midwifery in the health programme.

India 0111 Medical Education

To strengthen selected medical colleges.

India 0114 Paediatric Education

To strengthen the paediatric departments of certain medical colleges and non-teaching and district hospitals.

India 0147 Public Health Programme, Kerala
(June 1960 - Feb. 1966) R

The aim was to train personnel and to expand the health services in community development areas. WHO provided a public health officer, a public health nurse and a sanitarian, and a consultant (laboratory technician) for two months in October and November 1964.

Assistance was given in setting up primary health centres, in upgrading referral laboratories and hospitals, in integrating public health into basic nursing education programmes, and in establishing training schools for auxiliary nurses/midwives. A rural training centre was established to provide orientation for doctors of primary health centres and facilities for the practical training of nurses were developed. The WHO sanitarian helped with the state latrine development programme in most of the community development blocks.

From 1963 WHO assistance was provided to the Indo-Norwegian Health Centre at Neendakara in Quilon District, where facilities for practical training in public health nursing were established for all categories of nursing personnel and the home visiting service was developed. Public health nursing students, basic nurse/midwife students and auxiliary nurse/midwives were given training at the centre. The WHO laboratory technician advised on the remodelling and expansion of the laboratory premises at Quilon.

Orientation training courses have been well established. The association with the Indo-Norwegian project has promoted the field training of doctors and nursing personnel. Laboratory, nursing and general health services in the project area have been improved. On the other hand, the latrine programme was only moderately successful, owing to lack of sufficient interest on the part of the communities concerned.

India 0153 Malaria Eradication Programme

To eradicate malaria from the whole country and prevent the re-establishment of endemicity.

India 0155 Curriculum Guide for Nursing and Midwifery Training

The aim was to revise the syllabus and regulations for the training of nurses and midwives established by the Indian Nursing Council, and to prepare a guide to the new syllabus, which is designed to co-ordinate, upgrade and standardize nurse/midwife training throughout India. WHO provided a specialist in nursing education.

The work done under this project up to the end of 1965 was described in the Annual Report for 1965. Since then several workshops, attended by representatives of all states of the

\[1\] Off. Rec. Wld Hlth Org. 147, 116.
country, have been held to facilitate the implementation of the revised syllabus and regulations. Two thousand copies of the guide were printed; half of them were provided to the Indian Nursing Council, a further hundred were distributed by the Regional Office, and the remaining copies were sold. To meet the demand for more copies, a second edition, with an index, has been prepared and five thousand copies were printed and issued in October 1966.

The project has been successful in promoting interest in and action related to all aspects of basic nursing education. Among many other matters related to curriculum planning, attention has been directed to selection and organization of learning experiences, definition of aims and objectives, evaluation of the quality of patient care, and the setting and marking of examinations.


To improve the water supply and drainage of Greater Calcutta.


To increase the production of freeze-dried smallpox vaccine.

India 0176 Central Public Health Engineering Research Institute, Nagpur (Feb. 1961 - end of 1968) R UNDP/SF

To develop the Central Public Health Engineering Research Institute as a major research centre for environmental sanitation problems, to co-ordinate research programmes and to train research workers.

India 0180 Health Education in Schools (July 1964 - 1968) R

To develop health education in basic teacher-training courses and teacher-training institutions throughout the country.


To expand and improve the health component of the applied nutrition programme, particularly as regards the health and nutrition of mothers and children.

India 0182 Strengthening of Health Services (Epidemiology) (March 1963 - end of 1968) UNDP/TA

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.

India 0183 Medical Education, Gujarat (Dec. 1962 - end of 1970) UNDP/TA

To develop medical education and medical research in Baroda Medical College. (See page 122.)


To strengthen the national health services at state, district and local levels, with emphasis on training programmes for all health staff and on operational research.

India 0188 Strengthening of Laboratory Services (Feb. 1965 - early 1969) R

To strengthen health laboratory services and to improve the training of laboratory technicians.


To strengthen the development of rural health services and to train staff, including multipurpose health auxiliaries.

India 0195 Course in Radiological Physics, Bombay (April 1962 - end of 1966) R

To strengthen the training of radiological physicists.

India 0200 Fellowships R: Anatomy (twelve months), dermatology and venereology (three and a half months), epidemiology (five for nine months), pharmacology (two for twelve months), preventive and social medicine (two for twelve months), public health engineering (one for thirteen weeks, one for nine months), reconstructive surgery (twelve months), sanitary engineering (one for three weeks, one for nine months).

India 0201 Fellowships UNDP/TA: Anatomy (twelve months), health education (twelve months), microbiology (twelve months), nursing (six months), preventive and social medicine (twelve months).

India 0208 Improvement of Dental Education (July 1966 - end of 1968) UNDP/TA

To improve and strengthen dental education and research in a dental college.

India 0209 Community Water Supply (March - May 1964; Oct. 1965 - end of 1968) R

To study the feasibility and the financial and managerial aspects of water supply and drainage schemes.

India 0218 National Institute of Health Administration and Education, New Delhi (Sept. 1965 - end of 1969) R

To undertake teaching in hospital administration and to plan comprehensive district health services.

India 0221 Seminars and Workshops on Medical Education (Dec. 1965 - end of 1968) R

To assist with seminars in specialized fields organized by the Indian Academy of Medical Sciences, in order to strengthen medical teaching in the country.

India 0223 Study of Nursing Services (Oct. 1964 - end of 1967) R

To acquaint senior nurses with the latest developments in the application of certain managerial techniques to nursing administration, and to prepare a guide for the study of nursing activities in health services.

Indonesia 0009 Leprosy Control (July - Sept. 1955; Sept. 1956 - end of 1967) R

To develop, within the framework of the general health services, a leprosy control programme in all endemic areas of the country, and to train personnel.
Indonesia 0032.1 Malaria Eradication Programme
(May 1955 - end of 1974) R
To eradicate malaria throughout the country by stages.

Indonesia 0040 Vaccine and Sera Production
To improve methods of production of vaccines, antitoxins and toxoids.

Indonesia 0041 Nursing Education
To upgrade and expand training programmes for nurses and midwives.

Indonesia 0050 Tuberculosis Control (July 1961 - early 1969) R
To develop the national tuberculosis programme; to train staff in case-finding and ambulatory treatment, and to set up a central tuberculosis epidemiological unit to direct the control operations throughout the country.

Indonesia 0062 Medical Education (May 1964 - end of 1970) R
To improve departments of various faculties of medicine.

Indonesia 0068 School of Physical Therapy, Solo
(March 1963 - 1967) R
To improve and expand the training of physical therapists and to develop physical medicine and rehabilitation services.

Indonesia 0069 School for the Training of Technicians in Electromedical Techniques (March 1966 - end of 1968) R
To establish a school for training technicians in the maintenance and repair of X-ray and electro-medical equipment.

Indonesia 0200 Fellowships R: Anaesthesiology (twelve months), epidemiology (nine months), occupational therapy (three months), public health administration (three for ten months), X-ray equipment maintenance (six months).

Maldives Islands 0005 Public Health Administration
(Oct. 1959 - end of 1971) R
To develop comprehensive basic health services and train personnel, including health auxiliaries.

Maldives Islands 0200 Fellowships R: Malaria eradication (three months), nursing (twelve months).

Mongolia 0002 Public Health Laboratory Services
To develop the health laboratory services and to train personnel in health laboratory work.

Mongolia 0003 Tuberculosis Control
To study the epidemiology of tuberculosis and to plan a national tuberculosis control programme.

Mongolia 0005 Environmental Health (Community Water Supply) (June 1966 - end of 1968) UNDP/TA
To set up water supply and excreta disposal systems in provincial towns and rural areas.

Mongolia 0200 Fellowships R: Gynaecology (six months), health statistics (six months), infectious hepatitis (seven months), tuberculosis control (seven months).

Mongolia 0201 Fellowships UNDP/TA: Administration of medical services (three for nine months), anaesthesiology (eight months), cardiovascular diseases and gastro-enterology (six months), organization of health services (six months), pharmacology (twelve months), therapeutics (six months).

Nepal 0001 Malaria Eradication Programme
(June 1954 - end of 1973) R (AID)
To eradicate malaria throughout the country by stages.

Nepal 0002 Nursing Education and Services
(Nov. 1954 - end of 1974) UNDP/TA
To establish, in the Directorate of Health Services, a division of nursing to co-ordinate nursing activities in the country; to set up a basic nursing school to prepare qualified nurse/midwives for the health services; to upgrade the nursing services in Bir Hospital, and to improve the clinical training of student nurses.

Nepal 0003 Strengthening of Health Services
To develop effectively directed and supervised health services in which curative and preventive services are integrated at all levels and which are able to provide adequate technical guidance for field work and for the training of staff for the basic health services.

Nepal 0008 Maternal and Child Health Services and Training
To develop the maternal and child health services and establish referral facilities.

Nepal 0009 Smallpox Eradication and Control of Other Communicable Diseases
To start a smallpox eradication pilot project in the Kathmandu valley and to set up a communicable disease control unit.
Nepal 0014  Community Water Supply  
(June 1964 - end of 1968) R
To plan and co-ordinate the development of community water supplies.

Nepal 0016  Tuberculosis and Leprosy Control  
(March 1965 - early 1969) R
To set up control services for tuberculosis, leprosy and other endemic diseases in the Kathmandu valley, and to train health personnel.

Nepal 0017  Vital and Health Statistics  
(Nov. 1965 - Feb. 1966) UNDP/TA
A WHO consultant assisted in improving the collection, processing and presentation of hospital statistics, in organizing hospital record departments and in training personnel.
Further assistance is planned for 1967.

Nepal 0200  Fellowships R: Epidemiology (nine months).

Nepal 0201  Fellowships UNDP/TA: Water supply operation and management (one for five months, two for six months).

Thailand 0002 2  Strengthening of Health Services (Integration of Specialized Programmes)  
To integrate specialized programmes for the control of communicable diseases into the general health services and to develop the rural health services.

Thailand 0017.2  Mental Health Education and Services  
To strengthen training programmes for psychiatric nurses and to improve the mental health services.

Thailand 0021  Nursing Advisory Services  
To co-ordinate nursing services and nursing education; to develop basic nursing education, and to establish a college of nursing to enable nurses to qualify for a national degree.

Thailand 0030  Leprosy Control  
To intensify the leprosy control programme and expand it to cover all endemic areas of the country, and to train personnel.

Thailand 0042  Tuberculosis Control  
To develop a provincial tuberculosis control programme, suitable for all parts of the country, based on the experience gained in urban and rural pilot projects in which the organization of case-finding and treatment services is demonstrated and personnel trained.

Thailand 0043  Trachoma Control (July 1959 - 1968) R UNICEF
To develop a trachoma control programme, integrated into the public health services, in the areas where trachoma is endemic.

Thailand 0059  Strengthening of Health Services (Epidemiology)  
(Oct. 1966 - end of 1970) UNDP/TA
To establish, in the Department of Health, an epidemiological unit for defining prevailing disease patterns and planning control measures.

Thailand 0065  Malaria Eradication Programme  
(Jan. 1962 - end of 1972) R (AID)
To eradicate malaria from the entire country.

Thailand 0067  Radiation Protection Services  
To develop radiation protection measures and to establish a division of radiation health protection in the Ministry of Public Health.

Thailand 0071  School for Radiological Technology  
(Jan. 1965 - mid-1968) UNDP/TA
To establish a school for the training of radiographers.

Thailand 0073  Physical Therapy Training  
(Dec. 1965 - mid 1968) UNDP/TA
To develop the training of physical therapists for the expansion of orthopaedic and rehabilitation services.

Thailand 0078  Sewerage and Drainage, Bangkok  
(Jan. - Feb. 1966) UNDP/TA
Two WHO consultants assisted in drafting a contract for negotiating with a consulting engineering firm which would study the provision of sewerage and drainage in Bangkok and prepare the necessary engineering schemes.

Thailand 0200  Fellowships R: Epidemiology (nine months), health education (twelve months), pathology (ten months), radiation health (two months), tropical medicine (three weeks), venereal disease control (three weeks).

Thailand 0201  Fellowships UNDP/TA: Cancer pathology (three months), clinical radiotherapy (two months), clinical tropical medicine (ten months), preventive and social medicine (twelve months), radioisotope techniques in clinical medicine (twelve months), venereal disease control (twelve months).

SEARO 0007  Regional Assessment Team on Malaria Eradication  
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.

SEARO 0030  Smallpox Eradication and Epidemiological Advisory Team (Oct. 1962 - end of 1970) UNDP/TA
To assist the countries of the Region in controlling and ultimately eradicating smallpox, and in controlling other diseases.

To organize in certain rural health centres in Afghanistan, India, Nepal and Thailand a system of rural health service records and reports and to train personnel in the collection, processing and presentation of vital and health statistics at rural health centre level.

SEARO 0061 Courses for Medical Records Officers, Bangkok (8 June 1964 - 31 March 1965), Rangoon (Nov. 1966 - end of 1968) R

The first course was organized for nine persons from Afghanistan, Burma, Indonesia, Nepal and Thailand for training in the fundamentals of medical records technology. Training consisted of about 300 class hours and more than 400 hours of field work. The subjects covered during the course were medical sciences, medical record sciences, statistics—with emphasis on the Classification of Diseases—hospital statistics, and design of forms.

A second course of similar duration for training medical records officers from various countries of the Region was started in Rangoon in November 1966, with the assistance of the WHO personnel working on project SEARO 0072.

SEARO 0064 Development of Community Water Supply Programme (April 1965 - early 1969) R

To provide governments of the Region with consultant services for the development of their urban and rural community water supply projects.

SEARO 0072 Hospital Statistics (Jan. 1963 - end of 1973) UNDP/TA

To assist the Governments of Ceylon, India and Thailand in organizing an efficient system for the maintenance and flow of records in certain hospitals; in collecting, processing and presenting hospital statistical data on a national scale, and in training medical records and hospital statistical personnel.

SEARO 0094 External Cross-checking of Blood Films (June 1963 - end of 1968) R

To provide facilities for the external cross-checking of blood films received from malaria eradication programmes in the Region.

SEARO 0096 Medical Education (Nov. 1965 - Feb. 1966; July 1966 - ) UNDP/TA

To assist in improving teaching methods in medical colleges.


To assist in giving training in applied nutrition and to support the Nutrition Research Laboratories, Hyderabad, India, in carrying out the training programme.


To strengthen the faculty of the Asian Institute for Economic Development and Planning, established with the help of the United Nations Development Programme (Special Fund) and UNICEF, and to assist with the training in health aspects of planning and public health administration. (See page 123.)

SEARO 0103 Hospital Designs (Oct. - Dec. 1966) R

A WHO consultant assisted in preparing plans and designs for the construction of health units and hospitals in Afghanistan.

SEARO 0110 Seminar on the Teaching of Preventive and Social Medicine, Colombo (30 Nov. - 8 Dec. 1966) UNDP/TA

The seminar, held at the Faculty of Medicine of the University of Ceylon, was attended by nineteen professors and senior teachers of preventive and social medicine from Afghanistan, Burma, Ceylon, India, Indonesia and Thailand. They discussed the definition of the objectives of courses in preventive and social medicine, evaluation as an aid to students and teachers, the content of curricula, and teaching methods. Among the teaching methods demonstrated and discussed were four different forms of integrated teaching involving collaboration of teachers of medicine, paediatrics and pathology with those of preventive and social medicine.

WHO provided two consultants, secretarial assistance and the cost of attendance of the participants. The regional advisers in health education and in medical education assisted with the seminar.

SEARO 0124 Typhoid Immunization (Nov. 1966 - end of 1967) R

To assist governments of the Region in the preparation of acetone-inactivated and dried vaccine, in order to facilitate systematic immunization programmes for susceptible age groups.

SEARO 0136 Smallpox Eradication (Nov. 1966 - ) R

To review the progress of smallpox eradication work in the Region and to assist in further planning, within the context of the global eradication programme, for the next ten years.

SEARO 0142 Workshops in Medical Education, Bangkok (7 - 11 Nov. 1966), Rangoon (14 - 18 Nov. 1966) R

To promote the improvement of teaching methods in medical colleges, two workshops in medical education were held, one in Bangkok and one in Rangoon, consisting of discussions following the presentation of specific subjects and demonstrations of teaching and evaluation methods. They were attended by teachers from all the medical schools in Thailand and Burma, and the workshop in Bangkok was attended also by four medical school teachers from Indonesia. The report on the workshops will be distributed to all medical colleges in the Region.

WHO provided two consultants (an educational psychologist and a medical educator) and two temporary advisers (medical educators) to conduct the workshops, the cost of attendance of the participants, and secretarial assistance.
SEARO 0149 Seminar on Hospital Administration, New Delhi (11 - 23 July 1966) R

The seminar was held at the National Institute of Health Administration and Education in New Delhi. It discussed the role of the hospital in a comprehensive community health programme; the hospital care aspects of health services and the importance of proper planning and management of hospitals for patient care and optimum utilization of facilities; the methodology of evaluation of medical care in hospitals; and planning of hospitals and other medical care facilities in India. There were thirty-three participants from Afghanistan, Ceylon, India, Indonesia and Nepal and some regional office staff members attended. The WHO hospital administration specialist assigned to the National Institute of Health Administration and Education helped with the preliminary arrangements and with the conduct of the seminar.

WHO provided the cost of attendance of five participants.
Albania 0005  Cancer Control (1962 - ) UNDP/TA
To develop a specialized cancer control 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.

Albania 0006  Vaccine Production (1966 - 1970) R
To develop adequate facilities for the production of the vaccines and sera necessary for preventing and controlling communicable diseases.

Albania 0007  Central Institute of Epidemiology, Microbiology and Immunology (1965 - 1972) UNDP/TA
To develop the Central Institute of Epidemiology, Microbiology and Immunology, which is to be established in Tirana to conduct work in microbiology, virology and parasitology, produce sera, vaccines, toxoids and gamma-globulins and provide specialized training for various categories of personnel.

Algeria 0001  Communicable Eye Disease Control (1956 - 1972) UNDP/TA UNICEF
To carry out a programme for the control of communicable eye diseases. The programme includes a self-treatment mass campaign and the organization of collective treatment in schools, the control of trachoma and related diseases in the family environment, health education, and the training of technical personnel.

Algeria 0006  Rehabilitation (1963 - 1967) UNDP/TA
To promote rehabilitation services for the disabled; to make a general rehabilitation plan for the country; and to train national personnel in the techniques of rehabilitation.

Algeria 0010  Community Water Supply (1963 - ) Special Account for Community Water Supply
To study specific aspects of the community water supply programme.

Algeria 0014  Nursing Education (Oct. 1963 - 1972) UNDP/TA
To organize and implement basic training programmes for the different categories of nursing and midwifery personnel and to establish a post-basic school to prepare nurses for administrative and teaching responsibilities.

Algeria 0015  Training of Medical Assistants (1965 - ) R
To plan and organize training for medical assistants ("techniciens sanitaires").

Algeria 0012  Environmental Health (1963 - 1972) R UNICEF
To develop and strengthen environmental health services and to train sanitation personnel.

Algeria 0113  Environmental Sanitation (1963 - ) UNDP/TA UNICEF
To train sanitation personnel and promote work in environmental sanitation.

Algeria 0114  Health Education (1964 - 1971) UNDP/TA UNICEF
To promote health education work; to train personnel of various categories in the subject; to develop methods and techniques of health education and to prepare material adjusted to the conditions in and needs of the country.

Algeria 0115  Nutrition Advisory Services (1964 - 1968) R UNICEF (FAO)
To conduct nutrition surveys, to review programmes for the prevention of malnutrition, and to train personnel.

Algeria 0116  Epidemiology and Health Statistics (Jan. 1964 - 1970) UNDP/TA UNICEF
To organize health statistical services and to train national personnel in health statistics; to use the statistical data collected for determining priorities in public health planning.

To reorganize and improve nursing and midwifery services.

Algeria 0118  Malaria Pre-eradication Programme (1964 - ) R MESA
To prepare technical, administrative and operational services for a malaria eradication programme within the framework of the rural health services; to organize the network of rural health services which, in the course of the preparatory, attack and consolidation phases of the malaria eradication programme, will carry out malaria case-finding and treatment.

Algeria 0200  Fellowships R: Cholera control (two weeks), haematology (one month), hospital administration (one week), maternal and child health (two for seven weeks), rehabilitation (two months).

To reorganize and extend maternal and child health work in health centres throughout the country, and to develop training facilities for maternal and child health workers and related personnel.
Austria 0015 Nursing Education and Administration
(1961 - ) R

To prepare nurses for administrative and teaching posts in schools of nursing and for leadership in nursing services.

Austria 0200 Fellowships R: Air analysis (one month), cytology (one month), food control (one for two weeks, five for one month, one for six weeks), leptospirosis (one month), public health administration (one month), sanitation (one month), smallpox vaccine production (one month), water supply and sewage disposal (six weeks).

Belgium 0200 Fellowships R: Gerontology (two months), nursing (three weeks), paramedical professions (two for three weeks), pathology/electron microscopy (ten weeks), radiology (two months).

Bulgaria 0012 Central Institute of Public Health
(Dec. 1965 - July 1966) UNDP/TA

A WHO consultant advised on the organization of the new Central Institute of Public Health, the functions of which will be to assist in planning the health services, advise and assist the regional institutes of hygiene and epidemiology, and advise the Government on technical public health matters and on health legislation.

Bulgaria 0200 Fellowships R: Anatomy (four months), biochemistry (two months), cardiology (three months), endocrinology in children (three months), haematology (three months), lung surgery (three months), medical electronics (three months), microsurgery (four months), neurosurgery (three months), paediatrics (three months), public health administration (two months), rural health (six months), surgery (two for three months), urology (three months), vascularization of endocrine glands (four months).

Czechoslovakia 0009 Medical Training Institutes
(1960 - 1970) R

To assist national institutes in the development of training in medicine and public health.

Czechoslovakia 0010 Study on Tuberculosis Epidemiology and Control (1960 - 1966) R

WHO provided four consultants, two temporary advisers, nine fellowships for periods ranging from one to four months, and supplies in support of this project, the aims of which were to study the epidemiological characteristics of tuberculosis in different population groups so as to determine which groups should be given priority by tuberculosis control services, to assess the efficacy of various control measures, and to carry out trials for comparing the value of hospital and home treatment in Czechoslovak communities.

The project provided information on the origin of new cases, the prospects afforded by modern therapy in reducing the number of infectious patients, and the optimum frequency of mass miniature radiography. (See also page 129.)

Czechoslovakia 0200 Fellowships R: Biochemistry (two months), cancer (two months), clinical biochemistry (three months), clinical hepatology (three months), communicable diseases (two months), hygiene of lighting (two months), industrial hygiene (ten weeks), pathology (three months), pharmacology/rheumatology (two months), physiology (two months), postgraduate medical education (nine weeks).

Denmark 0200 Fellowships R: Child psychiatry (three months), nursing administration (eleven and a quarter months), orthopaedic, traumatic and vascular surgery (three months).

Finland 0200 Fellowships R: Child psychiatry (one for one month, one for two months), environmental health (one month), health education (one for one month, one for two months), mental health (one for two weeks, two for one month, two for two months), microbiology (four months), paediatrics (one month), pulmonary diseases (six weeks), radiation protection (one month), vital and health statistics (three months).

France 0200 Fellowships R: Cardiovascular surgery (two months), child mental health (two for three weeks), endocrinology (three weeks), health education (three weeks), hip conditions (six weeks), hospital organization (one month), paramedical professions (three weeks), public health administration (seven for three weeks), tuberculosis epidemiology (three weeks), urology (two months), virology (two months).

Germany 0200 Fellowships R: Health screening (two months), immunochemistry (three months), physical therapy (three months), psychiatry (seven weeks), radiation health (one month), school health (one month), smallpox control (three weeks).

Greece 0017 Nursing Education and Administration
(1956 - ) UNDP/TA

To train nurses abroad for teaching and administrative posts in a post-basic school of nursing which is to be established to prepare tutors and administrators for nursing education programmes and services.


To organize comprehensive and co-ordinated health services in a rural area where new methods of public health administration can be tested, all categories of public health personnel given practical training, and demonstration and research carried out. The project includes the organization of a vital and health statistical service in the demonstration area.

Greece 0034 Community Water Supply
(1963 - ) Special Account for Community Water Supply

To promote community water supplies in an area where general socio-economic development is taking place.

Greece 0200 Fellowships R: Anaesthesiology (two for three months), chemotherapy of cancer (four and a half months), endocrinology (six and a half months), food microbiology (three months), gastro-enterology (six and a half months), physiology (six months), social medicine (four months), traumatic surgery (thirteen weeks), virology (six months).

To develop new medical teaching programmes in certain medical schools.

Hungary 0008  Training of Sanitary Engineers (1965 - ) UNDP/TA

To organize the training of sanitary engineers and to train sanitary engineers as teachers.

Hungary 0010  Nursing and Midwifery Education and Administration (1966 - 1973) UNDP/TA

To develop nursing and midwifery education programmes and establish a post-basic school to prepare nurses and midwives for administrative and teaching posts in hospitals, in nursing homes, and in public health nursing and midwifery services.

Hungary 0012  Rural Health (1965 - 1966) UNDP/TA

A three-month fellowship was awarded for the study of problems of health services and epidemiology in rural areas.

Hungary 0013  Health Statistics (1965 - ) UNDP/TA

To develop epidemiological studies and health statistical services, in connexion with the Ministry’s plan to establish, under the Ministry of Health, a national health statistics processing centre for processing data from epidemiological surveys and medical research.

Hungary 0014  Molecular Biology (1966) UNDP/TA

A six-month fellowship was awarded to a research worker in molecular biology for study of problems in genetics, biochemistry, physics and micromorphology in specialized laboratories and institutions in Europe.

Hungary 0016  Cancer Research (1966) UNDP/TA

A nine-month fellowship was awarded to enable a cancerologist to study basic problems connected with cancer growth in a specialized research laboratory.

Hungary 0017  Virus Research (1966) UNDP/TA

A six-month fellowship was awarded to a virologist for study, in specialized virus laboratories, of new methods and techniques used in virus investigations.

Hungary 0200  Fellowships R: Audiology (two months), burn treatment (two for three months), cardiopulmonary functions (two months), immunology/immunochemistry (two months), lung cytology (two months), microbiology (three months), occupational health (one month), pathophysiology (two months), pharmacology in pediatrics (two months), psychiatric rehabilitation (two months), resuscitation services (three months), transplantation immunity (three months), virology (three months).

Iceland 0200  Fellowships R: Medical statistics and epidemiology (four and a half months), nephrology (six months), rehabilitation (five months).
Malta 0200 Fellowships R: Cholera control (two weeks), clinical treatment of tuberculosis (ten weeks), cytology and haematology (six months).

Monaco 0200 Fellowships R: Electronics in hospital administration (six months).

Morocco 0001 Communicable Eye Disease Control (1952 - 1970) UNDP/TA
To develop a nation-wide programme for the control of trachoma and seasonal conjunctivitis, using fully the possibilities offered by the reorganized rural health services; to carry out field surveys in areas of high endemicity and in schools, to serve as a basis for action in future years.

Morocco 0012 Environmental Sanitation (1958 - 1970) UNDP/TA
To develop a national programme of environmental sanitation by establishing for the purpose a sanitary engineering section in the Ministry of Health and training health personnel, including auxiliaries.

Morocco 0023 Medical Education (1966 - 1970) 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.

Morocco 0028 Malaria Pre-eradication Programme (1962 - ) R MESA
To prepare for a malaria eradication programme by the organization of technical, administrative and operational services; and to train medical and paramedical personnel of public health services (especially rural health services) in malaria eradication concepts and techniques.

Morocco 0030 Community Water Supply (1962 - ) Special Account for Community Water Supply
To draw up a programme for community water supply development.

Morocco 0032 Food Hygiene (1965 - ) UNDP/TA
To take measures against the microbiological contamination of processed foods; and to organize seminars to improve food hygiene practices.

Morocco 0034 Water Pollution Control (1965 - 1966) UNDP/TA
The WHO consultant provided in 1965 made a follow-up visit to Morocco to advise further on the elimination of water pollution caused by wastes from sugar factories.

Morocco 0092 Nursing Education (1959 - 1968) R
To develop basic nursing education, and also the post-basic school of nursing, which prepares qualified nurses for leading posts in specialized fields, including midwifery and nursing administration and education. (See page 130.)

Morocco 0093 Training of Health Auxiliaries (Oct. 1957 - 1968) UNDP/TA
To train auxiliary health personnel.

Morocco 0200 Fellowships R: Food hygiene (two for three weeks), gastro-enterology (twelve months), schools for para-medical personnel (one month).

Morocco 0211 Epidemiology and Health Statistics (1961 - 1972) R
To develop the national vital and health statistical services and to organize statistical courses and lectures for various groups of health personnel and students.

Morocco 0212 Training of Health Statistical Personnel (1964 - 1971) UNDP/TA
To improve the training of statistical staff, for which purpose a school for statistical personnel is being organized.

To train the laboratory technicians required for the development of a public health laboratory system, and to prepare for an expanded teaching programme.

Netherlands 0015 Fellowships R: Congenital malformations rehabilitation (five and a half months), drug control (three for one month), environmental sanitation (two for one month), health education (six weeks), public health administration (two for one month), schools of public health (one month), surgery (one month), use of computers in human genetics (two weeks), veterinary surgery (two for three weeks).
Three lecturers were also provided under this project.

Norway 0200 Fellowships R: Dentistry (three and a half months), Master of Public Health course (one for three and a half months, one for twelve months).

Poland 0015 Medical Faculties (1958 - 1970) R
To provide assistance to certain medical schools, particularly in improving facilities for teaching the basic medical sciences.

Poland 0016 Tuberculosis Control (1960 - 1970) UNDP/TA
To train staff in tuberculosis control; later, to set up a pilot area project for tuberculosis control; to study the epidemiological characteristics of tuberculosis in different population groups, and to assess the efficacy of various control measures in reducing the risk of infection, especially among children.

Poland 0023 Environmental Sanitation (1966) UNDP/TA
A six-month fellowship was awarded for the study of new methods for the treatment and distribution of drinking-water and the purification and disposal of sewage and industrial wastes, and of the collection and treatment of municipal refuse.
Poland 0024  Health Statistical Services (1963 - ) UNDP/TA

To develop health statistical services and improve the national and international comparability of statistical data; and to organize a morbidity survey.

Poland 0026  Protection of River Waters against Pollution (1965 - ) UNDP/SF

To develop scientific and research work for the control of water pollution by domestic wastes, industrial effluents, saline waste waters and waste waters from thermal power stations in the Slasko Dabrowskie area.

Poland 0200  Fellowships R: Air pollution (one for one month, one for six weeks, one for nine weeks), anaesthesiology (three months), biochemistry (one for two months, one for six and a half months), Diploma of Public Health course (nine months), food hygiene (one month), gynaecology (six months), haematology (two for six months), medical chemistry (six months), microbiology (six weeks), occupational health (one for one month, one for two months), psychiatry (three months), school health (two months), virology (three months).

Portugal 0030  Post-basic Nursing Education (1963 - ) *

Portugal 0033  Mental Health Services (1963 - ) *

Portugal 0034  Health Education (1962 - ) *

Portugal 0035  Public Health Administration (1963 - ) *

Portugal 0036  Health Education Services (1965 - ) *

Portugal 0200  Fellowships R: Food control (three weeks), food hygiene (seven weeks), health education (two weeks), hospital nursing administration (two months), nursing (two months), public health nursing (two months), resuscitation services (one month), statistics (four months), tuberculosis (one month).

Romania 0004  Institute of Microbiology, Parasitology and Epidemiology, Bucharest (1965 - 1966) UNDP/TA

To assist in improving the production of vaccines, sera and other biological substances by introducing freeze-drying procedures at the Cantacuzino Institute of Microbiology, Parasitology and Epidemiology, WHO provided a consultant for one month in September 1965, four fellowships (two of six weeks and two of three months), and supplies.

Romania 0200  Fellowships R: Anaesthesiology (one month), biochemistry (two months), cancer treatment (three months), dental prosthetics (two months), dermatology (two months), leukaemia treatment (three months), molecular genetics (two months), neurology (three months), nutritional diseases and diabetes (three months), orthodontics (two months), otorhino-laryngology (three months), radioisotopes in the diagnosis and treatment of cancer (three months), radiotherapy of cancer (three months), renal pathology (three months), rheumatology (two months), virology (one month).

Spain 0022  Health Statistical Services (1960 - ) R

To develop national statistical services and to set up a new department of biostatistics in the National School of Public Health, Madrid.

Spain 0023  Rehabilitation of Handicapped Children (1959 - ) UNDP/TA

To develop a national programme for the rehabilitation of handicapped children; to establish training centres and expand the services for handicapped children throughout the country.

Spain 0025  Epidemiological Studies of Virus Diseases of Public Health Importance (1964 - ) UNDP/TA

To resume the study of methods for the prevention and control of respiratory and enteric virus diseases that was started in 1959.

Spain 0030  Health Demonstration and Training Area (1965 - ) UNDP/TA

To set up, as part of the general plan for socio-economic development, a public health demonstration and training area with a complete network of co-ordinated rural health services. The area will be used for testing administrative and technical methods, for carrying out surveys, and, in collaboration with the National School of Public Health, for training various categories of health staff.

Spain 0031  Mental Health Services (1966 - ) UNDP/TA

To develop the mental health services, especially those for the rehabilitation of psychiatric patients.

Spain 0200  Fellowships R: Alcoholism (three months), bacteriology (one month), cholera control (two weeks), food hygiene (two months), mental health (six weeks), occupational therapy (six weeks), paediatrics (six months).

Sweden 0200  Fellowships R: Drug control (two months), food control (six weeks), nursing administration and education (nine months), training of sanitary inspectors (two months).

Switzerland 0018  Study of the Functions of Nursing Personnel (1965 - ) R

To determine the responsibilities and differentiate the functions of the various categories of nursing personnel required by the health services. The findings of this study will serve as a basis for planning the different types of training needed and the staffing of nursing services.

Switzerland 0200  Fellowships R: Air pollution (three weeks), drug control (five weeks), nursing education (three months), pedopsychiatry (three and a half months), tumours in children (six months).

Turkey 0011  Leprosy Control (1953 - 1972) UNDP/TA UNICEF

To carry out a leprosy control programme covering the endemic area of the country and to integrate it progressively into the general health services.

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* Suspended: see p. 86.
Turkey 0013 Tuberculosis Control  
(1952 - 1970) UNDP/TA UNICEF

To continue the mass BCG campaign; to carry out a sample prevalence survey on population groups living in different geographical, climatic and socio-economic conditions; and to establish a pilot area in the Province of Yozgat, where applicable methods of control will be developed within the existing network of general health services.

Turkey 0016 School of Public Health, Ankara (1960 - 1968) R

To develop the School of Public Health in Ankara.

Turkey 0023 Malaria Eradication Programme  
(1957 - ) R MESA UNICEF (World Food Programme)

To achieve malaria eradication throughout the country.

Turkey 0029 Nursing Education (Oct. 1955 - 1966) R

The aim was to organize and develop basic and post-basic nursing education to prepare staff for leading posts in nursing administration and education and in other specialized fields of nursing and midwifery. WHO provided a nursing adviser in 1955, two nursing advisers from 1956 to 1963, three in 1964 and 1965 and two in 1966. Three ten-month and four twelve-month fellowships were awarded.

Between 1956 and October 1961 the Division of Nursing of the Ministry of Health and Welfare was reorganized, a council of nursing was established, five of the eight basic schools of nursing, the post-basic school and eight of the fourteen rural midwifery schools were reorganized, curricula were revised, and staff were trained in teaching, supervision and administration. The training of auxiliary nurses and midwives was revised and their numbers increased.

In October 1961 the reform of the health services brought about a modification of the project. It became almost exclusively oriented towards the post-basic education and training of nurses, midwives and health assistants in one school—the Gevher Nesibe Institute—in Ankara. Many graduates from the Institute are employed in various fields of nursing in rural and urban areas. Some occupy administrative posts in health colleges and a few hold teaching posts.

Turkey 0046 Water Supply and Sewerage for the City of Istanbul and the Neighbouring Industrial Region  
(1965 - ) UNDP/SF

To prepare a master plan, and feasibility and preliminary engineering and other organizational studies for the extension and improvement of the water and sewerage system of Greater Istanbul and the rapidly developing industrial areas in the vicinity.

Turkey 0200 Fellowships R: Cholera control (five for two weeks), cytopathology (five weeks), environmental sanitation (four for one month), sanitary engineering (one for two months, one for three months, one for twelve months, one for fifteen months).

Turkey 0401 Development of Public Health Services and Training of Personnel  
(1964 - ) UNDP/TA UNICEF

To develop the health services and train health personnel, and to co-ordinate the work of the other internationally assisted health projects. Pilot areas are to be set up in the provinces where the new law on the nationalization of the health services is being applied and in those where the maternal and child health or malaria eradication services have been integrated into the general public health services.

Turkey 0402 Health Statistical Services  
(1964 - 1972) R UNICEF

To develop the national, regional and local health statistical services, in co-ordination with the general project, Turkey 0401, for the development of public health services.

Turkey 0403 Environmental Health Services  
(1964 - 1973) R UNICEF

To develop the environmental sanitation services and train sanitation personnel.

Turkey 0404 Environmental Sanitation  
(1964 - ) UNDP/TA UNICEF

To promote environmental sanitation work.

United Kingdom 0200 Fellowships R: Dental health epidemiology (six weeks), general and geriatric psychiatry (two months), medical education (two months), mental health (one month), smallpox (one month), urology (one month).

USSR 0200 Fellowships R: Applied immunology (two to two months), biochemistry (two months), medical chemistry and physics (synthesis of drugs) (six months).

Yugoslavia 0007 Rehabilitation of Handicapped Children  
(1965 - 1966) UNDP/TA UNICEF

Six fellowships—two of six months and four of two months—were provided to assist in improving the care of physically and mentally handicapped children. Assistance was previously provided under this project between 1950 and 1962. A demonstration and training centre for physical medicine and rehabilitation, with personnel trained in the rehabilitation of various categories of handicapped children, has been set up in each republic.

Yugoslavia 0020 Public Health Administration  
(1956 - ) UNDP/TA

To train various categories of health personnel for the federal and republic institutes of public health.

Yugoslavia 0025 Nursing Education and Services  
(1959 - ) UNDP/TA

To improve and expand nursing education programmes and services by preparing nurses for senior posts in nursing education and administration.

Yugoslavia 30 Malaria Eradication Programme  
(1959 - 1965) R MESA

A plan of operations was signed by the Government in 1959 for the implementation of a programme to eradicate malaria from the endemic areas of Macedonia and Kosmet, the residual foci of Crna-Gora, the Adriatic coastline and Bosnia-Herzegovina. The project aimed at eradicating malaria by spraying the indoor anopheline resting-places with residual insecticide,
setting up an active and passive case-detection network responsible for presumptive and radical treatment, strengthening and co-ordinating the existing malaria services, developing specific malaria legislation and stimulating public interest through health education. WHO provided a malariologist from July 1959 to December 1963, five consultants, nine fellowships (one for three weeks, three for one month and five for six weeks), and supplies and equipment. In addition, between 1961 and 1963 assistance was provided (under project Inter-regional 89) to the Malaria Eradication Training Centre in Belgrade, which trained staff for the programmes in Yugoslavia and other countries.

The project has successfully attained its objectives in that all residual malaria foci have been eliminated and the whole of the formerly malarious areas, with a population of approximately 6 000 000, has reached the maintenance phase. The cost of the spraying programme was estimated at $0.53 per head.

**Yugoslavia 0037 Early Detection and Control of Cancer**
(1965 - ) UNDP/TA

To train health personnel for the chronic and degenerative disease centres that are to be set up in certain republics.

**Yugoslavia 0038 Epidemiological Studies of Virus Diseases**
(1965 - ) UNDP/TA

To carry out, at the Institute of Public Health of the Republic of Serbia, an epidemiological study of respiratory virus diseases, especially in young children.

**Yugoslavia 0200 Fellowships R: Biochemistry (four months), cytology (four months), cytopathology (four months), dental health (four months), endocrinology (five months), haematology (five months), nutrition (three months), nutrition biochemistry (three months), pathophysiology (five months).**

**Yugoslavia 0201 Fellowships UNDP/TA: Anaesthesiology (six months), cardiology (six months), diarrhoeal diseases (six months), Diploma of Public Health course (three months), endocrinology (twelve months), epidemiology (three months), hospital construction (two for two months), laboratory diagnosis of arthropod-borne virus diseases (three months), quarantine (six months), traumatology (three months), water analysis (three months).**

**EURO 115 Training Institutions for Sanitation Personnel**
(1956 - 1965) R

Under this project, the aims of which were to strengthen the teaching of sanitary engineering by providing lecturers and awarding fellowships to members of the teaching staff and to organize and promote training courses for sanitary engineers, the following assistance was provided:

(a) ten lecturers and fourteen fellowships of from two to eight months' duration for the annual training course in sanitary engineering held at the University of Naples;
(b) educational films for a sanitary engineering course held at the Polytechnic School in Milan;
(c) twenty-seven lecturers and nine fellowships to trainees from Italy, Morocco, Poland, Switzerland and Yugoslavia for short courses in food bacteriology held at the Institut Pasteur, Lille, and assistance in organizing the courses;

(d) twenty lecturers and thirteen fellowships to trainees from Bulgaria, Czechoslovakia, Finland and Turkey for the annual course in sanitary engineering organized by the Delft Technological University in collaboration with the Netherlands University Foundation;

(e) three lecturers and eleven fellowships to trainees from Austria, Bulgaria, Federal Republic of Germany, France, Italy, Poland, Portugal, Spain, Switzerland, Union of Soviet Socialist Republics, and Yugoslavia for a short course in water sanitation held in Prague in 1960;

(f) a lecturer for a seminar on special topics of sanitary engineering organized in Bad-Godesberg in 1959 by the Government of the Federal Republic of Germany;

(g) an eleven-month fellowship to a trainee from Switzerland; and

(h) a standard air sampler monitor to the Technical University of Warsaw.

**EURO 0127 Travelling Seminar on Public Health Administration, Austria and Czechoslovakia (8 - 28 June 1966) R**

The aim of the seminar was to enable health administrators in leading positions to observe the organization and administration of health services in Austria and Czechoslovakia and to exchange views on the subject. Special attention was given in Czechoslovakia to the integration of preventive and curative services at the different levels—local, intermediate and central—and, in Austria, to rehabilitation and industrial health services.

WHO provided a temporary adviser and the cost of attendance of twenty-five participants from Albania, Algeria, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Greece, Hungary, Italy, Malta, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, United Kingdom, and Yugoslavia.

**EURO 0183 Participation in Seminars and Conferences of the United Nations and other Agencies (1959 - ) R**

**EURO 0184 Trachoma Control (1958 - ) UNDP/TA**

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 other countries.

**EURO 0185 Follow-up of Inter-country Activities on a National Basis (1958 - ) R**

To assist governments in developing national activities arising out of the inter-country programmes of the European Region.

**EURO 0207 Undergraduate Medical Education (1961 - ) R**

To stimulate improvements in undergraduate medical teaching and particularly the introduction of preventive and social medicine at various stages and sections of the curriculum.

**EURO 0211 Exchange of Information on Placement, Supervision and Follow-up of WHO Fellows (1962 - ) R**

To enable national officials supervising WHO fellowship matters to visit the Regional Office and some countries in order to compare arrangements, discuss problems related to fellowships, and to meet the deans of institutions receiving the greatest number of WHO fellows.
A series of studies on the accuracy and comparability of statistics on causes of death, carried out by national statistical services and co-ordinated by WHO.

A team to visit countries on request in order to assist in determining whether eradication of malaria has been achieved.

The aim was to support national seminars for the study of nursing service administration and nursing education programmes and the discussion of the conclusions reached at former meetings held in Europe in their application to national situations. The following assistance was provided:

(a) a consultant who helped to organize the National Meeting of Public Health Nurses, held at Vuokatti, Finland, in September 1964;

(b) a consultant and three temporary advisers who assisted in the planning and conduct of the seminar for directors of post-basic schools of nursing, organized by the Agnes Karll Verband in Frankfurt-am-Main in August-September 1964;

(c) two consultants and a temporary adviser who assisted in preparing and conducting the Seminar on Research in Nursing organized by the Federation of Nordic Nurses Associations in Copenhagen in December 1966 for the purpose of considering the promotion of research into nursing problems, the preparation of nurses for research work, and the utilization of the findings of research projects.

To make preparations and preliminary arrangements for conferences, seminars, etc., to be held in the following year.

In view of the spread of cholera El Tor to certain Eastern Mediterranean countries, the course was organized at short notice to provide training in cholera microbiology. Eight fellowships were awarded to trainees from Algeria, Malta, Spain and Turkey.

To assist the School of Public Health, Rennes (France), which is organizing courses in public health to which French-speaking students from other countries, including WHO fellows, are admitted, by providing an epidemiologist to undertake teaching and research.

To make a study of methods to be used by health administrations in examining the extent to which there is an excessive use of drugs, involving danger to health and economic waste, in determining the possible reasons for this (e.g., over-prescribing or excessive self-medication), and in evolving practical proposals for limiting any over-consumption of medicaments.

The conference studied organizational problems connected with the control of communicable diseases, malaria eradication, nutrition, environmental health, the training of auxiliary health personnel, etc. WHO provided a consultant, four temporary advisers, and the cost of attendance of nineteen participants from Algeria, Greece, Jordan, Lebanon, Morocco, Portugal, Spain, Tunisia, Turkey, United Arab Republic and Yugoslavia.

To provide entomological advice for malaria projects, primarily for those in Algeria and Morocco, but the project will also serve Turkey and other countries.
EURO 0321 Study of the Effectiveness of Tuberculosis Control Services (1966 - ) R

To assist governments in assessing the effectiveness of their tuberculosis control programmes. This long-term regional study, which follows the Technical Meeting on Tuberculosis Control (see EURO 0306) should make it possible to improve the accuracy and comparability of tuberculosis morbidity data, as called for by the Regional Committee for Europe in 1962. For this purpose, exchange visits will be arranged between national officials and a small meeting may also be held to coordinate the study and evaluate the results obtained.

EURO 0322 Symposium on Virus Disease Control, Moscow (19 - 23 July 1966) R

The symposium reviewed information on the preparation and use of the numerous virus vaccines developed in recent years (including those against poliomyelitis, measles and influenza) and the outcome of the attempts to evolve effective and practical chemoprophylactic and chemotherapeutic agents.

WHO provided six temporary advisers and the cost of attendance of twelve participants from Bulgaria, Federal Republic of Germany, France, Iceland, Italy, Luxembourg, Malta, Norway, Poland, Portugal, Union of Soviet Socialist Republics, and United Kingdom.

EURO 0323 Automation of Public Health Laboratory Services (1966 - ) R

To assist countries in developing the automation of laboratory methods and to help them to develop, as part of the national microbiological services, a network of virus diagnostic laboratories with a system for the collection and distribution of laboratory information to supplement notifications of infectious diseases.


The conference discussed recent changes introduced in the organization of general hospitals for the purpose of making their services more efficient. Three subjects—progressive patient care, the role of psychiatry in general hospitals, and hospital medical records—were selected for detailed consideration. In addition, some new developments were demonstrated and discussed with a view to assessing their merits, and visits were arranged to three London hospitals in order to observe the set-up of intensive care units and the working of psychiatric services in a general hospital.

WHO provided a consultant, five temporary advisers, and the cost of attendance of the twenty-four participants from Algeria, Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Finland, France, Greece, Hungary, Ireland, Italy, Luxembourg, Malta, Monaco, Morocco, Netherlands, Norway, Poland, Romania, Spain, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics, United Kingdom and Yugoslavia.


The purpose of the working group was to discuss the early detection and treatment of handicapping defects in children. Existing experience has been gained in the establishment of registers of children ' at risk ', and new screening methods have been devised, but more is needed. The group considered which children ' at risk ' of developing sensorial, motor, mental and other handicapping defects need special attention and what organization and methods are required for their early detection and management. The group was composed of eight temporary advisers from Denmark, France, Malta, Netherlands, Union of Soviet Socialist Republics, and United Kingdom, together with the Director of the Mental Retardation Project of the International Union for Child Welfare and a WHO consultant.


To study and report on certain matters of importance for the planning of mental health services in European countries, in preparation for a symposium proposed for 1968. The reports will be made with the assistance of consultants, in collaboration with governments and their nominated specialists, and will deal with subjects such as rates of mental morbidity under various economic conditions and in rural and urban areas, certain mental health problems in industry, and the relation of mental illness to family status and to disturbed family life. Part of the study, on the role of psychiatric social workers in mental health practice, will be made in collaboration with the United Nations.

EURO 0334 Symposium on Student Health Services, Cracow (15 - 20 April 1966) R

The symposium discussed the organization of student health services, which vary considerably in quantity and quality in the different European countries, and also the technical problems of medical care and social welfare caused by the large number of foreign students in Europe and the effects on health, including mental health, of life and work in universities. It was attended by sixteen participants from Austria, Belgium, Bulgaria, Czechoslovakia, Federal Republic of Germany, France, Ireland, Italy, Netherlands, Poland, Spain, Sweden, Switzerland, Turkey, United Kingdom and Yugoslavia.

WHO provided three temporary advisers and the cost of attendance of the participants.

EURO 0337 Symposium on the Education of the Public Health Physician in relation to his Work in the Community, Lisbon (14 - 18 Feb. 1966) R

The symposium, which followed up the study made at the Conference on the Training of the Doctor for his Work in the Community, held in Edinburgh in 1961, was attended by senior public health officers and senior members of teaching staffs of schools of public health. They considered the post-graduate education of the doctor intending to work as a public health specialist, including the content and methods of teaching required in public health courses. Emphasis was placed on the views of public health administrators concerning the tasks to be performed and the skills required by the present-day public health doctor.

WHO provided a consultant, four temporary advisers, and the cost of attendance of twenty-four participants from Algeria, Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Greece, Hungary, Ireland, Italy, Morocco, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, Union of Soviet Socialist Republics, United Kingdom and Yugoslavia.

EURO 0341 Symposium on the Use of Electronic Computers in Health Statistics and Medical Research, Stockholm (6 - 10 June 1966) R

See page 128.
EURO 0350  Epidemiological Studies (1966 - ) R  
To study and report on specific aspects of mortality and morbidity of particular interest to the Region. If appropriate, the findings will be presented to the annual sessions of the Regional Committee for Europe. Also, to co-ordinate and assist limited inter-country studies on relevant epidemiological subjects.

EURO 0612  Course on Public Health Practice, Uusimaa (7 - 27 Sept. 1966) R  
A four-week course, in English, for public health doctors concerned with rural health problems or with the teaching of public health. It was similar to those given since 1955 alternately in French at the Soissons Public Health Centre, France, and in English at the Uusimaa Public Health Research and Training Centre, Finland.  
WHO provided two lecturers and the cost of attendance of ten participants from Austria, Czechoslovakia, Finland, Hungary, Iceland, Ireland, Malta, Netherlands, Poland and Sweden.

EURO 0771  Post-Basic Nursing and Midwifery Education (1954 - end of 1966) R  
To assist with the development of advanced nursing and midwifery education programmes in the Region by preparing nurses and midwives, through study abroad, for administrative and teaching posts in post-basic schools of nursing.

EURO 0772  International School of Advanced Nursing Education (in French), Lyons (1962 - 1967) R  
To set up a school of advanced nursing education that will prepare nurses from countries in and outside Europe for positions of leadership in specialized branches of nursing, for nursing education and administration and for research in nursing.

EURO 0773  International School of Advanced Nursing Education (in English), Edinburgh (1963 - end of 1966) R  
To set up in the Nursing Studies Department of the University of Edinburgh an international school of advanced nursing education that will prepare nurses from countries in and outside Europe for leading positions in specialized branches of nursing, for nursing education and administration and for research in nursing.

EURO 0853  Symposium on Collaboration between Veterinary Services and Public Health Services, Ghent (15 - 19 March 1966) R (FAO)  
The symposium, which was organized jointly with FAO, followed up the work of the Seminar on Veterinary Public Health (Warsaw, 1957) and of the European Technical Conference on Food-borne Infections and Intoxications (Geneva, 1959). It was concerned with collaboration between veterinary and public health services which, in many countries, are not under the same ministry. Leading veterinarians from state veterinary services and public health administrators concerned with food control and zoonoses discussed both international and national collaboration in these fields.  
WHO provided a consultant, four temporary advisers and the cost of attendance of ten participants from Austria, Bulgaria, Denmark, Greece, Hungary, Morocco, Romania, Switzerland, Turkey and the Union of Soviet Socialist Republics. FAO provided the cost of attendance of nine participants, and nine participants attended at the expense of their governments.

EURO 1383  Course on Hospital and Medical Administration (in Russian), Moscow (15 Oct. 1956 - 15 July 1967) R  
WHO provided fellowships to four trainees from Bulgaria, Poland, Romania and Yugoslavia for the third diploma course in hospital and medical administration given in Russian at the Central Institute of Post-graduate Training in Moscow. Some supplies (technical literature) were also provided.

EURO 1513  Dental Health Services (1964 - 1967) R  
To follow up the Seminar on Dental Health Services for Children, held in Göteborg in 1960, by providing consultants to survey the progress made, and to assist certain countries to develop dental health services for children.

EURO 1594  Conference on Water Pollution, Budapest (10 - 14 Oct. 1966) R  
The conference followed up the findings and recommendations of the Expert Committee on Water Pollution Control (1965) as they apply to specific problems in Europe, and discussed developments in this field since the European conference organized by the Economic Commission for Europe in collaboration with FAO, IAEA and WHO in 1961.  
WHO provided nine temporary advisers. The respective governments covered the cost of attendance of the twenty-seven participants, who came from Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Hungary, Iceland, Luxembourg, Morocco, Netherlands, Norway, Poland, Romania, Sweden, Switzerland, Union of Soviet Socialist Republics, and Yugoslavia, and of ten observers from Bulgaria, Hungary, Poland, Romania and Yugoslavia.

EURO 1793  Study of Cardiovascular Diseases (1960 - ) R  
A study of registration, coding and reporting of deaths from cardiovascular diseases, including prevalence surveys of ischaemic heart diseases in some European countries showing different mortality rates.

EURO 2133  Study on Chronic Rheumatoid Arthritis (1966 - ) R  
Following the Technical Conference on the Public Health Aspects of Chronic Rheumatoid Arthritis and Related Diseases held in 1963, to give further support to and ensure the co-ordination of prevalence studies, using accepted methodology, and to enable suitable physicians to gain sufficient knowledge of epidemiology so that they can start studies in this field in their respective countries.

Two courses—one on vital and health statistics, and on biometrics and epidemiology—organized in collaboration with the London School of Hygiene and Tropical Medicine, to give physicians and health statisticians training in the application of statistical methods to public health and to epidemiological and clinical studies.
For the course on vital and health statistics (September-December 1965) WHO provided fellowships to two trainees from Hungary and Yugoslavia and (on other projects) fellowships to four trainees from Austria, Federal Republic of Germany, Netherlands and Switzerland. For the course on biometrics and epidemiology (January-April 1966) WHO provided fellowships to three trainees from Finland, Norway and Yugoslavia and (on other projects) seven fellowships to trainees from Bulgaria, Finland, Hungary, Iceland, Poland and Portugal.

EURO 2162 Course in the Application of Statistical Methods to Medicine and Public Health (in French), Brussels (1 Feb. - 4 June 1966) R

A course, organized in collaboration with the Free University of Brussels, to give physicians and health statisticians training in the application of statistical methods to public health and to epidemiological and clinical studies. WHO provided lecturers and fellowships to three trainees from Czechoslovakia and Italy, and (under other projects) to two trainees from Poland and Spain.


A course, in Russian, similar to that described under project EURO 2162 above. WHO provided three lecturers, five fellowships to trainees from Bulgaria, the Union of Soviet Socialist Republics, and Yugoslavia, and supplies. A one-month fellowship was awarded to the Director of the course to enable him to visit the London School of Hygiene and Tropical Medicine and the Free University of Brussels and to observe similar activities in the USSR.

EURO 2593 Course on the Medical and Social Aspects of the Care of the Elderly (in French), Paris (18 April - 18 May 1966) R

The course, which was for physicians and which was given in French, was similar to courses given in English in 1964 and in Russian in 1965.

WHO provided the cost of attendance of twelve physicians from Albania, Belgium, Federal Republic of Germany, France, Italy, Poland, Portugal, Romania, Spain and Switzerland, and three temporary advisers.

EURO 2631 Study on Health Problems created by Noise (1966 - ) R

To resume the study, started in 1964, on the effects of noise on human health, and on remedial measures.

EURO 2942 Symposium on the Efficiency of Medical Care, Copenhagen (4 - 8 July 1966) R

The purpose of the symposium was to evolve a more definite methodology that would enable responsible authorities to ascertain whether the medical care services were being operated in the most efficient and economical manner possible. It was attended by fifteen research workers and senior public health officials from Austria, Belgium, Bulgaria, Czechoslovakia, Federal Republic of Germany, Finland, France, Italy, Netherlands, Norway, Sweden, Switzerland, Union of Soviet Socialist Republics, United Kingdom and Yugoslavia. WHO met the cost of their attendance and provided a consultant and four temporary advisers.

EURO 3251 Advanced Course for Industrial Medical Officers (in French), Zurich (4 - 23 July 1966) R (ILO)

The course, which was for industrial medical officers, dealt with recent advances in occupational health, with emphasis on ergonomics.

WHO provided two temporary advisers and the cost of attendance of eleven participants from Belgium, Bulgaria, Czechoslovakia, Greece, Italy, Netherlands, Portugal, Romania, Spain, Switzerland and Turkey.


A course to give specialized training in the physical therapy of children to physical therapists who are teaching in this field.

WHO provided two lecturers and ten fellowships to trainees from Bulgaria, Czechoslovakia, Federal Republic of Germany, Greece, Hungary, Poland, Romania, Spain, Switzerland and Turkey.

EURO 3361 Training of Sanitary Engineers (in Russian) (1966 - ) R

To assist the annual post-graduate course in sanitary engineering in Poland.
EASTERN MEDITERRANEAN

Aden 0200 Fellowships R: Cholera bacteriology (four weeks), health services administration (two months), statistics (eight and a half months), tuberculosis control (two for two months, one for four months).

Cyprus 0001 Nursing Education, Nicosia (Aug. 1962 - June 1966) UNDP/TA

WHO provided a nurse educator to assist in promoting nursing education and training programmes which would meet the country's need for nurses and for nurse educators and administrators.

The basic nursing and midwifery curricula of the School of Nursing and Midwifery, Nicosia General Hospital, have been improved and are now recognized outside the country. Graduates of the School have demonstrated their ability to assume responsibility for the administration and supervision of the nursing services. Changes made in the administration of the nursing services at the Nicosia General Hospital have facilitated planning for these services and have provided for improvement in the standard of patient care.

The quality of the training given by the School has been brought to a satisfactory level. However, only ten professional nurses graduated from the School during the period 1963-1966 and the nursing services continue to suffer from a shortage of qualified personnel.

Cyprus 0018 Sewage Disposal, Nicosia (Dec. 1965 - April 1966) R

A WHO consultant was provided for a total of six weeks to make a preliminary study for the sewerage system of Nicosia.

Cyprus 0020 Hospital Planning (Oct. 1965 - Feb. 1966) R

A WHO consultant paid a second visit to Cyprus to advise on remodelling the Nicosia General Hospital and designing a new wing for the central medical laboratory.

Cyprus 0200 Fellowships R: Clinical instructor's course (seven months), dietetics (eighteen months), health administration and organization (three weeks), laboratory techniques (eleven months), mental hospital administration (twelve months), nursing education (ten months), psychological medicine (twelve months), undergraduate medical studies (eight for twelve months).

Cyprus 0201 Fellowships UNDP/TA: Undergraduate medical studies (four for twelve months).

Ethiopia 0003 Advisory Services in Vital and Health Statistics (Sept. 1952 - ) UNDP/TA

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.

Ethiopia 0006 Tuberculosis Control (March 1959 - 1968) UNDP/TA UNICEF

To test effective and practical methods of tuberculosis control in the Addis Ababa and Asmara centres and in the mobile units operating in a pilot area, with a view to extending them to the whole country.


To train health personnel to staff the expanding health services, particularly in rural areas.

Ethiopia 0017 Medical Education (Dec. 1964 - end of 1970) R

To establish and develop a medical faculty at the Haile Selassie I University in Addis Ababa.

Ethiopia 0024 Advisory Services in Epidemiology (Oct. 1966 - 1968) UNDP/TA

To plan, develop and operate epidemiological services at all levels of the health services.

Ethiopia 0025 Supervisory Team for Health Centres (Jan. 1962 - 1968) R UNICEF

To provide technical supervision and guidance to health personnel working in various health centres; to establish a division of basic health services in the Ministry of Public Health; and to develop provincial health departments.


To organize a two-year course to train X-ray technicians for the hospital radiology installations.

Ethiopia 0030 Nutrition Department (Dec. 1964 - end of 1968) R

To strengthen the Nutrition Department in the Ministry of Public Health, with a view to integrating work in nutrition into maternal and child health and other health work; to assess the nutritional status of the population; and to train public health officers in nutrition through refresher courses and courses given at the Public Health College and Training Centre at Gondar.

Ethiopia 0039 Malaria Eradication Training Centre (1959 - beyond 1968) R

To train technical staff for the malaria eradication programme.
Ethiopia 0040 Malaria Pre-eradication Programme
(1962 - beyond 1968) R MESA UNDP/TA (AID)
To build up the technical, administrative and operational facilities for a full-scale malaria eradication programme; and to develop at the same time the rural health services so that they may provide efficient collaboration in the eradication programme.

Ethiopia 0200 Fellowships R: Bilharziasis (six weeks), gastro-enteric diseases (twelve months), health and research institutes —study visits (one month), undergraduate medical studies (four for twelve months), X-ray techniques (thirteen months).

Ethiopia 0201 Fellowships UNDP/TA: Psychiatric social work (two for twelve months), undergraduate medical studies (three for twelve months).

Iran 0001 Malaria Eradication Programme
(1957 - beyond 1968) R UNICEF
To eradicate malaria progressively throughout the country by residual spraying and other measures.

Iran 0007 Nutrition Institute
(1963 - end of 1967) UNDP/TA (FAO)
To investigate, by field surveys, the nature and incidence of the main nutritional diseases and deficiencies, especially in mothers and children in rural and in over-populated areas; to plan and implement measures for improving nutrition in various population groups (including the assessment of the nutritional value of indigenous foodstuffs, the promotion of production and distribution of food, the training in nutrition of medical, nursing and other professional staff, and the carrying-out of nutrition education in general health centres, maternal and child health centres and in hospitals).

Iran 0028 Mental Health Services (May 1959 - 1967) R
To reorganize and integrate the mental health services at all levels; to study the feasibility of establishing extra-mural services and other types of services on a large community scale, having regard to the shortage of trained personnel; to train staff at all levels, and to promote the standardization of research on data for the purpose of assessing the value of the existing provisions for care and treatment.

Iran 0029 Cancer Control (Feb. - Sept. 1966) R
WHO provided two consultants, one for five months and one for two months, who advised the Cancer Research Department of the Cancer Institute, Teheran, on a research programme on tissue culture and on the use of the electronic microscope in the study of cancer.

Iran 0038 Bilharziasis Control (Nov. 1958 - 1967) UNDP/TA
To carry out field studies on the epidemiology of bilharziasis and on its prevention; to train staff; and to plan a control programme, integrated as far as possible into the programme for economic development.

Iran 0043 Post-graduate Education in Public Health
(Oct. 1964 - end of 1968) R
To develop post-graduate training in public health and allied fields at the School of Public Health, University of Teheran.

Iran 0045 Air Pollution Control, Teheran
(Sept. 1965 - Nov. 1966) R
The aim was to identify the causes of air pollution in Teheran and to recommend technical and administrative control measures, to develop systematic studies of the principal pollutants in the city and to set up air sampling equipment for the purpose. WHO provided two consultants, one in September 1965 and one in October-November 1966, and supplies and equipment.

In 1965 an inventory was made of industries and other sources of air pollution in the city of Teheran and its vicinity and suggestions were made to the Government for setting up a control service at different levels and for a modest programme of investigation of air pollutants. In 1966 national staff were appointed and a specific plan of action was drawn up. The WHO consultant provided in 1966 assisted in setting up and putting into operation the air sampling stations and in training staff.

Iran 0047 Rehabilitation and Training in Physical Therapy
To improve medical rehabilitation by training of physical therapy students at the Teheran school of physical therapy.

Iran 0049 High Institute of Nursing, Teheran
(1966 - beyond 1968) UNDP/TA
To develop basic nursing education at university level.

Iran 0052 Post-basic Nursing Education
(Nov. 1963 - beyond 1968) R
To strengthen nursing services through post-basic nursing education to prepare teachers, supervisors and administrators for leading posts in nursing.

Iran 0053 Laboratory for Pharmaceutical Quality Control
(Aug. 1966 - May 1968) UNDP/TA
To organize, direct and operate a laboratory for the quality control of pharmaceutical preparations, chemicals, drugs and specialties, either locally manufactured or imported, and to review recent legislation governing the trade.

Iran 0057 High School of Midwifery, Meshed
The aim was to strengthen and expand midwifery services by training qualified nurses in midwifery and public health as related to maternal and child health care. WHO provided a nurse educator.

A one-year course in midwifery and public health nursing, in which emphasis was placed on all aspects of maternal and child health care, was organized at the High School of Midwifery, Meshed. Twenty-six students completed the course during the period of WHO assistance. Changes made in the curriculum
and the establishment of a small antenatal clinic made it possible to provide students with experience in preventive medicine and health promotion, and the strengthening of the services of the maternity unit in the hospital used for the practical training of students gave them better opportunities of acquiring skill in midwifery practice.

**Iran 0059 Medical Faculty, Isfahan** (March 1966 - end of 1968) R

To improve the teaching of undergraduate medical students and to develop the training and research activities of the Isfahan Medical Faculty, particularly in the basic medical sciences.

**Iran 0068 Faculty of Dentistry, Teheran University**

(No. - Dec. 1966) R

WHO provided a consultant for one month to advise the Faculty of Dentistry of Teheran University on a training programme for dental hygienists.

**Iran 0200 Fellowships R:** Biophysics (twelve months), blood transfusion (three months), epidemiology and statistics (twelve months), leprosy control (three months), mycology—laboratory techniques (six months), nursing (two for twelve months), nutrition (one for nine months, one for fourteen months), phage typing (one month), public health laboratories (six weeks), sanitary engineering (six weeks), statistics (nine months).

**Iran 0201 Fellowships UNDP/TA:** Bacteriology (twelve months), food technology (twelve months), rehabilitation of drug addicts (six months), tuberculosis control (one for two months, one for six months).

**Iraq 0011 Malaria Eradication Programme**

(1957 - beyond 1968) R MESA UNICEF

To eradicate malaria from the whole country, as an extension of the malaria control programme with which WHO has assisted since 1952.

**Iraq 0014 Bilharziasis Control**

(Nov. 1955 - Aug. 1966) UNDP/TA

The aim was to evolve effective methods for bilharziasis control, particularly for the prevention of infection in newly developed areas, and to conduct pilot engineering studies in various irrigation systems. The project started in November 1955 with the appointment of a WHO sanitary engineer, followed by an epidemiologist in February 1957 and a malacologist in January 1958. Three short-term consultants were also provided.

The prevalence of bilharziasis in the population examined was found to be 20 per cent. (24 per cent. in men and 16 per cent. in women) and a peak of infection (32 per cent.) was found in children aged between ten and fourteen years. A study of snail sampling methods was made to determine the best method under various conditions. In the experimental area sodium pentachlorophenate was applied to kill the snails, and careful studies were carried out to determine the time of application, the method, and the dose of molluscicide that would give the best results. Medical students, auxiliary staff and laboratory assistants were trained in bilharziasis control operations.

The progress made during the period of the project has been satisfactory: control methods have been improved, epidemiological and malacological information has been obtained and personnel have been trained.

**Iraq 0018 Communicable Eye Disease Control**


The aim was to study the epidemiology of trachoma and of associated conjunctivitis in Iraq; to develop, in a pilot sector, effective and practicable methods for their control; and to plan the gradual extension of control measures to obtain full coverage of the population. WHO provided an ophthalmologist from January 1961 to June 1963, a public health nurse from October 1961 to June 1963, a consultant for six weeks between January and March 1966, and supplies and equipment.

A morbidity survey of communicable eye diseases was carried out in and around Baghdad and a number of roadside surveys were made in different parts of the country. These were followed by a pilot control campaign, the setting-up of thirteen communicable eye disease centres in the provincial capitals, and the constitution of advisory bodies to exercise administrative supervision and co-ordinate the work. About 150 professional medical and health personnel were trained for the project.

The work of the control centres was concentrated on schools, kindergartens and maternal and child health clinics. More than 450,000 children were examined between 1963 and 1965 and about 150,000 of them received treatment. In addition, many people were examined and treated in the centres’ outpatient clinics. The total number of persons examined from 1963 to 1965 was 817,000, and the total number treated was 290,000. The overall prevalence rate of trachoma among persons examined fell from 46.2 per cent. in 1963 to 34.9 per cent. in 1964 and 24.8 per cent. in 1965.

**Iraq 0033 College of Medicine, Baghdad** (1958 - 1968) R

To develop the Department of Social and Preventive Medicine of the College of Medicine, Baghdad, with a view to expanding teaching and research in the subject.

**Iraq 0035 Training of Health Personnel**

(Jan. 1960 - end of 1968) UNDP/TA

To train sanitarians for the health services.

**Iraq 0037 College of Nursing, Baghdad**

(March 1962 - end of 1973) R

To prepare nurses for leading posts in nursing services administration in nursing education.

**Iraq 0040 Hospital Services Administration**

(Nov. 1966 - 1968) R

To improve hospital administration at the Medical Centre, Baghdad.

**Iraq 0042 Advisory Services in Epidemiology**

(Jan. 1964 - end of 1968) UNDP/TA

To plan, develop and operate epidemiological services at all levels of the health services.
Iraq 0047  Public Health Aspects of Housing  
(April 1965 - March 1966) UNDP/TA

The aim was to study the public health aspects of housing and of public building such as hospitals, schools, colleges and office premises, and to establish administrative and legal procedures to ensure the maintenance of healthy conditions.

WHO provided a sanitary engineer who was assigned to the Ministry of Works and Housing, where he gave assistance to technical staff concerned with planning and designing public building programmes. He also assisted in preparing a sanitary code covering the sanitary aspects of hospitals and equipment. Considerable interest was aroused in the Ministry of Health and steps were taken to establish in the Ministry a technical office to provide liaison with the Ministry of Works and Housing on matters of joint concern.

Iraq 0049  Rural Health Advisory Services  
(Feb. 1964 - end of 1968) UNDP/TA

To plan and develop rural health services and to use them for field training of professional and auxiliary health personnel.


Following the outbreak of cholera El Tor in Iraq in August 1966, WHO provided three consultants—a bacteriologist, an epidemiologist and a clinician—who assisted the authorities in carrying out an investigation of the outbreak and in organizing diagnostic and treatment facilities and a control programme.

In addition, WHO negotiated with the Government of Czechoslovakia the loan of a microbiological mobile laboratory which arrived in Iraq in October 1966, together with a WHO team (see project Inter-regional 0445) to study the incidence of cholera and other diarrhoeal diseases by means of epidemiological and laboratory investigations.

Iraq 0060  Control of Endemic Goitre (Nov. 1966) R

A WHO consultant studied the incidence of goitre in the northern districts of Iraq and made recommendations on the organization of preventive measures.

Iraq 0200  Fellowships R: Biological standardization (three months), community mental health programmes (four months), epidemiology and morbidity statistics (four months), hospital administration (three months), hospital pharmacy administration (twelve months), hospital planning and administration (two months), nursing and psychiatric nursing education (four months), premature infant care (five months), surgical correction of spinal deformities in poliomyelitis patients (two months).

Jordan 0006  Malaria Eradication Programme  
(June 1958 - 1967) UNDP/TA (AID)

To eradicate malaria from the whole country and prevent its re-establishment.

Jordan 0011  Communicable Eye Disease Control  
(April 1960 - 1967) UNDP/TA UNICEF

To study the epidemiological pattern of trachoma and other communicable eye diseases in the Hebron area; to devise technical and administrative methods for their control, and integrate the control work into the public health organization of the country.

Jordan 0016  Nutrition Division  
(Jan. 1966 - 1973) R

To establish hospital dietary services in urban and rural hospitals and to conduct training programmes for hospital dietitians; to formulate suitable diets based on local foods and food habits; and to co-ordinate the work of the governmental and non-governmental organizations concerned with institutional and hospital feeding in Jordan.

Jordan 0023  Vaccine Production  
(Nov. 1959 - 1968) R

To develop the production of diphtheria and tetanus vaccines, and to train technical personnel.
Jordan 0027 Municipal Water Supplies and Waste Water Disposal

To carry out a community water supply and sewage and wastes disposal programme through the Ministry of Municipal and Rural Affairs.

Jordan 0029 Tuberculosis Control
(Feb. 1964 - Feb. 1966) R UNICEF

The aim was to study the evolution of the tuberculosis control programme with a view to making recommendations to guide the Government in the development of a national tuberculosis control pilot area and in the integration of tuberculosis control measures into the work of the basic health services. WHO provided a public health nurse from February 1964 to January 1965 and a consultant from November 1965 to February 1966.

BCG vaccination has been carried out in ninety schools in Amman. A pilot area has been set up in which modern methods of tuberculosis control by clinical and radiological examination combined with home visiting and health education have been taught and carried out, and epidemiological information has been collected. Recommendations for the orientation of the programme have been made by the WHO consultant.

Previous assistance in tuberculosis control was provided to Jordan (under project Jordan 5) from January 1956 to December 1960.


WHO provided a consultant who assisted in revising the curriculum and the programme for training health technicians.

Jordan 0200 Fellowships R: Cancer surgery (twelve months), forensic medicine and toxicology (two for twelve months), pharmaceutical analysis (twelve months), physical therapy (twelve months), public health administration (twelve months), radiotherapy (twelve months), silicosis prevention (three months), smallpox vaccine production (one month), vaccine production (one for three months, one for six month), X-ray diagnosis (one for three months, one for twelve months).

Jordan 0201 Fellowships UNDP/TA: Food analysis (twelve months), pharmaceutical analysis (twelve months), public health administration (twelve months), radiotherapy (twelve months).

Kuwait 0018 Consultative Group on Medical Education
(May 1966 - 1968) R

To investigate the possibilities of establishing a faculty of medicine in Kuwait.

Kuwait 0019 Occupational Health (Nov. - Dec. 1966) R

A WHO consultant trained public health staff in the methods of assessing environmental conditions in factories and other places of work.

Kuwait 0200 Fellowships R: Clinical pathology (twelve months), international health relations (six weeks).

Lebanon 0004 Rural Health Unit
(March 1965 - end of 1967) UNDP/TA UNICEF

To organize in Halba a model district unit of rural health services, to be used as a demonstration and training centre for health personnel of other rural health units. This is a follow-up of a project that was carried out in Saida in 1957 and 1958, and in North Lebanon from 1960 to 1962.

Lebanon 0007 Malaria Eradication Programme (1957 - 1967) R

To achieve complete eradication of malaria and prevent its re-establishment.

Lebanon 0010 Nursing Education (April 1964 - 1967) R

To strengthen nursing services and to co-ordinate nursing education projects.

Lebanon 0017 Environmental Health
(March 1964 - June 1966; Nov. 1966) UNDP/TA

The aim was to strengthen the Division of Sanitary Engineering in the Ministry of Public Health and to train auxiliary environmental health personnel, particularly for work in rural areas. WHO provided a consultant sanitary engineer for two months in 1964, a sanitarian tutor from April 1964 to June 1966, and a consultant in air pollution for one week in November 1966.

The sanitary engineer made a survey of sanitary engineering problems in urban and rural areas and of the organization engaged in dealing with them. The sanitarian tutor organized a course for assistant sanitarians in Tripoli, with field training in the rural health project area in Halba.

Lebanon 0031 Rehabilitation of the Physically Handicapped
(Second phase: April 1963 - end of 1968) R

To develop physical therapy services at the rehabilitation centre at Ouzai, Beirut.

Lebanon 32 Leprosy Control (Dec. 1965) R

A WHO consultant advised on the control of leprosy through the general health services, and on the training of staff.

Lebanon 0036 Management of Pharmacy and Medical Stores
(Feb. 1966 - end of 1968) R

To establish and expand pharmacy and medical stores services and to develop a laboratory for pharmaceutical quality control.

Lebanon 0041 Blood Bank (June 1965 - ) R

To organize a blood transfusion service for the whole country. In 1963, in preparation for this project, WHO provided supplies and equipment for a blood bank.

Lebanon 0042 Municipal Health Services

In December 1965 and January 1966 a WHO consultant made a general survey of municipal health services in Beirut and in September-October 1966 a second consultant advised the municipal authorities on rodent control measures.
Lebanon 0046  Sewage and Refuse Disposal (April - May 1966) R

A WHO consultant advised on drainage, refuse disposal and sewerage.

Lebanon 0047  Provincial Laboratory Services
(1966 - end of 1967) R

To establish and reinforce provincial laboratories so as to complete the network of health laboratory services.

Lebanon 0200  Fellowships R: Gas chromatography (two months), hospital administration (twelve months), maternal and child health (one for two months, one for six months, one for twelve months), public health (twelve months), radioactivity (six months), serology (six weeks).

Lebanon 0201  Fellowships UNDP/TA: Communicable diseases (twelve months), hospital administration (twelve months).

Libya 0002  Maternal and Child Health Demonstration and Training Centre, Tripoli (Nov. 1965 - 1970) Funds-in-trust

To strengthen and expand maternal and child health services in Tripolitania; and to train various categories of health personnel in maternal and child health and midwifery work.

Libya 0003  Nursing Education, Tripoli
(Sept. 1955 - 1975) R UNICEF

To develop a nursing education programme adapted to local needs and resources in order to provide professional nurses and assistants for the country's expanding health services.

Libya 0007  Health Training Institute, Benghazi
(Dec. 1955 - end of 1968) UNDP/TA Funds-in-trust

To train some selected groups of health auxiliaries and paramedical personnel for hospitals and health centres, particularly in rural areas.

Libya 0009  Malaria Eradication Programme
(April 1960 - beyond 1968) R Funds-in-trust

To eradicate malaria from the whole country. This follows the pre-eradication survey carried out (under the same project number) from June 1958 to September 1959.

Libya 0012  Maternal and Child Health, Benghazi
(Sept. 1956 - end of 1968) Funds-in-trust

To train auxiliary maternal and child health personnel for staffing maternal and child health and health centres in rural areas.

Libya 0020  Nutrition Unit (1965 - 1970) UNDP/TA (FAO)

To establish, in the Ministry of Health, a nutrition unit that will evaluate nutrition conditions in the country and prepare a nutrition programme; to set up a nutrition laboratory, and to train medical, health and nursing personnel in nutrition.

Libya 0021  Maternal and Child Health Advisory and Supervisory Services (Nov. 1965 - 1970) Funds-in-trust

To improve and expand maternal and child health services as an integral part of the general health services, with special emphasis on reducing foetal, infant and child mortality; to give health education to mothers and children; to increase the efficiency of all maternal and child health workers; and to strengthen and co-ordinate the organization, administration and operation of all services related to the care of mothers and children.

Libya 0022  Tuberculosis Control (Pilot Area)
(March 1963 - end of 1969) UNDP/TA Funds-in-trust

To set up a tuberculosis centre in Benghazi to train staff and demonstrate tuberculosis control techniques and to serve as the centre of operations for a pilot area project; to plan a national control programme on the basis of the results of the pilot area project.

Libya 0024  Bilharziasis Control
(Dec. 1965 - end of 1968) Funds-in-trust

To plan and develop bilharziasis control measures and to train personnel.

Libya 0027  National Health Planning
(Feb. 1966 - end of 1968) Funds-in-trust

To assess the health problems in the country and establish priorities for dealing with them; to appraise the efficiency of the health services in meeting the health needs of the population and to draw up guidelines for their future development; to determine the facilities needed in the health services for planning and evaluation and for co-ordination with the overall planning for the economic and social development of the country; and to prepare plans for national health programmes.

Libya 0200  Fellowships R: Bilharziasis (two months), laboratory techniques (twelve months), midwifery (twelve months), operating theatre nursing (thirteen months), undergraduate medical studies (one for seven months, three for eight months, seven for twelve months).

Pakistan 0030  Nursing Education, East Pakistan

The aim was to strengthen the education and training programmes in nursing and midwifery at the School of Nursing, Medical College Hospital, Chittagong. WHO provided a nurse educator from 1958 to 1961 and from August 1963 to June 1965, a second nurse educator from February 1964 to November 1965 and a nursing adviser from March 1964 to January 1965. Efforts were concentrated on improving the theoretical content of the curricula, and in raising the standard of patient care and providing better experience for the students in the practice areas.

Pakistan 0033  Public Health Institute, East Pakistan
(Oct. 1961 - end of 1968) UNDP/TA

To develop epidemiological and bacteriological departments in the Public Health Institute, Dacca, East Pakistan.
Pakistan 0036 Malaria Eradication Programme (1961 - 1975) R (AID)

To eradicate malaria from the whole country, by stages. The eradication programme follows a pre-eradication survey carried out with assistance from WHO in 1959 and 1960.

Pakistan 0039 Leprosy Control (Nov. 1961 - end of 1968) R

To control leprosy, which is endemic in both East and West Pakistan.

Pakistan 0044 Nursing Education, West Pakistan (Sept. 1961 - Dec. 1965) UNDP/TA

WHO provided a nurse educator to assist in developing and improving nursing education in West Pakistan. Two schools of nursing in Karachi were merged to form one central school of nursing with a single programme. The school operated for about two years, after which the two separate schools, each with its own programme, were re-established.

During the period of assistance, improvements were made in the theoretical and practical teaching of nursing students, the teaching staff acquired further qualifications, and the administration of nursing education was strengthened.


To establish national health laboratories in Islamabad, with a view to centralizing laboratory research for both West and East Pakistan.

Pakistan 0049 Malaria Eradication Training Centres (Nov. 1960 - beyond 1968) R

To train in malaria eradication techniques technical staff of all levels for the national malaria eradication service.

Pakistan 0050 Tuberculosis Control (Jan. 1953 - end of 1968) UNDP/TA UNICEF

To determine the methods of tuberculosis control which would be effective in implementing the national plan. (The BCG mass vaccination campaign—project Pakistan 13—and the Rawalpindi pilot area have been merged in this project.)

Pakistan 0052 Public Health Advisory Services, West Pakistan (Sept. 1964 - March 1966) R UNICEF (AID)

The aim was to plan and organize health services in West Pakistan. WHO provided a public health adviser and some equipment.

In September and October 1964 the WHO adviser assisted in the negotiations concerning the location of the project and in defining its objectives. The project started in Lahore, the headquarters of the provincial government of West Pakistan, in November 1964. Advisory services were provided to the provincial health secretariat, the national counterpart to the WHO public health adviser being the Health Secretary.

It was decided to start a rural health demonstration area, where particular attention would be paid to the integration of all health services at the local level, and two areas of Sheikhupura District were selected for the purpose. After two months' planning by the provincial government representatives in collaboration with the Central Government National Planning Board, UNICEF, the United States Agency for International Development and WHO, work began in the areas chosen. The immediate objective was to integrate the malaria eradication programme, which had reached the consolidation phase in the area, into the local health services, and also to integrate into those services the vaccination programmes and maternal and child health services that had hitherto been operated separately.

At the Central Government's request, the project, originally planned for a longer period, was terminated in March 1966.

Pakistan 0054 Community Water Supply and Rural Sanitation, West Pakistan (Nov. 1964 - end of 1968) R

To develop the organization and management of community water supply programmes and study their technical, legal and financial aspects; and to improve rural sanitation.

Pakistan 0061 School of Tropical Medicine and Hygiene, Dacca (1966 - 1970) R

To develop post-graduate training and research at the School of Tropical Medicine and Hygiene in Dacca.

Pakistan 0062 Nutrition Advisory Services (April - June 1966) R

A WHO consultant assisted in reviewing the work of the new nutrition department, and advised on the establishment of a regional nutrition centre and on the use of the existing research facilities and of the nutrition laboratory.

Pakistan 0064 Advisory Services in Epidemiology and Health Statistics (April - July 1966) R

WHO provided a consultant for three months to advise on the organization of epidemiological services and their possible integration into the existing biostatistics unit.

Pakistan 0200 Fellowships R: Anaesthesiology (twelve months), clinical pathology (twelve months), Diploma in Public Health course (six months), epidemiology (one for one week, one for nine and a half months), hospital administration (six months), industrial hygiene (twelve months), medical administration (twelve months), psychiatric medicine (one for six months, one for fifteen months), public health (twelve months), rabies vaccine (four months), tropical public health (twelve months), tuberculosis control (six months).

Qatar 0003 Hospital Administration (July 1966) R

A WHO consultant advised on problems related to hospital work, and on the organization of the new out-patient department of the Rumaila Hospital, made a survey of the hospital's casualty department, and submitted recommendations on facilities and services.

Saudi Arabia 0004 Malaria Pre-eradication Programme (1962 - beyond 1968) R MESA

To build up the technical, administrative and operational facilities for a full-scale malaria eradication programme, and at the same time to develop the rural health services, so that they may provide efficient collaboration in the eradication programme. The programme follows the pre-eradication survey carried out with the assistance of WHO from July 1959 to March 1962.
**Saudi Arabia 0007 Public Health Laboratory**  
To set up a national health laboratory in Riyadh.

**Saudi Arabia 0013 Tuberculosis Control (National Pilot Area)**  
(Feb. 1963 - end of 1968) R  
To test, through the tuberculosis centre in Riyadh and the mobile BCG vaccination units, practical and effective methods of case-finding, and of treatment and follow-up of tuberculosis patients, to be extended later to the whole country.

**Saudi Arabia 0029 Basic Public Health and Medical Care Services**  
To set up a provincial health organization, a model community health centre and a base hospital in the eastern province of the country.

**Saudi Arabia 0034 Advisory Services for Health Programming**  
WHO provided a senior adviser who made an extensive survey of the health services in Saudi Arabia and submitted a report with observations and suggestions. He also assisted the Ministry of Public Health in preparing the first five-year health plan which, however, was not finalized before the completion of the project, and advised the Supreme Planning Board on the budget of the Ministry of Public Health and on various health matters, including the use of prefabricated hospitals.

The project has been useful in promoting interest in planning for health services and in providing a considerable amount of information in the form of a report.

**Saudi Arabia 0035 Training of Medical and Health Personnel**  
(Feb. 1964 - 1967) Funds-in-trust  
To set standards for the education and training of health personnel and define the technical responsibility of each category; to carry out manpower surveys of health personnel and determine short-term and long-term needs; and to provide practical training for the students of the WHO-assisted project Somalia 0008 (Training of Health Personnel) and experience in the development of an integrated public health service in a rural area.

**Saudi Arabia 0038 Sanitary Engineering and Municipal Programming**  
(Oct. 1963 - end of 1968) Funds-in-trust  
To develop the municipal programme, with emphasis on environmental engineering.

**Saudi Arabia 0200 Fellowships R:** Medical stores (three for six months), undergraduate medical studies (one for five months, three for twelve months).

**Somalia 0002 Malaria Pre-eradication Programme**  
(May 1962 - beyond 1968) R MESA UNDP/TA  
To build up the technical, administrative and operational facilities for a full-scale malaria eradication programme and at the same time to develop the rural health services, so that they may provide efficient collaboration in the eradication programme. This programme follows the pre-eradication survey carried out with the assistance of WHO from 1955 to 1962.

**Somalia 0008 Training of Health Personnel**  
(Jan. 1959 - end of 1968) R UNICEF  
To train various categories of health auxiliary personnel, including health officers, assistant sanitarians and assistant public health nurse/midwives; and to provide in-service training and refresher courses to health personnel.

**Somalia 0011 Tuberculosis Control**  
(March 1960 - 1970) UNDP/TA UNICEF  
To test, in certain areas, simple, practical and effective methods of tuberculosis prevention and treatment, such as BCG vaccination and sputum examination; to study the possibility of extending these methods to the whole country and their integration into the work of basic health centres. The project is operated from the tuberculosis centre at Mogadishu, which is also used for training.

**Somalia 0013 Basic Health Services**  
(March 1962 - end of 1968) UNDP/TA UNICEF  
To set up a rural demonstration and training area which will provide practical training for the students of the WHO-assisted project Somalia 0008 (Training of Health Personnel) and experience in the development of an integrated public health service in a rural area.

**Somalia 0015 Nursing Education, Hargeisa**  
(Sept. 1961 - 1970) UNDP/TA  
To strengthen the nursing services by improving the nursing education programme.

**Somalia 0018 Environmental Health Services**  
(Jan. 1965 - end of 1966) R  
To organize and carry out a national environmental health programme, in which particular attention will be paid to the provision of community water supplies.

**Somalia 0020 Organization of Medical Care**  
(May 1962 - 1967) UNDP/TA  
To improve the medical care services, particularly as regards surgery and anaesthesiology; and to provide clinical training facilities for health personnel, especially student nurses.

**Somalia 21 Management of Pharmacy and Medical Stores**  
(Oct. 1962 - Dec. 1965) UNDP/TA  
WHO provided a pharmacist who assisted the Government in drawing up standard lists of supplies and equipment for the country's health centres and in organizing procedures for the procurement, clearance and receipt of supplies. He also helped to train twenty-five pharmacy attendants and medical storekeepers for service in various parts of the country. The project has resulted in an improvement in the pharmacy and medical stores services in the country.

**Somalia 0025 Public Health Laboratory Services (1966 - 1968)** R  
To develop sound technical methods for laboratory investigation and to provide training facilities, including in-service training for all grades of technical staff.
Somalia 0200 Fellowships R: Health administration (six weeks), midwifery (twelve months), medical stores (two months), nursing (three months), tuberculosis social work (five months), undergraduate medical studies (one for four months, one for ten months, ten for twelve months), undergraduate pharmacy studies (one for six months, two for twelve months).

Somalia 0201 Fellowships UNDP/TA: Undergraduate medical studies (one for nine months, three for twelve months), undergraduate nursing studies (one for twelve months).

Sudan 0006 Malaria Pre-eradication Programme
(June 1963 - beyond 1968) R MESA

To build up the technical, administrative and operational facilities for a full-scale malaria eradication programme and at the same time to stimulate the development of the rural health services, so that they may provide efficient collaboration in the eradication programme. The programme follows the pre-eradication survey carried out with the assistance of WHO from January 1961 to December 1962.

Sudan 0007 Nursing Education, Khartoum
(Oct. 1955 - June 1966) R

The aim was to establish a college of nursing, providing a course of basic professional education to train nurses for leading posts in the country’s health programme. WHO provided, for varying periods, a senior nurse educator, and nurse educators in nursing science, public health and obstetrics, nursing arts, and medical/surgical nursing, and supplies and equipment.

The Khartoum Nursing College was established in 1956 and in the following ten years fifty-five professional nurses were trained there. During the first few years of operation it was difficult to recruit students for training, the number per year ranging from two to eight only. With time, however, nursing has become better accepted as a profession and the College plans to enrol thirty students a year. The comprehensive curriculum in basic nursing, which covers three years of study, is administered by a fully qualified Sudanese nurse director, assisted by a group of well-trained and experienced Sudanese nurse educators.

The College has made steady progress and the objectives of the project have been met.

Sudan 0015 Communicable Eye Disease Control

To test the effectiveness of the control methods used in a pilot treatment programme for communicable eye diseases in urban and rural communities.

Sudan 0019 Rural Health Demonstration Area
(Nov. 1961 - 1967) UNDP/TA

To establish a rural health demonstration area at El Huda in the Menagi extension of the Gezira irrigated area, as part of a pilot scheme of community development; and to organize health and vital statistics services in the country.

Sudan 0020 Nutrition Division, Khartoum

To establish a nutrition division in the Ministry of Health, to carry out nutrition surveys throughout the country, and to train personnel.

Sudan 0026 Onchocerciasis Control (March 1963 - end of 1968) R

To carry out a survey of onchocerciasis infection in the main section of the Nile north of Khartoum and in Bahr-el-Ghazal and Equatoria Provinces, so as to determine the reasons for the prevalence of the infection, in particular the relationship between the disease in man and the breeding places of the insect vector; to develop a programme for the control and prevention of onchocerciasis; and to train personnel.

Sudan 0028 Smallpox Eradication (Jan. 1962 - 1968) R

To plan and implement the final phase of the smallpox eradication programme, which started in 1962, and to organize and intensify the surveillance system.

Sudan 0030 Cancer Control (1963 - 1968) R

To develop, in Khartoum Hospital, radiation and isotopes services for the treatment of cancer patients.

Sudan 0032 Malaria Eradication Training Centre
(May 1963 - beyond 1968) R MESA

To train technical staff for the malaria eradication programme.

Sudan 0036 Environmental Health (Jan. 1965 - 1970) R

To plan and administer a national environmental health programme.

Sudan 0038 Vital and Health Statistics Advisory Services
(Jan. 1965 - 1968) R

To strengthen vital and health statistics at the Ministry of Health, to develop a vital and health statistical system in the country and to train personnel of various levels.

Sudan 0039 Teaching of Paediatrics (Jan. 1966 - 1968) R

To establish a department of paediatrics in the medical school of Khartoum University to carry out teaching and research.

Sudan 0042 Community Water Supply, Gezira

To study the problems of water purification in the villages of the Gezira area, with a view to altering the present plants and designing new ones. (See page 136.)


To establish an electro-encephalography unit at the Khartoum teaching hospital.

Sudan 0044 Health Component in Land and Water Resources Survey, Jebel Marra Area
(April 1966 - March 1967) UNDP/SF (FAO)

To study the risks of spread of bilharziasis and onchocerciasis that would be involved by irrigation farming in the Jebel Marra area; to collect information on the epidemiology of the two diseases; if necessary, to conduct field investigations; and to determine what control measures should be applied. This
project is part of a survey of the land and water resources of the Jebel Marra area being carried out with assistance from the United Nations Development Programme (Special Fund component), with FAO as the executing agency.

Sudan 0046 Training of Waterworks Personnel
(May 1966 - 1968) UNDP/TA

To train waterworks personnel, particularly those in the subprofessional grades.

Sudan 0200 Fellowships R: Analytical chemistry (twelve months), dental education (three months), filariasis (twelve days), haematology (twelve months), health education (twelve months), maternal and child health programme evaluation (six weeks), nursing—clinical instruction (twelve months), operating theatre nursing (two weeks), psychiatric social work (twelve months), psychiatry (twelve months), public health (twelve months), statistics (twelve months), tropical public health (twelve months).

Syria 0002 Malaria Eradication Programme
(March 1956 - beyond 1968) R UNDP/TA

To eradicate malaria from the whole country and prevent its re-establishment. (See page 136.)

Syria 0004 Bilharziasis Control (Nov. 1964 - 1967) R

To assess the situation as regards the prevalence and control of bilharziasis, especially in the Kamichlie area; to devise new methods for controlling the intermediate host; to improve health education, environmental sanitation and the treatment of bilharziasis; and to draw up a programme for training professional and auxiliary personnel.

Syria 0016 Rural Health Unit (Jan. 1958 - June 1967) UNDP/TA

To establish in a rural area a model health service that will be used for demonstration and teaching, with a view to the future expansion of rural health services.

Syria 0020 Communicable Eye Disease Control
(1966 - end of 1968) R

To carry out a study of the epidemiology of trachoma and related eye infections and develop effective technical and administrative methods for their control; to train personnel, and to set up adequate services within the existing pattern of public health services for maintaining the control programme on a permanent basis and extending it.

Syria 0030 Public Health and Endemic Diseases Laboratory
(Oct. 1959 - end of 1968) R

To develop the services of the public health and endemic diseases laboratory, and particularly the food microbiology section.

Syria 0037 Nursing Education, Damascus (Nov. 1960 - 1972) R

To set up a national school of nursing that will provide the country with better-qualified nurses and thus contribute to raising the standard of nursing education and nursing services.

Syria 0039 Training of Sanitarians
(July 1962 - end of 1967) UNDP/TA

To train sanitarians for service in the Ministry of Health and Public Assistance.

Syria 0045 Tuberculosis Control (National Pilot Area)
(March 1965 - Dec. 1966) R UNICEF

The aim was to set up a national pilot area where operational investigations on tuberculosis control would be conducted, and to provide a basis for the development of an antituberculosis service, both preventive and curative, to be integrated into the general health services. WHO provided a public health nurse from March 1965 to December 1966 and a consultant from June to September 1965.

During the course of the pilot project nearly fifty health workers were trained in tuberculin testing and BCG vaccination, nearly 64,000 children between six months and fourteen years of age were vaccinated with BCG, and over 6300 persons over fifteen years of age were X-rayed.

The pilot project has successfully demonstrated the possibility of integrating ambulatory treatment of tuberculosis cases into the work of the general health services.

Previous assistance in tuberculosis control was provided to Syria (under project Syria 10) from May 1952 to June 1955.

Syria 0047 Medical School, Aleppo
(July 1966 - 1970) UNDP/TA

To establish a medical school in Aleppo and to raise the standard of medical education and research in the country.


A WHO consultant advised on the control of leprosy and on the training of staff.

Syria 0054 Problems of Water Supplies, Euphrates Valley
(Aug. 1966 - ) UNDP/TA

To design community water supply treatment plants for the communities in the Euphrates valley.

Syria 0200 Fellowships R: Drug control (six months), epidemiology (twelve months), health education (two months), hospital administration (six months), laboratory services (two months), public health administration (two for six weeks, one for two months, one for twelve months), rabies vaccine (one month), tuberculosis (one for three months, one for six months, one for nine months), typhoid and cholera vaccine production and control (six weeks).

Tunisia 0003 Communicable Eye Disease Control
(Nov. 1953 - Dec. 1966) UNDP/TA

To carry out a mass campaign against seasonal conjunctivitis, collective treatment of trachoma in schools, and a programme of research on communicable eye diseases.

Tunisia 0006 Maternal and Child Health
(Second phase: May 1959 - July 1966) UNDP/TA UNICEF

The aim was to establish a maternal and child health demonstration and training centre in Tunis; to expand the maternal and child health programme as an integral part of the general public health programme, and to train professional and auxiliary
The WHO team assisted in setting up the maternal and child health demonstration and training centre and in the organization and development of the maternal and child health services. Eight-month courses were held for nurses, midwives and auxiliaries, and short courses for social workers. The WHO medical officer and nurse/midwife made frequent visits to maternal and child health centres in the different provinces and districts to advise and guide the local staff. Some of these visits were made by the nurse/midwife with her national counterpart for training senior national nursing staff in the supervision and guidance of personnel working in maternal and child health centres.

### Tunisia 0017 Malaria Eradication Programme
**(1966 - beyond 1968)**  R  UNDP/TA

To eradicate malaria from the country and prevent its re-establishment.

### Tunisia 0018 Environmental Health Services
**(May 1962 - end of 1967)**  UNDP/TA

To develop a national programme of environmental health and to train personnel for the purpose.

### Tunisia 0027 Medical Education

To set up the first medical school in Tunisia, and to organize a medical course, starting with the preclinical sciences.

### Tunisia 0029 Medical Rehabilitation

To set up a medical rehabilitation programme for the physically handicapped; and to train medical and paramedical personnel.

### Tunisia 0031 Training of Nursing Personnel

To prepare qualified nurses for nursing instructor posts in order to meet the demand for education and training programmes.

### Tunisia 0033 Training Centre for the Repair and Maintenance of Medical Equipment

To train personnel in the repair and maintenance of medical apparatus.

### Tunisia 0034 Nursing Education

To organize courses to prepare qualified nurses for administrative posts in nursing services.

### Tunisia 0200 Fellowships R: Anaesthesiology (twelve months), experimental medicine (one month), medical biochemistry (seven months), medical use of radioisotopes (six months), ophthalmology (three months), paediatrics (twelve months), phthisiology (twelve months), urology (two for twelve months).

### Tunisia 0201 Fellowships UNDP/TA: Anaesthesiology (twelve months), anatomy (twelve months), forensic medicine (three months), medical biology (twelve months), nursing education (twelve months).

### United Arab Republic 0023 Malaria Eradication Programme
**(Oct. 1965 - beyond 1968)**  R  MESA

To eradicate malaria from the country and prevent its re-establishment.

### United Arab Republic 0027 High Institute of Public Health, Alexandria

To develop the High Institute of Public Health so that it may advance the knowledge and training of professional level health workers in all fields of public health, promote research and field work, and contribute to the solution of practical health problems in the United Arab Republic.

### United Arab Republic 30 Premature Infants' Unit

The aim was to improve health services for infants and children, and particularly the care of the new-born and of premature infants, by helping mothers to meet the health needs of their new-born infants and by training health personnel in the care of premature infants in hospital and at home. WHO provided a public health nurse specialized in the care of premature infants, and supplies and equipment.

The public health nurse assisted in organizing the nursing care of premature infants at the Kasr-el-Aini University Hospital and at the home care units of the Giza maternal and child health centres. At the same time courses were given for nurses, auxiliaries and nurse/midwives from different hospitals. The work of the maternal and child health centres in the care of premature infants was co-ordinated with that of the premature infants' care unit of the University Hospital.

Previous assistance in the care of premature infants was provided under this project in 1955 and in 1957.

### United Arab Republic 0038 Sanitary Engineering Research

To organize a laboratory and centre for sanitary engineering research and to strengthen the teaching of the subject.

### United Arab Republic 0044 Concentrated Sera Production Plant
**(1957 - end of 1966)**  UNDP/TA

To set up a purified and concentrated sera production unit in the central laboratories in Agouza.

### United Arab Republic 0049 Bilharziasis Control Pilot Project and Training Centre

To test measures for controlling bilharziasis, so as to find those cheapest and most effective under conditions in the United Arab Republic. The project is to be developed to serve as a field demonstration and training centre for the Region. (See page 138.)

### United Arab Republic 0050 Nursing Education, Cairo

To strengthen nursing education and services through basic and post-basic nursing education; and to develop a model educational plan for nursing personnel and model nursing services in hospitals and health centres.

### United Arab Republic 0060 Higher Institute of Nursing, Cairo University

To develop a four-year degree programme in basic nursing, so as to prepare nurses for leading posts in nursing education, administration and services.
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United Arab Republic 0062  Social Paediatrics Training
(Sept. 1966) R

A WHO consultant lectured on social paediatrics at a refresher course organized in Cairo by the Ministry of Health for 150 Egyptian paediatricians and medical officers working in maternal and child health centres in various parts of the country. He also visited a number of maternal and child health centres, rural health centres, and paediatric and maternity hospitals, and advised on various technical matters.

United Arab Republic 0063  Virus Vaccine Production Centre
(1966 - 1968) R

To set up a vaccine production centre for poliomyelitis, measles and other virus vaccines. The former project United Arab Republic 37, Virology Research Laboratory, has been combined with this project.

United Arab Republic 0064  Health Component in Lake Nasser Development Centre (Oct. 1966 - 1972) UNDP/SF (FAO)

To examine the public health problems arising from environmental changes associated with the comprehensive lake resources development scheme in the Aswan region, which is being carried out with assistance from the United Nations Development Programme (Special Fund component).

United Arab Republic 0200  Fellowships R: Angiocardiography (three months), chemical analysis of biological drugs (six months), chemical assay of antibiotics (six months), colouring matters and preservatives in foodstuffs (three months), drug addiction prophylaxis and treatment (three months), electro-encephalography (three months), epidemiology (three months), local health services co-ordination (three months), maxillo-facial surgery (two for twelve months), orthotics and braces (twelve months), polarographic analysis (three months), preparation of human antisera used in blood typing (three months), preparation of plasma and blood fractions (six months), prosthetics (two months), public health dentistry (twelve months), rehabilitation (nine months), rehabilitation centre administration (four months), renal failure in obstructive uropathies (four months), statistical aspects of evaluation of health projects (three months), training of public health personnel (two months), titration and standardization of sera and vaccines (six months).

United Arab Republic 0201  Fellowships UNDP/TA: Pharmaceutical manufacture (twelve months).

Yemen 0003  Public Health Administration
(Jan. 1961 - beyond 1968) R

To organize health and medical care services at the central level and to improve the public health services generally.

Yemen 0008  Health Centre and Training School, Sana'a
(July 1956 - 1970) UNDP/TA Funds-in-trust UNICEF

To establish a health centre and training school in Sana'a in order to provide training for auxiliary health personnel (including assistant sanitarians, assistant nurses and laboratory assistants), to demonstrate modern practice in the prevention and cure of some diseases and the control of communicable diseases, to assist the promotion of health, and to facilitate the organization of public health services.

Yemen 0015  Local Health Services, Hodeida and Taiz
(Nov. 1963 - end of 1968) R

To organize two health centres—one in Hodeida and one in Taiz—to provide integrated health services to the community, and to train various categories of auxiliary health personnel.

Yemen 0016  Smallpox Eradication (1966 - 1968) R

To reorganize the smallpox eradication programme.

Yemen 0200  Fellowships R: Hospital administration (one for six weeks, one for twelve months), laboratory techniques (six for nine months, one for twelve months), nursing administration (six months), public health administration (six weeks), training of auxiliary personnel (six weeks), undergraduate medical studies (one for eight months, two for nine months, thirteen for twelve months), undergraduate pharmacy studies (two for twelve months).

Yemen 0201  Fellowships UNDP/TA: Undergraduate medical studies (one for five months, four for twelve months), undergraduate nursing studies (twelve months), undergraduate pharmacy studies (three months).

EMRO 0007 Arab States Training Centre for Education in Community Development, Sirs-el-Layyan
(Jan. 1953 - beyond 1968) UNDP/TA (FAO) (ILO) (UNESCO)

To integrate training in the health education and public health aspects of community development into the programme of the Centre, which trains community development workers from Arab States. Emphasis is given to the preparation of physicians, nurses, sanitarians, teachers and agricultural and social workers. This is primarily a UNESCO-assisted project, in which WHO collaborates and provides training in health subjects.

EMRO 0023  Dental Health (1964 - end of 1966) R

To advise various countries in the Region on the establishment of dental health and dental care programmes.

EMRO 36.02 Group Meeting on Vital and Health Statistics, Alexandria (6 - 10 Dec. 1965) R

The meeting was convened to follow up the regional seminar on vital and health statistics held in Damascus in 1963. Its purpose was to discuss and, as far as possible, lay down principles for efficient collection, processing and publication of statistical information on health manpower, health establishments and their activities, and hospital morbidity. The meeting was attended by eight participants and an observer from Iran, Iraq, Jordan, Lebanon, Pakistan, Syria, Tunisia and United Arab Republic.

WHO provided a consultant for a month to prepare for the meeting and assist in leading the discussions.
EMRO 0043 Advisory Services (1958 - beyond 1968) R

To provide countries of the Region with consultant services on subjects for which there is no regional adviser, in cases where it is impracticable to obtain assistance from headquarters staff.

EMRO 0045 Participation in Educational Meetings
(April 1959 - 1970) R

To enable countries of the Region to participate in seminars, conferences and training courses organized in other regions and by other agencies.

EMRO 0051 Epidemiological and Statistical Centre

To assist in carrying out surveys in connexion with tuberculosis and other projects in the Region and in analysing their results, and to advise on the planning and assessment of health programmes.

EMRO 0053 Fellowships for Training in Virology
R: Iran—one for twelve months; United Arab Republic—one for one month,


To provide books and periodicals to meet the most urgent needs of medical libraries in the Region.

EMRO 0058 Malaria Eradication Evaluation Team
(April 1961 - beyond 1968) R

To assist in special epidemiological studies of malaria eradication programmes.

EMRO 0061 Training of Laboratory Technicians
(May 1962 - 1968) R

To provide advanced training for laboratory technician tutors who will occupy teaching and supervisory posts in their countries of origin. Two courses have been given in Beirut and it is planned to hold further courses in Jordan, at the inter-country level, and to revise the curriculum so as to prepare specialized laboratory technicians in serology, immunohaematology and blood bank methods.

EMRO 0062 Training of Medical Radiology Technicians
(Sept. 1965 - end of 1968) UNDP/TA

To train instructors in X-ray techniques at courses held at the Radium Institute, Baghdad.

EMRO 0079 Advanced Training for Sanitarians
(1966 - end of 1968) UNDP/TA

To provide advanced training in sanitation and supervision of sanitation services, and training for experienced national sanitarians from selected countries.

EMRO 0083 Seminar on School Health Education, Kuwait
(14 - 20 March 1966) UNDP/TA

See page 137.

EMRO 0084 Medical Education (Jan. 1965 - end of 1968) R

To assist countries in the Region in developing undergraduate and post-graduate medical education, and in establishing new medical faculties.

EMRO 0090 Courses on Cancer Control
(April 1964 - 1968) R

To organize for cytologists, at the Cancer Institute, Teheran, regional courses in the early detection of cancer. A preliminary study was made by a consultant in 1964. The first course took place from June to September 1965 and the second from September to October 1966. Other courses are planned.


To advise countries of the Region on municipal refuse disposal in relation to fly control.

EMRO 0101 Medical Records Advisory Services
(1965 - 1970) UNDP/TA

To provide advice on medical recording in hospitals and health centres to countries in the Region that are developing medical records units, and to train national medical records officers.

EMRO 0107 Nursing Seminar, Teheran (9 - 19 Nov. 1966) R

The seminar, at which various aspects of nursing education in the Region were discussed, was attended by twenty-nine nursing leaders from Afghanistan, Ethiopia, Iran, Iraq, Jordan, Kuwait, Lebanon, Pakistan, Somalia, Sudan, Syria, Tunisia and United Arab Republic.

WHO provided a consultant, the cost of attendance of the participants, the services of five members of the Regional Panel of Nurses, five WHO nurse educators and members of the regional office staff, and supplies and equipment.

EMRO 0107 Advanced Course on Cholera Bacteriology, Beirut (7 - 12 March 1966) R

The course, which was held at the Central Public Health Laboratory, Beirut, provided training in current techniques in cholera bacteriology to twelve qualified bacteriologists from Ethiopia, Greece, Iraq, Jordan, Kuwait, Lebanon, Sudan, Syria, Tunisia and Yemen.

WHO provided two consultants to assist in organizing and running the course.

EMRO 0124 Group Meeting on Medical Research, Alexandria
(22 - 26 Feb. 1966) R

The meeting, which was organized in collaboration with the Medical Research Institute, Alexandria, was attended by thirteen professors and medical research experts from Iran, Iraq, Lebanon, Pakistan, Sudan and United Arab Republic. They discussed the status of medical research in their countries, studied problems encountered and considered how medical research in the Region could be promoted. The meeting recommended, inter alia, that, in every country where it was possible to do so, a medical research council or equivalent body should be set up to promote, plan and co-ordinate research in medicine and public health, and that countries of the Region should endeavour to form a cadre of research workers ensured of adequate professional status and security.
EMRO 0129 Training of Librarians (1964 - 1966) R

A six-week course for training librarians for medical schools in the Region was held at WHO headquarters, Geneva, for twelve students from Iran, Iraq, Pakistan, Sudan, Syria, Tunisia and United Arab Republic.

In 1964 and 1965 similar courses were held (under project EMRO 0055) at the American University of Beirut, Lebanon. The 1964 course was attended by nine students from Iran, Iraq, Pakistan, Syria and United Arab Republic, and the 1965 course by ten students from Iran, Iraq, Pakistan, Turkey and United Arab Republic.


WHO provided a consultant for four weeks, who carried out a survey of the health services for mothers and children in the Trucial States, and advised on the planning, organization and development of these services and on the co-ordination of related public health activities.

EMRO 0155 Training in Anaesthesiology (Oct. 1966) R

The feasibility of establishing a regional anaesthesiology school was investigated by a WHO consultant. In the meantime, consultant services to institutions and fellowships for the study of anaesthesiology, especially for prospective teachers of the subject, are available.

EMRO 0200 Fellowships R: Iran—sanitary engineering (ten weeks), social paediatrics (ten weeks), use of computers in human genetics (three weeks); Iraq—water supplies (three and a half months); Sudan—sanitary engineering (three and a half months); Syria—social paediatrics (ten weeks); United Arab Republic—use of computers in human genetics (three weeks).
WESTERN PACIFIC

Australia 0200 Fellowships R: Clinical pathology (twelve months), public health administration (seven months).

British Solomon Islands Protectorate 0002 Malaria Pre-eradication Programme
(Jan. 1965 - 1970) R UNDP/TA (South Pacific Commission)

To develop the operational, technical and administrative facilities of the malaria and public health services, so that a country-wide malaria eradication programme can be implemented later.

This programme supersedes a malaria eradication pilot project carried out from 1961 to 1964.

British Solomon Islands Protectorate 0003 Nursing Education
(Nov. 1959 - 1971) R (South Pacific Commission)

To carry out a basic programme of general nursing for nurses and medical assistants, and a programme of midwifery and maternal and child health, combined with the nursing programme, for women nurses.

British Solomon Islands Protectorate 0007 Rural Health Services
(Oct. 1965 - 1971) UNDP/TA UNICEF

To expand and strengthen the network of local health services and to train auxiliary health personnel.

Brunei 0003 Malaria Pre-eradication Programme
(May 1962 - Dec. 1965) R

Of the total population of approximately 110,000 in Brunei, 60,000 live in the malarious rural areas. Anopheles balabacensis is the chief, and probably the only, malaria vector which is found throughout the country; the incidence is generally low and transmission, though perennial, is limited to certain localities.

The project was started in 1962 with the main objectives of building up a functional scheme for the development of the technical and administrative machinery of the malaria and rural health services, and of developing facilities and making adequate provision for a malaria eradication programme as soon as possible. WHO provided a malariologist, a sanitarian, a short-term consultant in entomology, and fellowships.

The project was successfully concluded in December 1965, having accomplished the establishment of the national malaria eradication service with trained national staff and adequate physical facilities and completed the basic epidemiological, entomological and operational studies necessary for the preparation of a detailed plan of operation for the eradication programme. The project has been redefined and a malaria eradication programme started in January 1966 (see Brunei 0003 below).

Brunei 0003 Malaria Eradication Programme
(Jan. 1966 - 1969) R

To eradicate malaria from the country. This follows the malaria pre-eradication programme started in 1962.

Cambodia 0001 Malaria Pre-eradication Programme
(July 1962 - 1970) R UNDP/TA

To build up administrative and operational facilities to the level required for the implementation of a full malaria eradication programme; to complete an epidemiological survey of malaria; and to train national technical staff for the eradication programme.

The pre-eradication programme continues the antimalaria operations with which WHO has been assisting (under the same project number) since October 1950.

Cambodia 0003 Nursing Education, Phnom-Penh

To establish a school of nursing in Phnom-Penh; and to organize nursing and midwifery training.

Cambodia 0004 Maternal and Child Health Advisory Services
(Second phase: May 1962 - Aug. 1966) UNDP/TA UNICEF

The aim was to develop a programme of health services for mothers and children suited to the needs and resources of the country. WHO provided a public health nurse/midwife and one fellowship.

A survey was made of the maternal and child health services, which showed that maternal health services were functioning to a certain extent in all provinces, although there was a great shortage of staff, but that for children there were only some exclusively curative paediatric services. There were no statistical data on maternal and child mortality and morbidity, but from hospital records it could be seen that infant mortality was rather high.

A programme for the expansion and improvement of the maternal and child health services, based on the results of the survey, was drawn up and implemented. In Phnom-Penh the number of maternal and child health centres was increased from three to eight; more and better prenatal consultations are now given, but the proportion of mothers bringing their children regularly to the child welfare clinics and attending the post-natal consultations is still low. In the provinces, all maternity homes have been provided with UNICEF equipment and the general standard of nursing in the homes has been improved, although there is still no liaison between them and the prenatal clinics.

Two midwives have been placed in charge of the administration of the midwifery services. A centre has been set up at Anlong Rameeth for training rural midwives in domiciliary services, and a second school for rural midwives, offering a twelve-month course, has been opened at Kompong Cham. Arrangements have been made for monthly inspection of the kits and registers of rural midwives. In Cambodia, much of the maternal and child health work is carried out through these rural midwives, who, however, need supervision and assistance.

Although there have been many improvements in both the curative and preventive maternal and child health services, much still remains to be done, and maternal and child health work needs to be co-ordinated with the general health programme.
Cambodia 0007 Tuberculosis Control
(May 1965 - 1970) R UNICEF

To set up the nucleus of a national tuberculosis control service with emphasis on preventive and public health work; and to carry out an effective control programme, so as to reduce, and finally to eliminate, the infection as a public health problem.

Cambodia 0009 Rural Health Training Centre, Takhmau

To plan and implement a comprehensive provincial health programme; to build up model public health services in Kandal Province; and to give field training to all categories of professional and auxiliary health personnel at the Takhmau centre.

Cambodia 0013 Nursing Education and Administration
(Nov. 1963 - 1970) R

To survey and evaluate training resources, and prepare short-term and long-term plans for meeting the nursing needs of the health services; to organize and improve nursing services and education programmes throughout the country; and to review nursing legislation, personnel policies, and terms of service.

Cambodia 0017 Epidemiology and Health Statistics
(March 1966 - 1969) R

To establish in the Ministry of Public Health an epidemiological and health statistical service which will be responsible for planning and guiding national disease control programmes; to study local epidemiological patterns of prevailing causes of morbidity and mortality as a basis for the formulation of such programmes; and to train personnel of the health services in epidemiology and health statistics.

Cambodia 0018 School Health

To expand and improve the school health programme; to undertake, through the rural health training centre in Takhmau, a study of school health in the rural areas, and to give training in school health and sanitation to school-teachers and students of teacher-training institutions.

Cambodia 0019 Environmental Sanitation Training
(April 1965 - 1968) UNDP/TA (Asia Foundation)

To train a cadre of sanitarians for environmental sanitation work in the villages and towns.

China 0027 Institute of Public Health, Taiwan
(Aug. 1958 - 1968) R (China Medical Board)

To strengthen the training at the Institute of Public Health, particularly in epidemiology and public health practice.

China 0034 Trachoma Control, Taiwan
(Jan. 1960 - 1968) R UNICEF

To carry out an island-wide study of the prevalence, distribution and relative gravity of trachoma, and of environmental and other factors influencing the transmission of the disease; to develop a comprehensive control programme based on existing health services with the objective of reducing trachoma to a level at which it will no longer be a major public health problem, and of preventing disabling complications and sequelae.

China 0036 Community Water Supply and Sewerage, Taiwan
(Jan. 1963 - 1968) UNDP/TA UNICEF

To follow up the recommendations made in 1961 by a WHO team of water supply consultants in connexion with the improvement of community water supply and sewerage; to review and amend as necessary national and provincial legislation pertaining to community water supplies; to develop techniques for financing and administering water supply and sewerage programmes, so as to make the programmes self-supporting; to stimulate regional planning of water supply schemes; to initiate training programmes; and to co-ordinate activities relating to community water supply with other sectors of the nation's economy (industry, agriculture, etc.) which are directly concerned with the use and allocation of water resources.

China 0045 Rehabilitation Programme for Disabled Leprosy Patients, Taiwan
(Nov. 1965 - 1970) R

To establish and demonstration pilot project for rehabilitation of leprosy patients, and to prepare a plan for a national programme.

China 0046 Communicable Disease Control Centre, Taiwan
(July 1965 - 1968) R

To set up in the Provincial Department of Health an epidemiological service that will include laboratory facilities; to study local epidemiological patterns of prevailing causes of morbidity and mortality; in order to establish a basis for planning specific disease control programmes; and to develop procedures, suited to local conditions, for the investigation, diagnosis, control and prevention of the most prevalent communicable diseases.

China 0047 Occupational Medicine, Taiwan
(Nov. 1965 - April 1966) R

A WHO consultant helped to assess present and potential occupational health hazards and plan for their prevention and control, to develop the Division of Occupational Health in the Provincial Department of Health, and to plan a training programme for doctors in the occupational health service.

China 0048 Health Education Advisory Services, Taiwan
(April - July 1966) R

A WHO consultant was provided for three months from April 1966 to assist in strengthening the Division of Health Education of the Provincial Department of Health and to provide advisory services to the Institute of Public Health and on health education in schools. In May 1966 a further consultant was provided for two weeks to explore the feasibility of instituting a post-graduate health education training programme in two universities in co-operation with the Department of Health.

China 0051 Smallpox Vaccine Production, Taiwan

WHO provided a consultant for two weeks to advise on the establishment and maintenance of a freeze-dried smallpox vaccine production unit and awarded two fellowships for training in vaccine production.
China 0060  
Taipei Sewerage Planning  
(Nov. - Dec. 1966) UNDP/TA

Two WHO consultants helped to prepare a request to the United Nations Development Programme (Special Fund component) for assistance in planning the design and construction of a sanitary sewerage system for the metropolitan area of Taipei.

China 0200  Fellowships R:  
Diphtheria/pertussis/tetanus vaccine production (six months), drug control (six months), drug standardization (six months), health education (twelve months), health laboratory administration—analysis and standardization of antibiotics and biological products (twelve months), industrial hygiene (two for six months, one for twelve months), international quarantine procedures (two for ten weeks), nutrition (twelve months), psychiatry with emphasis on training in psychotherapy (twelve months), public health administration (one for six months, one for twelve months), public health administration, including communicable disease control programmes (four and a half months), public health administration with emphasis on tuberculosis control (twelve months), public health engineering (twelve months), public health nursing (one for six months, one for twelve months), public health nursing administration (six months), rehabilitation nursing (three months), sanitation (two for six months), virology and virus vaccine production (two years).

Cook Islands 0200  Fellowships R:  
Tuberculosis control (five months).

Fiji 0002  
Fiji School of Medicine, Suva  
(Feb. 1955 - 1967) R (China Medical Board)

To train assistant medical officers for government service in Fiji and adjacent territories, and to strengthen the staff of the School of Medicine.

Fiji 0200  Fellowships R:  
Biochemistry (twelve months), haematology (twelve months), orthopaedic surgery (twelve months), public health administration (two for twelve months), public health planning (two months).

Gilbert and Ellice Islands 0004  Nursing Education  
(Feb. 1964 - 1968) UNDP/TA

To develop training programmes for preparing nursing and midwifery personnel for the hospital and health services.

Gilbert and Ellice Islands 0200  Fellowships R:  
Tuberculosis control (twelve months).

Hong Kong 0200  Fellowships R:  
Dental nursing (two for twelve months, one for sixteen months), dental technology (two for twelve months), diarrhoeal diseases (three months).

Japan 0023  Medical Rehabilitation  

To raise the standard of teaching at the physical and occupational therapy school set up in 1963; to give in-service training to physical and occupational therapy personnel; to train a nucleus of senior physical and occupational therapists, in conformity with internationally accepted standards, for teaching posts in other similar schools to be established in the future; to modify procedures for the admission and classification of patients at rehabilitation centres to enable rehabilitation measures to be undertaken more quickly.

Japan 0200  Fellowships R:  
Child mental health (six months), child welfare (three months), dental disease epidemiology (three months), drug control (two months), first-aid medical services (three months), food control—study of colouring agents used in the preparation of foods and drugs (three months), health planning for suburban communities (three months), insecticide research (seven months), maternal and child health (three months), meat and milk sanitation (three months), medical care facilities (three months), medical care of mental disorders (three months), medical care under the social security system (six months), mental health—diagnosis of mental retardation (three months), mental health of pre-school children (three months), mental hospital architecture and management (two months), post-graduate training programmes for physicians (three months), radiation health—environmental control of atomic energy plants (three months), rehabilitation of the physically handicapped (three months), sanitary inspection (three months), tuberculosis control (three months), vital and health statistics (two for three months).

Korea 0004  Leprosy Control  
(Nov. 1961 - 1968) UNDP/TA UNICEF (Deutsches Aussätzigen Hilfswerk, Würzburg) (Order of Malta)

To expand the leprosy control programme.

Korea 0013  Malaria Pre-eradication Programme  
(Jan. 1962 - 1968) R

To survey the malaria situation, organize a national malaria service and train staff, so as to enable an eradication programme to be planned and implemented.

This programme follows the pre-eradication survey that began in June 1959.

Korea 0015  National Institute of Health, Seoul  
(Dec. 1960 - 1968) R

To strengthen the Department of Training and Surveys of the National Institute of Health (formerly the National Institute for Public Health Training) which trains staff for the local health services.

Korea 0019  Tuberculosis Control  
(March 1962 - 1967) UNDP/TA UNICEF

To develop an effective and comprehensive tuberculosis control programme, so as to reduce, and finally to eliminate, the infection as a public health problem.

Korea 0025  Local Health Services, Chungchong Namdo  
(March 1963 - 1968) R UNICEF

To strengthen the organization of the health services at various levels in the province of Chungchong Namdo, with the ultimate objective of strengthening the country's local health services. (See page 144.)
Korea 0028  International Quarantine Advisory Services  
(Sept. - Oct. 1966) R

A WHO consultant was provided for four weeks to review the national quarantine service and submit recommendations for its improvement.

Korea 0029  Environmental Health Advisory Services  

To strengthen the sanitation section of the Public Health Bureau, and to improve sanitary services, including water supplies, excreta and refuse disposal, food hygiene, and control of vectors of disease, in urban and rural areas.

Korea 0034  National Health Planning  
(Sept. 1966 - March 1967) R

WHO provided a consultant to assist in the organization of the National Health Planning Unit in the Ministry of Health and in the formulation and development of a national health plan as part of the country's overall economic development plan.

Laos 0002  Central Public Health Laboratory, Vientiane  

To establish a public health laboratory service and train laboratory personnel.

Laos 0006  Maternal and Child Health Services  

To ascertain the principal maternal and child health needs in Laos and set up training programmes; to expand and improve maternal and child health services as an integral part of the general health programme.

Laos 0009  Public Health Administration Advisory Services  
(April 1961 - 1967) UNDP/TA

To survey health conditions and prepare a long-range national health plan; to develop a programme of work appropriate to local conditions, and to organize the operation of the national health administration at the central and local levels.

Laos 0010  Rural Health Development  

To provide practical training courses in nursing and midwifery and in sanitation; to promote and develop environmental sanitation; and to carry out maternal and child care, and nutrition and health education activities adapted to the local conditions.

Work carried out under this project is a part of the special programme, assisted by the United Nations, for rural development. It is planned to set up four centres in rural areas, with staff from the participating agencies.

Laos 0012  Nursing Education  

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.

Laos 0020  Fellowships R: Morbid anatomy (eight months), obstetrics and gynaecology (twelve months), pneumology (twelve months).

Macao 0200  Fellowships R: Plastic surgery of facial injuries and burns (six months).

Malaysia 0014  Hospital Administration, West Malaysia  
(May 1956 - Dec. 1966) UNDP/TA

To review the hospital administration system and to provide training for non-medical hospital administrators.

Malaysia 0015  Hospital Records  

The original objective was to improve the medical records systems of the government hospitals in the Federation of Malaya and the training of local personnel in medical records techniques. As from November 1963 the objectives were expanded to cover the development of an up-to-date system of health statistics, including morbidity, cause-of-death, hospital, health services and epidemiological statistics, and medical records in Malaysia. WHO provided a hospital records adviser and four fellowships.

The national senior medical records officer was appointed to the project as counterpart in December 1963. Over sixty medical records officers have been trained locally and hospital medical records departments have been improved. A division of medical records and health statistics, equipped with calculating machines, has been set up in the Ministry of Health. All the statistical files of the division have been reorganized and the staff has been increased. A punch card for hospital morbidity data has been introduced, coding instructions have been drawn up and staff trained in their use. Arrangements have been made for the processing of statistical data at the Department of Statistics. A working party has been formed at the Ministry of Health to redesign the health forms. Agreement has been reached on a family folder, new maternal and child health forms, and a letter form for referring patients to and from hospitals. Investigation report forms for poliomyelitis and cholera, and forms for health statistical returns, have been redesigned.

In West Malaysia the organization of health statistics is still in the initial stages. In Sabah a course on medical records, attended also by personnel from Sarawak, was given in January 1966, as the first step towards extending work to the whole of Sabah.

The project was terminated before an up-to-date system of health statistics could be established for the whole of Malaysia.

Malaysia 0020  Malaria Pre-eradication Programme, West Malaysia (July 1964 - 1967) R

To build up administrative and operational facilities to the level required for the implementation of a full malaria eradication programme; to complete an epidemiological survey of...
malaria; and to train national technical staff for the eradication programme.

The pre-eradication programme continues the antimalaria operations with which WHO has been assisting (under the same project number) since February 1960.

Malaysia 0021 Training Institutions (Clinical Pathology),
West Malaysia (Nov. 1960 - Dec. 1966) R

To raise the standard of training in clinical pathology at the Institute for Medical Research, Kuala Lumpur, and to train at the Institute sufficient laboratory technicians for the research institutes and the clinical and diagnostic laboratories of the larger hospitals.

Malaysia 0030 Health Education Advisory Services,
West Malaysia (Jan. 1962 - 1970) R

To survey the health education work at the national and state levels, in order to evaluate the effectiveness of present methods of health education and recommend improvements.

Malaysia 0032 Nursing Education
(Aug. 1962 - 1968) UNDP/TA

To assess the education programmes for nurses and nursing needs and resources; to develop the programme and the associated clinical practice fields so as to meet the country's requirements in nursing personnel; and to improve the quality of nursing education by in-service training, refresher courses, special courses for local registered nurses and courses to prepare nursing personnel for administrative and teaching posts.

Malaysia 0034 Environmental Health Advisory Services
(Nov. 1965 - 1969) UNDP/TA

To establish sanitary engineering services in the Ministry of Health, and advisory and supervisory services in the medical and health offices of the states of Malaysia; to carry out environmental health programmes in urban and rural areas; and to train personnel.

Malaysia 0035 Strengthening of Rural Health Services and Training of Health Personnel (Jan. 1964 - 1968) R

To strengthen the organization and administration of the rural health services and to expand facilities for training staff for them; and to plan a comprehensive environmental health programme.

Malaysia 0040 University of Malaya (Sept. 1965 - 1969) 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 and medical recording.

Malaysia 0041 Environmental Health Advisory Services, East Malaysia (Jan. 1966 - 1969) R

To improve the general level of community sanitation and personal hygiene in the rural areas of East Malaysia; to develop sanitary facilities suitable for villages and small rural communities, including sanitary latrines and water supply systems; and to train village workers in sanitation techniques, with emphasis on rural water supplies, excreta disposal, vector control and food sanitation.

Malaysia 0042 Malaria Eradication Programme, East Malaysia (Sabah) (July 1961 - 1970) R UNDP/TA UNICEF

To eradicate malaria from Sabah. The eradication programme follows antimalaria operations for which WHO has provided assistance since July 1955.


To eradicate malaria from Sarawak. This follows the malaria pilot project started in 1952.

Malaysia 0067 Medical Library Services, West Malaysia (Nov. 1965 - March 1966) R

A WHO consultant advised the Government on the setting-up of a co-ordinated medical library system for use by Ministry of Health and state chief medical and health officers, and at designated hospitals.

Malaysia 0200 Fellowships R: East Malaysia—public health administration (one for three months, three for four months); West Malaysia—communicable diseases (six months), maternal and child health (six months).

New Hebrides 0004 Tuberculosis Control
(June 1964 - 1968) UNDP/TA

To expand and improve the tuberculosis control service; to carry out a systematic tuberculin testing and BCG vaccination campaign throughout the Condominium; to treat all cases, mainly at home under supervision; to take measures to protect the healthy; and to provide chemoprophylaxis for tuberculin reactors among family contacts under five years of age.

New Zealand 0200 Fellowships R: Environmental health (four months), nursing education (four months), paediatric physical therapy (four months), public health laboratory services (four months).

Niue 0200 Fellowships R: Ophthalmology (six months).

Papua and New Guinea 0008 Health Education Advisory Services (Jan. - March 1966) R

A WHO consultant assisted the Department of Public Health in planning and organizing a health education course for health personnel.

Papua and New Guinea 0200 Fellowships R: Child health (three months), environmental health (six months), malaria eradication (six weeks), maternal and child health (six months), tuberculosis control (two months).

Philippines 0004 Mental Health Advisory Services

To develop a mental health programme for the whole country.

Philippines 0043 Environmental Health Advisory Services

To reorganize the central and regional environmental sanitation services.
Philippines 0050  Virology Centre (Sept. 1965 - 1967) UNDP/TA

To build up a diagnostic laboratory and referral centre for the identification of viral agents of disease; to extend technical services to the Disease Intelligence Centre and other units of the Department of Health in connexion with the epidemiological study and control of virus diseases; to train professional and non-professional workers in virology; and to strengthen the Alabang laboratory to enable it to function as a control laboratory for the production of virus vaccines.

Philippines 0051  Environmental Sanitation Training
(June 1958 - Dec. 1966) R UNICEF (AID)

To organize an advanced training programme for sanitary inspectors and to demonstrate environmental sanitation work in a selected area.

Philippines 0053  Malaria Eradication Programme

To implement the plan for eradicating malaria from the country.

Philippines 0059  Paediatric Nursing
(March 1962 - Aug. 1966) UNDP/TA UNICEF

To extend and improve the health services, particularly as regards the promotion of health and prevention of disease and the provision of adequate nursing care for children; to establish closer co-ordination and integration of the promotional, preventive and curative services at all levels. (See page 145.)

Philippines 0069  Tuberculosis Control
(Oct. 1963 - 1968) R

To determine whether tuberculosis control plans based on the data already obtained are practical, productive and suitable for local conditions; to investigate, in controlled groups, specific developments in BCG vaccination, case-finding and chemotherapy, particularly as regards their economy and acceptability; to provide facilities for training various categories of health personnel; and to obtain data on which to base the integration of tuberculosis control work into the national public health programme.


To organize, at the University of the Philippines, collegiate courses for training physical therapists and occupational therapists and to develop professional standards; and to provide in-service training for sub-professional workers.

Philippines 0073  School Health Education
(Oct. 1963 - 1968) UNDP/TA UNICEF

To carry out a co-ordinated school health education programme; to train staff for the programme, and to promote closer co-operation among the various official and voluntary agencies concerned.


To strengthen the organization of maternal and child health services at national and regional levels.

Philippines 0080  Pilot Project in Applied Nutrition
(March 1964 - March 1966) UNDP/TA UNICEF (FAO)

To train personnel for an applied nutrition project; and to carry out nutrition education programmes in schools and communities and through the health services.

Philippines 0085  Health Education Advisory Services
(Jan. - April 1966) R

A WHO consultant assisted the Government to plan, organize and conduct a seminar on administration and supervision in health education for national and regional health educators of the Departments of Health and Education and faculty members of public health and teacher-training institutions.

Philippines 0200  Fellowships R: Clinical psychiatry (twelve months), epidemiology and biostatistics (twelve months), nursing and midwifery education (twelve months), public health administration with emphasis on veterinary public health (twelve months), vital and health statistics (six months).

Philippines 0201  Fellowships UNDP/TA: Public health training (three months).

Ryukyu Islands 0200  Fellowships R: Dental health (three months), epidemiology (twelve months), health education (two for twelve months), hospital administration (twelve months), international sanitary regulations (two for three months), public health administration with emphasis on epidemiology (two for twelve months), public health nursing (twelve months), radiological techniques (twelve months), sanitary science and engineering (two for twelve months).

Singapore 0003  Nursing Education
(June 1952 - 1968) UNDP/TA

To improve the standards of nursing education and nursing service.

Singapore 0004  Nursing Administration and Practice
(Jan. 1956 - 1968) R

To develop programmes to prepare nursing personnel for administrative posts in hospital and public health services and to improve the quality of nursing practice, patient care and clinical teaching.

Singapore 0006  Midwifery Education Programme

To study and improve the basic midwifery curriculum, particularly as regards the clinical, public health and health education aspects; to organize supplementary and refresher courses for practising midwives; to co-ordinate training programmes for midwifery students in district hospitals and to arrange facilities for their practical training; to revise the Midwives’ Ordinance and the rules of the Midwives’ Board; and to plan and organize midwifery services.

Singapore 0011  University of Singapore (Aug. 1966) R

A WHO consultant was provided for a month to review the nutrition teaching programme of the University of Singapore and help to plan its future development; to explore the possibilities for establishing practical nutrition programmes in
Singapore; and to study the need and possibilities for developing in the University an applied nutrition training centre to serve Singapore and other countries in the Region.

**Singapore 0012 Health Education Advisory Services**

To evaluate the health education programme, and to plan and carry out an expanded programme, particularly in schools, maternal and child health centres, teacher training centres and institutions, and centres for the training of health and medical workers.

**Singapore 0020 Waste Disposal**
(Nov. 1966 - Feb. 1967) UNDP/TA

Two WHO consultants were provided to make a general survey of the refuse disposal systems and submit recommendations for their improvement and on the cleansing and collection equipment required, and to advise on the selection and siting of refuse disposal plants.

**Siangapore 0200 Fellowships R: Cardiovascular roentgenography**
(six months), drug control (six months), public health engineering (twelve months), vector control (twelve months), vital and health statistics (twelve months).

**Tonga 0001 Environmental Sanitation**
(March 1958 - Dec. 1966) UNDP/TA UNICEF

To strengthen environmental sanitation services; particularly to study the problems of rural and urban environmental sanitation and the social, economic and cultural factors affecting them; to plan, execute and evaluate a pilot environmental sanitation project and to train personnel.

**Tonga 0200 Fellowships R: Assistant health inspectors' course**
(twelve months), clinical dentistry (six months), laboratory techniques (six months), paediatrics (twelve months), public health administration (six and a half months), public health dentistry (twelve months), public health nursing administration and education (twelve months).

**Trust Territory of the Pacific Islands 0200 Fellowships R:**
Dentistry (three months), public health administration (two for twelve months).

**Viet-Nam 0007 Tuberculosis Control**
(Jan. 1958 - 1968) UNDP/TA UNICEF

To set up the nucleus of a national tuberculosis control service, with emphasis on preventive and public health work; to complete a national tuberculosis centre in Saigon and to integrate it in the existing facilities; to continue the UNICEF/WHO-assisted BCG vaccination project and integrate it in the national tuberculosis control service.

**Viet-Nam 0011 Vital and Health Statistics**

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 which will meet national and international needs; and to train national personnel in the administration and operation of a national health statistical service.

**Viet-Nam 0014 Epidemiological Services** (Jan. 1960 - 1968) R

To develop the epidemiological services at central and regional levels and to train health workers in this field.

In the first phase of this project, which started in 1960 and was completed in 1962, a preventive medicine service was set up in the Ministry of Health.

**Viet-Nam 0015 Hospital Administration**

To develop a hospital system throughout the country; to prepare hospital legislation and regulations to standardize hospital records; and to implement a case registration system.

**Viet-Nam 0016 Malaria Pre-eradication Programme**
(March 1959 - 1968) R (AID)

To train national staff and to make preparations for the implementation of a malaria eradication programme.

**Viet-Nam 0018 Health Laboratory Services**

A WHO consultant paid a third visit to the Republic of Viet-Nam to assess the developments in the school health project and to assist the Government in further planning.

**Viet-Nam 0026 Venereal Disease Control** (June 1966 - 1970) R

To reduce the incidence of the venereal diseases; to demonstrate modern methods of venereal disease control and to strengthen and improve the syphilis serological work carried out in the laboratories.

**Viet-Nam 0033 Environmental Health Advisory Services**

To strengthen the environmental sanitation service in the Ministry of Health and to introduce improvements in public water supply, human excreta disposal, refuse disposal, food hygiene and vector control in urban and rural areas.

**Viet-Nam 0036 International Quarantine Advisory Services**
(Nov. 1961 - Dec. 1966) R

A WHO consultant reviewed the national quarantine service and submitted recommendations for its improvement.

**Viet-Nam 0200 Fellowships R: Health education**
(twelve months), leprosy control (six months), quarantine services (four months), rodent control (four months).

**Western Samoa 0006 Public Health Administration Advisory Services**

The aim was to develop and strengthen the health services, and for this purpose to survey health conditions, draw up a national health programme, geared to the economic and social
development programme, and co-ordinate all WHO-assisted projects in the country. WHO provided a medical officer.

Health surveys were carried out and health personnel were given in-service training. Recommendations were made for improving the organization and operation of the health services, including the disease control and health statistical services, for developing the Apia general hospital, and concerning the qualifications and functions of supervisory personnel. Two projects—for rural health development and for improvement of health laboratory services—have been planned and will receive assistance from WHO as from 1967. A long-term health plan has been drawn up for incorporation in the Government's first five-year economic development plan. It covers, *inter alia*, the strengthening of general health services and their extension in the rural areas, so as to make them accessible to the whole population. Because of its relatively slower pace of development, the island of Savai'i has been given high priority for the establishment of basic health services. An annual budgetary increment, which will match the population growth, has been adopted as a minimum requirement to support the services to be operated under the health plan.

**Western Samoa 0007  Filariasis Control**
(July 1965 - 1968) R UNICEF

To determine, by a pilot project, the best way of controlling filariasis, mainly by drug treatment, in Western Samoa; to prepare a filariasis control programme for the whole country, based on the results of the pilot project; and to train staff in filariasis survey and control techniques.

**Western Samoa 0200  Fellowships R:** Assistant dental officers' course (two for twelve months), assistant medical officers' course (five for twelve months), dentistry (twelve months), health statistics (six months), medical laboratory techniques (twelve months), medical studies (twelve months), nursing (two for four and a half months, four for twelve months), physical therapy (twelve months), public health administration (three for six and a half months, one for twelve months).

**WPRO 0022  Inter-country Treponematoses Team**

See page 146.

**WPRO 0072  Malaria Eradication Training Centre, Manila**
(April 1959 - June 1961; Sept. 1963 - ) R (AID)

To provide training in the theory and techniques of malaria eradication for various categories of personnel needed by countries of the Western Pacific Region and other regions.

**WPRO 0075  Regional Tuberculosis Advisory Team**
(July 1961 - ) R

To assist countries of the Region in assessing their tuberculosis programmes.

**WPRO 0079  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:

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**China (Taiwan) — Air Pollution.** A consultant for three weeks in January - February 1966 to advise on the legal, administrative, organizational and technical measures required for the control of air pollution in the main industrial towns.

**China (Taiwan), Republic of Korea, and Republic of Viet-Nam — BCG Vaccine Production.** Two consultants in BCG vaccine production—one to the Republic of Viet-Nam for two weeks in February - March 1966 and one to the Republic of Korea for two weeks in May - June 1966 and to China (Taiwan) for two weeks in June 1966—to make a review of the physical facilities and organization of the BCG vaccine laboratory; to assess the local methods of maintaining the BCG strain and of incubating, harvesting and controlling the vaccine product; and to assist in improving the techniques and the quality of production.

**Laos — National Health Planning.** A consultant for seven weeks from November 1966 to January 1967 to review information on needs and resources, advise the Ministry of Health on the organizational and administrative aspects of the planning process, and assist in preparing a draft health plan.

**WPRO 0083  Maternal and Child Health Advisory Services, South Pacific Area** (April 1962 - Aug. 1963; Sept. 1965 - 1968) UNDP/TA (South Pacific Commission)

A maternal and child health team, based in Fiji, to undertake assignments as required in territories of the South Pacific area.

**WPRO 0112  Seminar on Training of Auxiliary Health Personnel, Manila**
(24 - 31 Oct. 1966) R UNDP/TA

See page 145.

**WPRO 0115  Epidemiological Surveys of Dental Diseases**
(Oct. - Nov. 1966) R

A WHO consultant visited China (Taiwan), Hong Kong, West Malaysia, Philippines, Republic of Korea, Republic of Viet-Nam, and Singapore to follow up the plans made by the Governments to carry out epidemiological surveys of dental diseases.

The work done under this project up to December 1965 was described in the Annual Report of the Director-General for 1965.1

**WPRO 118  Seminar on Helminthic Infections, Manila**
(6 - 16 Dec. 1965) UNDP/TA

The seminar assessed the extent of the problem of helminthic infections in the Region, reviewed the control work being carried out, discussed survey methods and considered the new knowledge and experience acquired. Ascariasis and ancylostomiasis were considered as major public health problems in the Region and mass treatment of these infections, and especially of ascariasis, in children of school and pre-school age, was recommended. There were seventeen participants from China (Taiwan), Fiji, Gilbert and Ellice Islands, Japan, Malaysia, Papua and New Guinea, Philippines, Republic of Korea, Republic of Viet-Nam, Ryukyu Islands, Singapore, Trust Territory of the Pacific Islands, and Western Samoa, and nine observers, including one from UNICEF.

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WHO provided the cost of attendance of the participants, three consultants, three temporary advisers and supplies and equipment.

WPRO 0125 Tuberculosis Course, Singapore and China (Taiwan) (14 Feb. - 14 May 1966) R

The course, in which particular attention was given to the epidemiology and control of tuberculosis on a national basis, was held in Singapore and was followed by a two-week field visit to China (Taiwan). There were eleven participants from China (Taiwan), Japan, Malaysia, Philippines, Republic of Korea, Ryukyu Islands and Singapore, all of whom had had at least five years’ experience in tuberculosis work. In addition, two observers from Singapore and one from the Cook Islands attended the courses in Singapore.

WHO provided the cost of attendance of the participants, six temporary advisers, the services of seven WHO staff members and some equipment and supplies. The Government of Singapore and the Provincial Government of Taiwan provided local lecturers, staff, supplies and services for the course.

WPRO 0128 Seminar on the Integration of Health Services, Manila (15 - 28 Feb. 1966) UNDP/TA

The purpose of the seminar was to review country experiences, problems and trends connected with the integration of health services, to stimulate inter-country collaboration in the tackling of mutual health problems and to consider the role of international, bilateral and other organizations in promoting the integration of health services. Consideration was given to various aspects of the integration of health services, including local health services, hospital services and mass campaigns, and to the collaboration required between the general health services and private practitioners and between official and voluntary health agencies. There were seventeen participants from Australia, China (Taiwan), Fiji, Japan, Laos, Malaysia, New Hebrides, Papua and New Guinea, Philippines, Republic of Korea, Republic of Viet-Nam, Ryukyu Islands, Singapore, Tonga, and Trust Territory of the Pacific Islands, and three observers from the Philippines, UNICEF and the South Pacific Commission.

WHO provided the cost of attendance of the participants, three consultants and supplies and equipment.

WPRO 0129 WHO/South Pacific Commission Course in Environmental Health, Nuku’alofa, Tonga (18 - 31 May 1966) R (South Pacific Commission)

The course provided training in environmental sanitation practices, and especially in water supply and latrine construction. The practical aspects of planning and constructing sanitary facilities and the health education approach to the implementation of a sanitation programme were discussed in detail. There were nineteen participants—inspectors, health officers and public works and local government officers—from American Samoa, Australia, British Solomon Islands Protectorate, Cook Islands, Fiji, French Polynesia, Gilbert and Ellice Islands, New Caledonia, New Hebrides, Papua and New Guinea, Tonga, Trust Territory of the Pacific Islands, and Western Samoa.

WHO provided the cost of attendance of fifteen participants, a consultant and supplies and equipment. The South Pacific Commission provided a sanitary engineer, translation and interpretation staff, and the cost of attendance of four participants.

WPRO 0130 Virus Laboratory Services, China (Taiwan) and Republic of Korea (Sept. - Dec. 1966) R

Two WHO consultants visited China (Taiwan) to assess the extent of the virus infection problem and the diagnostic facilities available, to assist in preparing plans for improving the services and to train personnel working in this field. They also assisted in organizing and carrying out laboratory studies and sample surveys in connexion with the Government’s poliomyelitis control programme.

In December 1966 a consultant visited the Republic of Korea to advise on the expansion of national virus diagnostic facilities.

WPRO 0131 Seminar on Hospital Medical Records and Statistics, Manila (28 Nov. - 5 Dec. 1966) R

The purpose of the seminar was to study desirable standards for medical records, methods of compilation and comparability of statistical data, the organization, administration and functions of medical records departments and the training of personnel. The seminar was attended by twenty-two medical educators, health statisticians, hospital administrators and medical records officers from Australia, China (Taiwan), Cook Islands, Fiji, Japan, Malaysia, New Caledonia, Philippines, Republic of Viet-Nam, Ryukyu Islands, Singapore, Tonga, Trust Territory of the Pacific Islands, and Western Samoa, two observers from the Philippines and Thailand, and five WHO staff members.


The seminar considered the importance and use of health education services in national health programmes, leadership in health education, and the organization and administration of national health education services. There were twenty-five participants, including public health administrators and senior health education personnel, from Australia, British Solomon Islands Protectorate, China (Taiwan), Fiji, French Polynesia, Japan, Malaysia, New Caledonia, New Zealand, Papua and New Guinea, Philippines, Republic of Korea, Republic of Viet-Nam, Singapore, and Tonga. Observers attended from FAO, UNESCO, UNICEF, the South Pacific Commission, the International Union for Health Education and the United States Agency for International Development.

WHO provided three consultants and the cost of attendance of twenty-three participants and of a temporary adviser from the South Pacific Commission. The Commission sponsored two participants—one from the British Solomon Islands Protectorate and the other from Tonga.

WPRO 0135 Environmental Health Advisory Services, South Pacific Area (Oct. 1965 - 1970) UNDP/TA

To assist countries and territories in the South Pacific area to improve community water supplies and environmental sanitation in general.

WPRO 0153 Lower Mekong Basin Health Survey (Nov. 1966 - Sept. 1967) UNDP/ECAFE Mekong Development Committee

To carry out a health survey in the development area of the lower Mekong Basin in co-operation with the Mekong Development Committee of the Economic Commission for Asia and the Far East. The countries covered by the survey are Cambodia, Laos, Republic of Viet-Nam and Thailand.
INTER-REGIONAL

Inter-regional 0051 Treponematoses Epidemiological Team (1959 - ) R

To study the nature, extent and significance of treponemal infections by epidemiological serological random sample surveys, in order to provide data for estimating the emphasis needed in continued surveillance activities after mass treponematoses control programmes, particularly campaigns against yaws; to study and evaluate the application of diagnostic techniques in treponematoses to populations in tropical countries, in order to obtain information for the selection of practical and specific tests, which in turn can lead to new knowledge on the nature and extent of infection; to undertake epidemiological studies, including research for the improvement of methodology and operation systems in multipurpose immunological sample surveys (e.g., malaria, virus diseases, immuno-haematology, etc.) in co-operation with national laboratories and WHO reference centres.

Inter-regional 0054 Leprosy Epidemiological Team (1966 - 1967) R

To obtain information on the epidemiology of leprosy and on patterns of the disease and to assist other field research in different areas of the world. This team replaces the leprosy advisory team provided (under the same project number) from 1960 to 1965.

Inter-regional 0070 Malaria Eradication: Pool of Advisers (1961 - ) R MESA

To have available malarialogists and entomologists who can be assigned at short notice to assist governments in planning and implementing eradication programmes, to advise on particular problems or to replace WHO advisers who are away ill or on leave.

Inter-regional 0071 Meeting of Regional Malaria Advisers (1956 - ) R

To hold an annual meeting of the regional malaria advisers, so as to ensure a co-ordinated technical approach to malaria eradication planning and methods.

Inter-regional 0078 Malaria Eradication: Technical Consultants (1959 - ) R

To provide expert advice on the preparation of malaria eradication programmes, to assist governments to assess such programmes and to advise on special technical problems.

Inter-regional 0079 Malaria Eradication: Training Programme for International Recruits (1958 - ) R

To train in malaria eradication techniques malarialogists, entomologists, sanitary engineers, sanitarians and other categories of staff, in internationally assisted malaria eradication training centres and subsequently in malaria eradication projects.

Inter-regional 0081 Study Tours of Malaria Eradication Projects for Advisers (1960 - ) R

To enable malaria advisers to undertake visits to malaria eradication programmes in operation in order to study their organization and functioning; and to assist in training team leaders and advisers in eradication.

Inter-regional 0110 Training Programme for French-speaking Nurses (1962 - ) R

To prepare French-speaking nurses and midwives for teaching and administrative posts in basic and post-basic schools of nursing and midwifery and in nursing services in various countries.

Inter-regional 0112 Malaria Eradication: Team for Field Research on Special Epidemiological Problems (1961 - ) R

To undertake studies on the factors causing persistent transmission of malaria, and to carry out field research for the development and demonstration of new techniques to interrupt such transmission.

Inter-regional 0113.1 International Course in the Epidemiology and Control of Tuberculosis, Prague (14 April - 9 Sept. 1966) R UNDP/TA

One of a series of courses organized in co-operation with the Postgraduate Medical School in Prague, to teach modern methods of controlling tuberculosis as a public health problem to physicians who will be key organizers of tuberculosis programmes. There were thirteen trainees from Czechoslovakia, India, Japan, Mauritius, Nigeria, Seychelles, Sierra Leone, Sudan, Syria, United Arab Republic and Yugoslavia. The course, which was given in English, included lectures, discussions and practical demonstrations in Prague, followed by two months' additional training—one month at the Danish Tuberculosis Index, Copenhagen, and one month at the National Tuberculosis Institute, Bangalore, India.

WHO provided fellowships for eleven trainees, lecturers (including WHO staff members) and some equipment.

Inter-regional 0113.2 International Course in the Epidemiology and Control of Tuberculosis, Rome (15 Feb. - 31 May 1966) R UNDP/TA

One of a series of courses, organized in co-operation with the Carlo Forlanini Institute, Rome, similar to that described under project Inter-regional 0113.1 above, but given in French. There were twelve trainees from Afghanistan, Albania, Brazil, Cameroon, Costa Rica, Iran, Macao, Madagascar, Morocco, Spanish Sahara and Uruguay. The course included lectures, discussions and practical demonstrations in Rome, followed by one month's additional training in Tunisia.

WHO provided fellowships for the trainees, lecturers (including WHO staff members) and some equipment.
Inter-regional 0117 Medical Rehabilitation Courses, Copenhagen and London (1960 - ) UNDP/TA

To follow up the annual courses on medical rehabilitation held in Copenhagen and London, which have been supported by WHO since 1960, two consultants were provided for about three weeks in May and June 1966 to advise on the planning of rehabilitation services in Bulgaria.

Inter-regional 0120.1 Anaesthesiology Course, Copenhagen (Jan. - Dec. 1966) UNDP/TA

A course, similar to those that have been held yearly since 1956 at the Anaesthesiology Training Centre, Copenhagen, for training medical personnel.

WHO provided fellowships for twenty-one trainees from Albania, Brazil, Bulgaria, China (Taiwan), El Salvador, Greece, Hungary, Japan, Mexico, Philippines, Poland, Portugal, Republic of Korea, Romania, Sudan, Syria, Thailand, Turkey and Yugoslavia. Three trainees from Finland attended at the expense of their Government.


The object of the course was to provide intensive instruction in the use of modern computer techniques to statisticians and geneticists, and to facilitate the introduction of modern computational methods in human genetics programmes in other parts of the world. The course was given at the Department of Human Genetics, University of Michigan, by the Faculty of the Department and guest lecturers provided by the United States National Institutes of Health. It was attended by eighteen trainees from Australia, Brazil, Czechoslovakia, Denmark, Federal Republic of Germany, France, Greece, India, Iran, Israel, Netherlands, New Zealand, Nigeria, Poland and United Arab Republic.

WHO provided the cost of attendance of the trainees.

Inter-regional 0137.1 Courses on Human Genetics for Teachers in Medical Schools, Copenhagen (30 Aug. - 19 Nov. 1966) UNDP/TA

The aim of the course was to stimulate the planning and integration of teaching in human genetics into the medical curriculum. It was given at the Institute of Human Genetics, Copenhagen, in English, by the Faculty of the Institute, and was attended by twenty trainees, teaching staff of undergraduate medical schools, from Bulgaria, Costa Rica, El Salvador, Hungary, India, Jamaica, Japan, Malaysia, Nigeria, Poland and Sudan.

WHO provided the cost of attendance of the trainees, and three lecturers. In addition, as a follow-up activity, three temporary advisers lectured at a national course organized in Hungary, and a consultant advised on the teaching of human genetics at the Medical School, Cracow, Poland.

Inter-regional 0140 FAO/WHO Training Centre on Abattoir Management and Operation, Copenhagen: Third Course (30 May - 10 July 1966) UNDP/TA (FAO)

The course was attended by twenty-three participants from Chile, Ecuador, Ethiopia, Fiji, Greece, Guatemala, India, Jordan, Malaysia, Mexico, Nigeria, Paraguay, Peru, Portugal, Sierra Leone, Singapore, St Vincent, Thailand, United Arab Republic and United Republic of Tanzania. It was mainly concerned with the planning, siting, construction, equipping, management and operation of abattoirs. Also, instruction on modern techniques in hygienic handling, packing, storage and transportation of meat and meat products was given.

WHO shared with FAO the cost of the course and a WHO staff member lectured on the public health aspects of meat production, processing, distribution and transport.

Inter-regional 0156 Integrated Public Health (March 1962 - ) UNDP/TA

A service of experts to help governments in strengthening and integrating their health services, covering a wide variety of public health activities, including public health administration, maternal and child health, nutrition, epidemiology, statistics, health laboratory services, etc. The experts are available, individually or as a team, for any requesting country, and also provide a complementary service for field projects.

Inter-regional 0172 Field Trials of New Insecticides and Antimalarial Drugs (Second Team) (1962 - ) MESA

To carry out field trials of new insecticides and drugs that are of potential value in malaria eradication.

Inter-regional 0178 Course on Nursing Service Administration, Hillerod and Copenhagen (26 Aug. - 8 Oct. 1966) UNDP/TA

The course was given for nurses called upon to organize courses in ward administration and to participate in the planning of nursing services, and was aimed at assisting countries in promoting the improvement of patient care. It was the second course of its kind, the first having been held in 1964. The course covered the planning, organization and evaluation of patient care, the utilization of nursing personnel, in-service education, and methods of studying nursing problems and of testing the effectiveness of nursing care.

WHO provided fellowships for the eighteen trainees from Botswana, Bulgaria, Cameroon, Ceylon, Colombia, Costa Rica, Cyprus, Greece, Jamaica, Japan, Jordan, Malta, Nepal, Portugal, Republic of Viet-Nam, Swaziland, Turkey and Yugoslavia, and two temporary advisers to assist in the conduct of the course, teach special subjects and lead discussions. Members of the regional office staff participated in the planning and organization of the course, lectured and acted as group discussion leaders.

Inter-regional 185 Seminar on Public Health Programmes in Radiation Protection, Singapore (7 - 11 Dec. 1965) R

The purpose of the seminar was to bring out the basic principles of and give practical guidance on the organization of radiation protection services within the framework of existing public health programmes. It was attended by twelve senior administrative officers from China (Taiwan), Fiji, Hong Kong, Japan, Malaysia, Pakistan, Republic of Korea and Singapore.

WHO provided five lecturers and the cost of attendance of the participants. A lecturer was provided by IAEA.

Inter-regional 0190 Leprosy/BCG Trial Team, Burma (April 1964 - end of 1969) R

To carry out a trial to assess the value of BCG vaccination in the prevention of leprosy.
Communicable diseases.

The seminar was attended by eighteen participants from Ceylon, Chile, Cuba, Ghana, India, Iran, Israel, Malaysia, Mauritius, Mexico, Mongolia, Nigeria, Pakistan, Romania, Sudan, Thailand and United Republic of Tanzania, who were accompanied by three officials from the Ministry of Health of the USSR, three WHO consultants and one WHO staff member. After meeting in Moscow, the group spent seven days in Erevan and returned to Moscow for the final discussions and the closing session. The programme of the seminar consisted of lectures and visits to health and research institutions at different administrative levels, which enabled the participants to acquaint themselves with the basic features of the health services in the USSR, and particularly those dealing with the control of communicable diseases.

WHO provided the three consultants and the cost of attendance of the participants.

Inter-regional 0205 Travelling Seminar on Nursing, Union of Soviet Socialist Republics (6 - 28 Oct. 1966) UNDP/TA

The purposes of the seminar were to enable nurses from countries outside the USSR to observe and gain an understanding of the health services in the USSR in which nursing plays a part, the organization and administration of nursing services, the work of the nurse in health services, the training of nurses, and the relationship of nurses to other members of the health team—especially fieldshers and midwives. It was attended by twenty-three nurses from Afghanistan, Ceylon, Chile, Costa Rica, Ghana, India, Iran, Israel, Japan, Malaysia, Nigeria, Pakistan, Poland, Romania, Singapore, Sudan, Turkey, Uganda, United Republic of Tanzania, Uruguay, Venezuela and Yugoslavia. The programme included visits to institutions in Moscow, Kiev, Vinnica, Tbilisi and Sukhumi.

WHO provided the cost of attendance of the participants and two consultants.

Inter-regional 0212 Field Trials of New Insecticides and Antimalarial Drugs (First Team) (1962 - ) R

To carry out field trials of new insecticides and drugs that are of potential value in malaria eradication.


The purpose of the meeting was to review the findings of the study of the incidence of leukaemia in patients treated with radiation for cancer of the cervix uteri and, because of the significance of the results for the question of radiation leukaemogenesis in man, to decide whether it should be continued.

The meeting was attended by thirty-seven participants from co-operating centres in Europe and North America. They discussed the present status of the study and the interpretation of the findings to date, and recommended that the study should be continued.

WHO provided the cost of attendance of the participants.

Inter-regional 0218 Cancer Advisory Team, Asia (1963 - ) R

To study the epidemiology of oropharyngeal tumours, and particularly their relation to chewing and smoking habits.

Inter-regional 0228 Course on Cholera Control, Calcutta (14 March - 4 April 1966) UNDP/TA

The course was held at the School of Tropical Medicine in Calcutta. The programme comprised lectures on epidemiology, bacteriology and control of cholera, practical work and field visits. There were twelve participants from Afghanistan, India, Iran, Iraq, Japan, Malaysia, Nepal, Philippines, Republic of Korea, Republic of Viet-Nam, Thailand, and United Arab Republic.

WHO provided the cost of attendance of the participants and contributed to the expenses of running the course. Five WHO staff members assisted with the course.

Inter-regional 0231 Assistance to Trachoma Research (Jan. 1965 - 1967) R

To assist in advancing laboratory research on problems of international interest and practical importance in the field of trachoma and related infections.

Inter-regional 0234 Economic Commission for Africa (1964 - ) R

WHO is providing a sanitary engineer having specialized knowledge of the public health aspects of housing, attached to the Housing, Building and Planning Section of the Economic Commission for Africa, to deal with the environmental health aspects of the housing and physical planning programmes being developed in Africa.

Inter-regional 0239 Advanced Course on Clinical Chemistry, Copenhagen (29 March - 14 June 1966) UNDP/TA

The course, which was held at the Bispebjerg Hospital, Copenhagen, was attended by fifteen physicians and biochemists from Burma, China (Taiwan), Greece, Hungary, India, Indonesia, Iran, Malaysia, Nigeria, Poland, Republic of Korea, Turkey, United Arab Republic and Yugoslavia. The instruction covered chromatography and gel filtration, different forms of electrophoresis, including immunoelectrophoresis, and the organization of hospital laboratory work. The programme included lectures, practical work, demonstrations and visits to institutions.

WHO provided four lecturers and fellowships for the participants.

Inter-regional 0242 Cancer Advisory Team, Africa (1964 - ) R

To arrive at a working definition of the so-called Burkitt's tumour versus other lymphomas, as a first step towards further investigations on these tumours. Histopathological, clinical and some epidemiological information is being collected from cases of lymphomas in children in several places in Africa, together with pathological material. The information collected is being assembled at the Institut Gustave Roussy, Villejuif, France. Pathological slides will be circulated among a few specialized pathologists whose independent and blind readings will be analysed and further related to clinical features.

Inter-regional 0243 Course on Recent Advances in the Application of Basic Medical Sciences to Surgery (in English), Copenhagen (29 March - 3 June 1966) UNDP/TA

The purpose of the course was to acquaint surgeons with the developments in the basic medical sciences such as physiology, pathophysiology and pharmacology, in order to enable them to practice better surgery and to teach students and other

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doctors in their home countries. It included lectures, discussion groups, practical classes and symposia on various subjects. The course, which was held at the Institute for Experimental Research in Surgery of the University of Copenhagen, was attended by fourteen surgeons from Bulgaria, Chile, Colombia, Hong Kong, Iceland, Malaysia, Mexico, Nigeria, Philippines, Poland, Sudan, Thailand, Venezuela and Zambia.

WHO provided fellowships for the participants.


The purpose of the meeting was to determine the most essential needs for data in order to provide a more adequate scientific basis for an understanding of the effects of radiation on human health. Emphasis was placed on the establishment of priorities in human radio-epidemiological studies and on the drawing-up of balanced proposals for obtaining the most critically needed data and for improvements in research approaches and methodology. There were thirty-six participants from Czechoslovakia, Denmark, Federal Republic of Germany, France, India, Israel, Japan, Poland, Portugal, United Kingdom and United States of America.

WHO provided the cost of attendance of twelve participants and supporting services.

Inter-regional 260 Meeting on Basic Health Recommendations regarding Exposure to Ionizing Radiation, Geneva (20 - 23 Dec. 1965) R

The purpose of the meeting was to consider basic recommendations for radiation protection and to discuss practical measures for their implementation and the needs and problems of national public health authorities in this field. There were seven participants from Austria, Berlin, Czechoslovakia, France, Sweden and the United States of America, and representatives of the International Atomic Energy Agency and the International Commission on Radiological Protection also attended.

WHO provided a consultant and the cost of attendance of the participants.

Inter-regional 0270 Insecticides Testing Unit, Lagos (1960 - ) Special Account for Medical Research

To carry out village-scale field trials of new insecticides of potential value in malaria eradication and other vector control programmes.

Inter-regional 0271 Research Unit for the Control of Mosquito Vectors of Filariasis, Rangoon (1962 - ) Special Account for Medical Research

To carry out research and field trials on the control of mosquitoes, particularly the vectors of filariasis, using organophosphorus and other new insecticides, biological control procedures, and other techniques not at present employed.


The seminar was the second of a series of ten annual meetings, the purpose of which is to secure wider international agreement between psychiatrists on psychiatric diagnosis, classification and statistics. It was concerned primarily with "borderline psychoses". Diagnostic exercises were carried out with pre-circulated case histories and interviews of patients by psychiatrists recorded on video-tape. The work of the 1965 seminar, which concentrated on schizophrenia, was followed up. The seminar was attended by a permanent group of twelve experts from Austria, France, Japan, Norway, Peru, Union of Soviet Socialist Republics, United Kingdom, and United States of America, together with twelve Scandinavian participants.

Inter-regional 0276 Cholera Control Team (1964 - ) UNDP/TA

A team, consisting of an epidemiologist, a bacteriologist and a clinician, to assist countries in developing and improving their programmes for the control of cholera; to assist, when required, in dealing with cholera epidemics; and to advise on epidemiological, laboratory and clinical aspects of control and treatment.

Inter-regional 0283 Improvement of Anaesthesiology Services (May 1966) UNDP/TA

As a follow-up of the courses given every year at the Anaesthesiology Training Centre, Copenhagen (see project Inter-regional 0120.1 above), WHO provided two consultants and a temporary adviser to assist in improving anaesthesiology services in Bulgaria.

Inter-regional 0285 Course for Clinical Instructors in Physical Therapy, Copenhagen (1 Sept. - 30 Nov. 1966) UNDP/TA

The course was organized for physical therapists with three years' training and at least two years clinical experience who wished to become clinical instructors in physical therapy. The programme included a review of important sections of the basic subjects of anatomy, physiology and physics, and exercise therapy, hydrotherapy and electro-therapy, and the trainees were given practical experience in a department of physical therapy. There were eighteen trainees from Argentina, Bulgaria, China (Taiwan), Greece, Hungary, India, Indonesia, Lebanon, Malta, Nigeria, Pakistan, Philippines, Poland, Portugal, Spain and United Arab Republic.

WHO provided fellowships for the trainees and a temporary adviser.

Inter-regional 0287 Advanced Course in Diagnosis, Treatment and Prevention of Major Cardiovascular Diseases, Copenhagen (1 Nov. 1966 - 30 June 1967) UNDP/TA

The purpose of the course is to train physicians from developing countries in clinical cardiology, including modern diagnostic techniques, and to give them basic training in respiratory pathophysiology, epidemiology and the prevention of cardiovascular diseases. The programme includes visits to out-patient clinics, departments of medicine and paediatrics, and cardiopulmonary laboratories, as well as the actual training programme and series of lectures. There are nine participants from Burma, Hong Kong, Iran, Malaysia, Nigeria, Poland, Romania, Sudan and Thailand.

WHO provided the cost of attendance of the participants and temporary advisers from Denmark, Uganda and the United Kingdom, who will lecture during the course.

Inter-regional 0289 Course on Child Dental Health, Copenhagen (1 March - 27 May 1966) UNDP/TA

The course provided advanced training in the teaching and practice of dentistry for children to teachers of pedodontics and administrators of children's dental health services. It was
given at the Royal Dental College, Copenhagen, by the faculty of the College and was attended by eleven trainees from Argentina, China (Taiwan), Costa Rica, India, Iran, Nigeria, Philippines, Turkey, United Arab Republic, Venezuela and Yugoslavia. WHO provided fellowships for the trainees.

Inter-regional 0290 Travelling Seminar on Helminthic Diseases, Union of Soviet Socialist Republics (12 May - 2 June 1966) UNDP/TA

The aim of the seminar was to consider practical approaches to the epidemiology and control of helminthic diseases, drawing for illustrative purposes upon experiences in the Soviet Union. It was held in Moscow, Tbilisi and Alma Ata. The principal subjects discussed were soil-transmitted helminthiasis, with emphasis upon the control of ascariasis and hookworm, and zoonotic helminthiasis, particularly those associated with domestic animals (hydatid disease, taeniases and trichinosis) and with fish (diphyllolothriasis and opisthorchiasis). The seminar also dealt with practical aspects of the assessment of the importance of helminthic diseases and the planning and conduct of public health campaigns against common helminthic infections. There were twenty-one participants from Ceylon, Costa Rica, Ecuador, Ethiopia, Ghana, India, Iran, Israel, Japan, Malaysia, Mexico, Mongolia, Singapore, Spain, Sudan, Turkey, Uganda, Venezuela and Yugoslavia, and two observers from Argentina and Japan.

WHO provided three consultants and the cost of attendance of the participants, and four WHO staff members assisted with the seminar.

Inter-regional 0296 Travelling Seminar on the Preparation of Teachers for Medical Schools, Union of Soviet Socialist Republics (15 Sept. - 4 Oct. 1966) UNDP/TA

The aim of the seminar, which was held in Moscow from 15 to 21 September, and from 3 to 4 October, in Leningrad from 22 to 25 September and in Erevan from 27 to 30 September, was to study in the USSR the methods used and the experience gained in the preparation of teaching staff for medical schools. There were twenty-four participants from Argentina, Brazil, Burma, India, Iran, Iraq, Jamaica, Japan, Kenya, Malaysia, Mexico, Pakistan, Philippines, Poland, Singapore, Sudan, Turkey, Uganda, United Arab Republic, Venezuela and Yugoslavia.

WHO provided two consultants, each for one month, and the cost of attendance of the participants.

Inter-regional 0297 Seminar on Planning and Evaluation of Applied Nutrition Programmes in Asia and the Far East, New Delhi (30 Nov. - 10 Dec. 1966) UNDP/TA (FAO)

The seminar, which was organized jointly with FAO, was attended by twenty-six participants from Cambodia, Ceylon, India, Japan, Malaysia, Nepal, Philippines, Republic of Korea, and Thailand, and by five observers from India and one each from UNICEF and UNESCO. Various aspects of the planning and evaluation of applied nutrition programmes were discussed, including the selection and collection of base-line data, the involvement of national institutions and local communities, criteria for and type of evaluation, orientation and training of personnel, and problems of co-ordination and integration of the work of the various government agencies involved.

WHO provided a consultant and shared with FAO the cost of attendance of the participants.

Inter-regional 0298 Travelling Seminar on Community Water Supply, Union of Soviet Socialist Republics (8 - 30 Sept. 1966) UNDP/TA

The purpose of the seminar was to contribute to raising the general level of national water supply management and operation by the incorporation of ideas which have proved successful elsewhere. There were nineteen participants from Argentina, Burma, Ceylon, Ethiopia, Greece, India, Japan, Kenya, Morocco, Nepal, Pakistan, Sudan, Turkey, United Arab Republic, United Republic of Tanzania, and Venezuela. They were able to study water supply methods and procedures in the Soviet Union and, through group discussions, to compare them with methods used elsewhere. The meetings were held in Moscow and in Erevan. Twenty-two papers were presented, nineteen of them by Soviet specialists and three by WHO consultants and staff, and an observer from the United Nations Development Programme addressed the seminar. Field visits were paid to water supply and sewage disposal works and to various laboratories.

WHO provided two consultants and the cost of attendance of the participants.

Inter-regional 0300 Trypanosomiasis Study Team (Jan. 1965 - ) R

To assist in surveying areas where trypanosomiasis is endemic and to collaborate in exchanging epidemiological information, in order to obtain a clear picture of the present endemic foci potentially dangerous for a flare-up to the disease, both human and animal, and of the distribution and changes in advance of the fly belts; also to propose co-ordinated measures and to promote the use of modern techniques and methods for trypanosomiasis control.

Inter-regional 0301 Seminar on Trypanosomiasis, Nairobi (17 - 29 Oct. 1966) R (FAO)

The aim of the seminar, which was organized jointly by FAO and WHO, was to provide an opportunity for those in charge of national trypanosomiasis programmes to discuss problems of epidemiology and developments in research, control, diagnosis and organization of services. There were thirty participants from Burundi, Democratic Republic of the Congo, Dahomey, Ethiopia, Ghana, Ivory Coast, Kenya, Mali, Niger, Nigeria, Sierra Leone, Sudan, Togo, United Republic of Tanzania, Uganda, Upper Volta and Zambia. They exchanged views on epidemiological problems of trypanosomiasis and its control, medical and economic problems, organizational and administrative problems, co-ordination of work between various administrative authorities at country level, inter-country co-ordination of trypanosomiasis control, acceleration of exchange of information, and training of personnel.

WHO provided a consultant, four temporary advisers and the cost of attendance of the participants, and three WHO staff members assisted with the seminar. FAO provided two consultants and a staff member.

Inter-regional 0306 Aedes aegypti Research Unit, Bangkok (1966 - ) Special Account for Medical Research

To carry out research and field trials on the control of Aedes aegypti, using organophosphorus, carbamate and other insecticides, biological control procedures, and other techniques not at present employed.
Inter-regional 0311 Course on Radiological Health Inspections, Rockville, Md., United States of America
(7 - 18 Nov. 1966) R (United States Public Health Service)

The course provided instruction in the principles, standard techniques and recent developments in work concerned with the radiation safety inspection of radiological installations and equipment. WHO provided fellowships for the seventeen participants, who came from as many countries in all six WHO regions, and a consultant/lecturer. The rest of the teaching staff was provided by the United States Public Health Service.

Inter-regional 0315 Symposium on Developmental Work in Community Water Supply, Teheran (24 Oct. - 3 Nov. 1966) R

The symposium reviewed recent experience in community water supply planning, design, construction and operation from the point of view of reducing capital and recurrent costs of water supply systems. There were eighteen participants from China (Taiwan), Greece, India, Indonesia, Iran, Mexico, Philippines, Sudan, Thailand, Turkey and United Arab Republic.

WHO provided a consultant, two temporary advisers, the cost of attendance of the participants, supporting services and supplies and equipment.


The conference reviewed the differences and similarities between institutions offering post-graduate education in public health. There were twenty-two participants from Australia, Brazil, Canada, Chile, Federal Republic of Germany, France, India, Iran, Mexico, Netherlands, Pakistan, Philippines, Portugal, Sweden, Union of Soviet Socialist Republics, United Arab Republic, United Kingdom, United States of America, and Yugoslavia. The subjects discussed included curriculum content and organization, programmes other than the basic post-graduate course, the field experience necessary, research as part of public health training, and the approach for meeting the needs of developing countries. Agreement was reached on these subjects, and on the value, and the methods of promoting, mutual recognition of schools of public health and of diplomas.

WHO provided two consultants, conference staff, and the cost of attendance of the participants.

Inter-regional 0322 International Symposium on Radioecological Concentration Processes, Stockholm (25 - 29 April 1966) R (Royal Academy of Sciences, Sweden) (FAO) (IAEA)

The symposium, which was organized jointly by the Royal Academy of Sciences of Sweden, FAO, IAEA and WHO, considered the health implications for man of substantially enhanced concentrations of natural and artificial radioactive substances in biological material that can occur, under various circumstances, particularly in arctic and subarctic regions, as the result of special ecological conditions. There were 140 participants who discussed papers submitted and exchanged information.

WHO contributed to the cost of the symposium, which was attended by a staff member.

Inter-regional 0355 Seminar on Advanced Epidemiological Methodology in Malaria Eradication, Adana, Turkey
(24 Oct. - 10 Nov. 1966) MESA

The seminar enabled senior national malaria staff holding responsible posts in malaria eradication programmes that have already reached an advanced stage, and WHO senior advisers of malaria projects from the European and Eastern Mediterranean Regions, to discuss and widen their knowledge of matters pertaining to the epidemiology of malaria, its principles, planning, technique and methodology, to the assessment of malaria eradication programmes, and to technical problems requiring a deep epidemiological understanding for an appreciation of the causes and means of overcoming them. There were six participants from Iran, Pakistan, Turkey and United Arab Republic, three observers from the Government of Turkey and a representative of the United States Public Health Service. Fifteen WHO staff members attended the seminar.

WHO provided the cost of attendance of the participants, two temporary advisers, and conference staff and other services.

Inter-regional 0356 Seminar on Prevention of Re-establishment of Malaria from Areas where the Disease has been Eradicated, Washington, D.C., and Atlanta, Ga. (14 - 21 Nov. 1966) MESA

The seminar considered the measures at present adopted against the reintroduction of malaria by countries that have eradicated the disease, and the type of organization of general health services, including epidemiological and quarantine services, that would be required in order to prevent the re-establishment of malaria. Special problems, such as immigration through unchecked borders and the danger of importation of malaria resistant to drugs were the subject of considerable discussion. The position of the International Sanitary Regulations in respect of malaria was reviewed and a number of important conclusions were reached. The seminar was attended by participants both from countries from which malaria has been eradicated or where eradication was nearly completed, and from those which were still malarious and from which malaria was likely to be imported into other, malaria-free, countries. There were eighteen participants from Bulgaria, China (Taiwan), Cyprus, El Salvador, Guyana, Hungary, India, Iran, Israel, Jamaica, Lebanon, Spain, Trinidad and Tobago, Union of Soviet Socialist Republics, United Republic of Tanzania, United States of America, and Venezuela. Following the meeting in Washington, D.C. from 14 to 19 November, the participants visited the Communicable Disease Center, Atlanta, Georgia, on 20 and 21 November.

The Organization provided the cost of attendance of the participants, temporary advisers, and conference staff and other services.

Inter-regional 0374 Community Water Supply : Consultant Services (Sept. 1965 - ) UNDP/TA

To advise governments on priority problems in community water supply and sewerage, on project development and financing, and on the establishment of national, regional or local authorities for community water supply.


The purpose of the symposium, which was organized by Lyons University, was to discuss the neurophysiological, pharmacological, neurological and psychopathological aspects of consciousness, and to bring up to date available scientific information on the subject. Discussions were based on the most recent multidisciplinary research on different states of sleep and, in particular, on the so-called paradoxical phase. The results of the investigations so far carried out are promising for a clear understanding of the mechanisms of sleep, consciousness and some psychopathological states. There were
fifty participants from Australia, Belgium, Federal Republic of Germany, France, Romania, Switzerland, Union of Soviet Socialist Republics and United States of America.

WHO provided seven consultants—specialists from Australia, Romania, the Union of Soviet Socialist Republics and the United States of America—and two WHO staff members took part in the symposium.

**Inter-regional 0396 Travelling Seminar on the Control of Environmental Sanitation, Union of Soviet Socialist Republics (9 June - 1 July 1966) UNDP/TA**

The seminar was similar to the one held in the Union of Soviet Socialist Republics in September 1964 (project Inter-regional 272), but was conducted in French and Russian. The aim was to study the role of the central and state ministries of health and of related scientific institutes in the establishment of standards for environmental sanitation, the role of the sanitary and epidemiological services in the control and supervision of environmental sanitation work carried out by various government agencies, and the work in air pollution control, water supply, sewage and excreta disposal, refuse collection and disposal, food hygiene, soil sanitation, etc. There were sixteen participants from Algeria, Brazil, Burundi, Cambodia, Chad, Dahomey, Iran, Laos, Madagascar, Mauritius, Mexico, Niger, Syria, Tunisia and Yugoslavia. Lectures were given by Soviet sanitary physicians, engineering experts and WHO staff, and field visits were made to observe sanitation practices at markets, dairy plants, refuse disposal sites, housing and city planning schemes, and water and sewage treatment plants.

WHO provided the cost of attendance of the participants and supplies and equipment.

**Inter-regional 0424 Cholera Control Film (1966) R**

A film on cholera control, for the training of medical and paramedical personnel, with soundtracks in English and French, was commissioned by WHO for the use of inter-regional and regional cholera teams in countries affected or threatened by cholera and at training courses and seminars, as well as by national health authorities and universities on request.

**Inter-regional 0445 Cholera Control Team (1966) UNDP/TA**

A team, similar to that described under Inter-regional 0276 above, to assist countries in developing and improving their programmes for the control of cholera; to assist, when required, in dealing with cholera epidemics; and to advise on epidemiological, laboratory and clinical aspects of control and treatment.

**Inter-regional 0446 Seminars and Courses on Cholera Control**

- **Seminars and Courses on Cholera Control, Alexandra (5 - 7 April 1966)**

  The purpose of the seminar, which was held at the WHO Regional Office for the Eastern Mediterranean, was to enable senior health administrators responsible for cholera control programmes in countries of the Mediterranean basin to discuss concerted national and international measures for preventing the spread of cholera in the area. The programme consisted of lectures, discussions and films. There were twenty participants from Algeria, Bulgaria, Greece, Iran, Iraq, Kuwait, Lebanon, Malta, Somalia, Sudan, Syria, Tunisia, Turkey, United Arab Republic, Yemen and Yugoslavia.

  WHO provided three consultants and the cost of attendance of the participants. Six WHO staff members assisted with the seminar.

- **Course on Cholera Control, Hyderabad, India (18 - 30 July 1966)**

  The course, which was held at the Infectious Diseases Hospital, Hyderabad, provided training in cholera control for medical officers from countries of the South-East Asia Region. The programme consisted of lectures on the epidemiology, treatment and control of cholera, laboratory work and field visits. There were twenty-eight participants from Burma, Ceylon, India, Indonesia, Nepal and Thailand.

  WHO provided a consultant and the cost of attendance of the participants, and three WHO staff members assisted with the course.

- **Seminars and Courses on Cholera Control, Manila (29 Aug. - 9 Sept. 1966)**

  The purpose of the seminar was to give refresher training in cholera control to epidemiologists, bacteriologists and clinicians from countries of the Western Pacific Region, in order to enable them to establish national control programmes in their own countries, if necessary. The seminar was attended by twenty-six participants from China (Taiwan), Hong Kong, Japan, Laos, Malaysia, Papua and New Guinea, Philippines, Republic of Korea, and Republic of Viet-Nam.

  WHO provided five consultants, fifteen temporary advisers and the cost of attendance of the participants. Several WHO staff members assisted with the seminar.

- **Course on Cholera Control, Beirut (2 - 15 Nov. 1966)**

  The purpose of the course, which was held at the Central Public Health Laboratory, Beirut, in French, was to provide training in cholera control for medical officers from countries affected or threatened by cholera. There were nine participants from Algeria, Iran, Laos, Lebanon, Morocco, Republic of Viet-Nam, and Syria.

  WHO provided two temporary advisers, the cost of attendance of the participants and supplies and equipment. Five WHO staff members assisted with the course.
Annex 1

MEMBERS AND ASSOCIATE MEMBERS OF THE WORLD HEALTH ORGANIZATION

at 31 December 1966

At 31 December 1966 the World Health Organization had 124 Member States and three 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.

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<td>Switzerland</td>
<td>26 March 1947</td>
</tr>
<tr>
<td>Syria</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 Republic *</td>
<td>16 December 1947</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>Zambia</td>
<td>2 February 1965</td>
</tr>
</tbody>
</table>

Associate Members

<table>
<thead>
<tr>
<th>Member State</th>
<th>Date of Admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mauritius</td>
<td>9 May 1963</td>
</tr>
<tr>
<td>Qatar</td>
<td>5 March 1964</td>
</tr>
<tr>
<td>Southern Rhodes</td>
<td>16 May 1950</td>
</tr>
</tbody>
</table>

* Member States that have acceded to the Convention on the Privileges and Immunities of the Specialized Agencies and its Annex VII.
## Annex 2

### MEMBERSHIP OF THE EXECUTIVE BOARD

#### 1. Thirty-seventh Session (Geneva, 18-28 January 1966)

<table>
<thead>
<tr>
<th>Designated by</th>
<th>Designated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libya</td>
<td>Professor D. González Torres</td>
</tr>
<tr>
<td>Kuwait</td>
<td>Dr J.C. Happi, Rapporteur</td>
</tr>
<tr>
<td>Iran</td>
<td>Dr A. A. Al-Huraibi</td>
</tr>
<tr>
<td>Morocco</td>
<td>Dr O. Keita, Vice-Chairman</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>Dr D. P. Kennedy</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Professor P. Macúch</td>
</tr>
<tr>
<td>Mali</td>
<td>Dr P. D. Martínez</td>
</tr>
<tr>
<td>Norway</td>
<td>Professor P. Muntendam</td>
</tr>
<tr>
<td>Turkey</td>
<td>Dr C. Quiros, Rapporteur</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>Dr K. N. Rao</td>
</tr>
<tr>
<td></td>
<td>Dr Hurustiati Subandrio, Vice-Chairman</td>
</tr>
<tr>
<td></td>
<td>Dr T. Viana</td>
</tr>
<tr>
<td></td>
<td>Dr J. Watt</td>
</tr>
</tbody>
</table>


The Nineteenth World Health Assembly in resolution WHA19.14 elected Argentina, Burma, Dahomey, France, Nigeria, Philippines, Somalia and the Union of Soviet Socialist Republics to designate persons to serve on the Board in place of the retiring members—designated by Brazil, Indonesia, Iran, Mali, Netherlands, New Zealand, Norway and Sierra Leone. This resulted in the following composition of the Board at the thirty-eighth session:

<table>
<thead>
<tr>
<th>Designated by</th>
<th>Designated by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Libya</td>
<td>Mr A. F. Abrar</td>
</tr>
<tr>
<td>Somalia</td>
<td>Somalia</td>
</tr>
<tr>
<td>Kuwait</td>
<td>Kuwait</td>
</tr>
<tr>
<td>France</td>
<td>France</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippines</td>
</tr>
<tr>
<td>Dahomey</td>
<td>Dahomey</td>
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<tr>
<td>Morocco</td>
<td>Morocco</td>
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<tr>
<td>Malaysia</td>
<td>Malaysia</td>
</tr>
<tr>
<td>Turkey</td>
<td>Turkey</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>Yugoslavia</td>
</tr>
<tr>
<td>United Kingdom of Great Britain and Northern Ireland</td>
<td>United Kingdom of Great Britain and Northern Ireland</td>
</tr>
<tr>
<td>Paraguay</td>
<td>Paraguay</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Cameroon</td>
</tr>
<tr>
<td>Yemen</td>
<td>Yemen</td>
</tr>
<tr>
<td>Guinea</td>
<td>Guinea</td>
</tr>
<tr>
<td>Burma</td>
<td>Burma</td>
</tr>
<tr>
<td>Argentina</td>
<td>Argentina</td>
</tr>
<tr>
<td>Nigeria</td>
<td>Nigeria</td>
</tr>
<tr>
<td>Peru</td>
<td>Peru</td>
</tr>
<tr>
<td>India</td>
<td>India</td>
</tr>
<tr>
<td>Union of Soviet Socialist Republics</td>
<td>Union of Soviet Socialist Republics</td>
</tr>
<tr>
<td>United States of America</td>
<td>United States of America</td>
</tr>
</tbody>
</table>

1 Absent from the session.
2 Dr A. R. Al-Awadi, alternate, attended the session.
3 Dr A. Diba, alternate, attended the session.
4 Dr L. W. Jayesuria, alternate, attended the session.
5 Dr T. Alan, alternate, attended the session.
6 Mr M. Lennuyeux-Comnée, alternate, attended the session.
7 Dr T. J. B. Geffen, alternate, attended the session.
8 Dr D. F. Lofruscio, alternate, attended the session.
9 Dr A. O. Austen Peters, alternate, attended the session.
Annex 3

ORGANIZATIONAL MEETINGS IN 1966

Executive Board, thirty-seventh session: Standing Committee on Administration and Finance
Executive Board: Standing Committee on Headquarters Accommodation, twelfth session
Executive Board, thirty-seventh session
Executive Board, thirty-seventh session: Darling Foundation Committee
Executive Board, thirty-seventh session: Léon Bernard Foundation Committee
Executive Board, thirty-seventh session: Standing Committee on Non-governmental Organizations
Executive Board: Ad Hoc Committee
Nineteenth World Health Assembly
Executive Board: Standing Committee on Headquarters Accommodation, thirteenth session
Executive Board, thirty-eighth session
Regional Committee for the Eastern Mediterranean, sixteenth session:
Sub-Committee B
Sub-Committee A
Regional Committee for Europe, sixteenth session
Regional Committee for Africa, sixteenth session
Regional Committee for the Western Pacific, seventeenth session
Regional Committee for the Americas, eighteenth session /XVII Pan American Sanitary Conference
Regional Committee for South-East Asia, nineteenth session

Annex 4

EXPERT ADVISORY PANELS AND COMMITTEES

1. EXPERT ADVISORY PANELS

The expert advisory panels in existence at 31 December 1966 were on the following subjects:

Air pollution
Antibiotics
Biological standardization
Biology of human reproduction
Brucellosis
Cancer
Cardiovascular diseases
Cholera
Chronic degenerative diseases
Dental health
Drug dependence
Enteric diseases
Environnemental health
Food additives
Health education
Health laboratory services
Health of seafarers
Health statistics
Human genetics
Immunology
Insecticides
International pharmacopoeia and pharmacaceutical preparations
International quarantine
Leprosy
Malaria
Maternal and child health
Medical research ¹
Mental health
Nursing
Nutrition
Occupational health
Organization of medical care
Parasitic diseases
Plague
Professional and technical education of medical and auxiliary personnel
Public health administration
Rabies
Radiation
Rehabilitation
Trachoma
Tuberculosis
Venerable infections and treponematoses
Virus diseases
Zoonoses

¹ See resolution WHA12.17.
2. EXPERT COMMITTEES

The membership of the expert committees that met in 1966 was as follows:

**Expert Committee on Nursing**

*Geneva, 26 April - 2 May*

Dr H. R. Acuña, Chairman, Science Department, College of Arts and Sciences, University of the Americas, Mexico City, Mexico

Miss H. Bachelot, Director, International School of Advanced Nursing Education, Lyons, France

Mrs J. Izycka, Vice-Director, Department of Medium-Grade Medical Personnel, Ministry of Health and Social Welfare, Warsaw, Poland

Miss D. A. N. Kisseih, Chief Nursing Officer, Ministry of Health, Accra, Ghana

Miss A. Riahi, Nursing Education Consultant, Nursing Division, Ministry of Health, Teheran, Iran

Miss D. Schwartz, Associate Director, Public Health Nursing, Cornell University; New York Hospital School of Nursing, New York, United States of America

Miss H. M. Simpson, Nursing Officer (Research), Ministry of Health, London, England

Miss J. V. Sotejo, Dean, College of Nursing, University of the Philippines, Quezon City, Philippines

**Expert Committee on the Prevention of Rheumatic Fever**

*Geneva, 26 April - 2 May*

Dr E. G. L. Bywaters, Professor of Rheumatology, Postgraduate Medical School, University of London; Hon. Director, Medical Research Council; Rheumatism Research Unit, Canadian Red Cross Memorial Hospital, Taplow, Maidenhead, England

Dr A. M. Davies, Professor and Head, Department of Medical Ecology, The Hebrew University, Hadassah Medical School, Jerusalem, Israel

Dr A. O. Lucas, Professor and Head, Department of Preventive and Social Medicine, University of Ibadan, Nigeria

Dr F. Mendoza, Assistant Director, National Institute of Cardiology, Mexico City, Mexico

Dr P. Mozziconacci, Professor and Director, Service for Research on Rheumatic Diseases, International Children’s Centre, Paris, France

Dr A. I. Nesterov, Professor of Rheumatology; Director, Research Institute for Rheumatism, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

Dr S. B. Roy, Professor of Cardiology, All-India Institute of Medical Sciences, New Delhi, India

**Expert Committee on Dependence-Producing Drugs**

*Geneva, 4-9 July*

Dr N. B. Eddy, Consultant on Narcotics, National Institutes of Health, Bethesda, Md., United States of America

Dr L. Goldel, Professor of Research on Alcohol and Analgesics, Karolinska Institute, Stockholm, Sweden

Dr M. Granier-Doyeux, Professor of Pharmacology and Toxicology, Faculty of Medicine, Central University of Venezuela, Caracas, Venezuela

Dr E. Hosoya, Professor of Pharmacology, Keio Gijuku University School of Medicine, Tokyo, Japan

Dr P. Kielholz, Professor of Psychiatry, University of Basle, Switzerland

Dr A. D. Macdonald, Professor Emeritus of Pharmacology, University of Manchester, England

Dr V. V. Vasil’eva, Professor of Pharmacology, Second Moscow Institute of Medicine, Union of Soviet Socialist Republics

Dr A. Wikler, Professor of Psychiatry and Pharmacology, University of Kentucky Medical Center, Lexington, Ky., United States of America

**Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (The Use of Health Service Facilities in Medical Education)**

*Geneva, 26 July - 1 August*

Dr C. Fraser Brockington, Professor of Social and Preventive Medicine, University of Manchester, England

Dr F. R. Hassan, Under-Secretary of State, Ministry of Health, Cairo, United Arab Republic

Dr J. F. Isakov, Professor of Surgery, Head of the Central Board for Educational Establishments, Ministry of Health of the USSR, Moscow, Union of Soviet Socialist Republics

Dr B. G. Prasad, Professor and Head of the Department of Social and Preventive Medicine, King George’s Medical College, University of Lucknow, India

Dr J. Sénécal, Professor of Paediatrics, Faculty of Medicine, University of Rennes, France

Dr C. E. Taylor, Professor and Director, Division of International Health, Johns Hopkins University School of Hygiene and Public Health, Baltimore, Md., United States of America

Dr H. Orishojolomi Thomas, Dean, Professor and Head of Surgery, Medical School, University of Lagos, Nigeria

Dr G. Velázquez Palau, Dean, Faculty of Medicine, University of Valle, Cali, Colombia


ANNEX 4

Expert Committee on Appraisal of the Hygienic Quality of Housing and its Environment

*Geneva, 30 August - 5 September*

Mr G. Blachère, Ingénieur en chef des Ponts et Chaussées; Director, Scientific and Technical Building Centre, Paris, France

Mr B. Givoni, Head, Department of Building Climatology, Building Research Station, Technion, Haifa, Israel

Professor M. S. Goromosov, Deputy Director, Sysin Institute of General and Municipal Hygiene, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

Mr E. Larkey, Co-ordinator of Industrial Research; Director, Institute of Standards, Ghana Academy of Sciences, Accra, Ghana

Mr C. B. Patel, Director, National Buildings Organization, Ministry of Works, Housing and Urban Development, New Delhi, India

Mr C. L. Senn, Los Angeles County Health Department and University of California, Los Angeles, Calif., United States of America

Mr W. M. Woodhouse, Head, Overseas Division, Building Research Station, Garston, England

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Expert Committee on Specifications for Pharmaceutical Preparations: Sub-Committee on Non-Proprietary Names

*Geneva, 6-9 September*

Mr T. C. Denston, Secretary, British Pharmacopoeia Commission, London, England

Dr T. Itai, Director, Osaka Branch Laboratory, National Institute of Hygienic Sciences, Osaka, Japan

Dr J. B. Jerome, Assistant Secretary, Council on Drugs, American Medical Association, Chicago, Ill., United States of America

Dr P. Lechat, Professeur agrégé, Pharmacological Institute, Faculty of Medicine, University of Paris, France

Dr K. Schriever, Institute of Pharmacy and Food Chemistry, University of Munich, Federal Republic of Germany

Professor V. V. Zakusov, Director, Institute of Pharmacology and Chemotherapy, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

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Expert Committee on Cholera

*Manila, 13-19 September*

Dr J. C. Azurin, Director, Bureau of Quarantine, Department of Health, Manila, Philippines

Dr A. S. Benenson, 1070 Park Avenue, New York, United States of America

Dr W. Burrows, Department of Microbiology, University of Chicago, Ill., United States of America

Dr R. N. Chaudhuri, Emeritus Scientist, School of Tropical Medicine, Calcutta, India

Dr J. J. Dizon, Chief, Disease Intelligence Centre, Department of Health, Manila, Philippines

Dr P. H. Teng, Director of Medical and Health Services, Hong Kong

---

Dr D. Ushiba, Department of Microbiology, Keio Gijuku University School of Medicine, Tokyo, Japan

---

Expert Committee on Malaria

*Geneva, 13-19 September*

Dr O. Adeniyi-Jones, Medical Officer of Health, Lagos City Council, Public Health Department, Lagos, Nigeria

Dr J. K. Amorin, Director of Public Health, Lomé, Togo

Professor N. N. Dukhanina, Chief of Section of Malaria Prophylaxis in the USSR, Institute of Medical Parasitology and Tropical Medicine, Moscow, Union of Soviet Socialist Republics

Dr A. Gabaldón, Consultant, Bureau of Malariology and Environmental Sanitation, Ministry of Health and Social Welfare, Caracas, Venezuela

Dr L. Howard, Deputy Director, Health Service, Office of Technical Co-operation and Research, Agency for International Development, Department of State, Washington, D.C., United States of America

Professor G. Macdonald, Director, Ross Institute of Tropical Hygiene, London School of Hygiene and Tropical Medicine, London, England

Dr E. J. Pampana, Florence, Italy (former Director of WHO Malaria Eradication Division)

Dr A. P. Ray, Director, National Malaria Eradication Programme, National Institute of Communicable Diseases, Delhi, India

---

Expert Committee on Filariasis (*Wuchereria* and *Brugia* Infections)

*Geneva, 19-24 September*

Dr P. C. Basu, Deputy Director, National Institute of Communicable Diseases, Delhi, India

Dr F. Hawking, Head of Parasitology Division, National Institute for Medical Research, London, England

Professor L. A. Jachowski, Jr, Assistant Head, Department of Zoology, University of Maryland, Md., United States of America

Dr J. W. Kibukamusoke, Consultant Physician, Mulago Hospital, Kampala, Uganda

Dr J. Mouchet, Office of Overseas Scientific and Technical Research, Bondy (Seine St-Denis), France

Dr G. S. Nelson, Professor of Helminthology, London School of Hygiene and Tropical Medicine, London, England

Professor M. Sasa, Chief, Department of Parasitology, Institute of Infectious Diseases, University of Tokyo, Japan

Dr P. E. Thompson, Director of Parasitology, Department of Experimental Therapeutics, Parke, Davis and Company Research Laboratories, Ann Arbor, Mich., United States of America

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Expert Committee on Insecticides (Safe Use of Pesticides in Public Health)

*Geneva, 21-27 September*

Dr A. Arman, District Health Officer, Beersheba, Israel

Dr J. M. Barnes, Director, Toxicology Research Unit, Medical Research Council Laboratories, Carshalton, England
Dr J. F. Copplestone, Assistant Director (Occupational Health),
Division of Public Health, Department of Health, Wellington,
New Zealand

Dr M. K. Q. Hashmi, Project Director, Malaria Eradication
Programme, Ministry of Health, Labour and Social Welfare,
Karachi, Pakistan

Dr W. J. Hayes, jr, Chief Toxicologist, Office of Pesticides,
Communicable Disease Center, United States Public Health
Service, Atlanta, Ga., United States of America

Professor D. Henschler, Institute of Pharmacology and Toxico-
logy, University of Würzburg, Federal Republic of Germany

Professor B. Holmstedt, Department of Toxicology, Swedish
Medical Research Council, Karolinska Institute, Stockholm,
Sweden

Dr H. F. Schoof, Assistant Director, Biology/Chemistry Section,
Communicable Disease Center, United States Public Health
Service, Savannah, Ga., United States of America

Dr M. Vandekar, Chief, Toxicology Department, Institute for
Medical Research, Yugoslav Academy of Sciences and Arts,
Zagreb, Yugoslavia

Expert Committee on National Health Planning in Developing
Countries

Geneva, 27 September - 3 October

Professor B. Abel-Smith, Professor of Social Administration,
London School of Economics and Political Science, London,
England

Dr T. Bana, Director-General of Public Health, Ministry of
Health, Niamey, Niger

Dr N. Espinosa, Chief, Technical Department, National Health
Service, Santiago, Chile

Dr F. R. Hassan, Under-Secretary of State, Ministry of Health,
Cairo, United Arab Republic

Professor H. E. Hilleboe, Professor of Public Health Practice,
Columbia University, New York, United States of America

Dr N. Jungalwalla, Additional Director-General of Health
Services, Ministry of Health, New Delhi, India

Dr G. Popov, Head of Public Health Planning Department,
Ministry of Health of the USSR, Moscow, Union of Soviet
Socialist Republics

Expert Committee on Teaching of Immunology in the Medical
Curriculum

Geneva, 3-8 October

Dr A. D. Ado, Chairman, Department of Pathological Physi-
ology, Second Moscow Institute of Medicine, Union of Soviet
Socialist Republics

Dr O. Bier, Professor of Microbiology, School of Medicine,
Department of Microbiology and Immunology, São Paulo,
Brazil

Professor S. Boyd, Research School of Social Sciences,
Australian National University, Canberra, Australia

Professor R. R. A. Coombs, Department of Pathology, Uni-
versity of Cambridge, England

Dr J. J. van Loghem, Director, Central Laboratory of the
Netherlands Red Cross Blood Transfusion Service, Amster-
dam, Netherlands

Professor R. J. Pautrizel, Immunology and Parasitic Biology
Laboratory, Faculty of Medicine and Pharmacy, University
of Bordeaux, France

Professor B. H. Waksman, Department of Microbiology, Yale
University, New Haven, Conn., United States of America

Professor R. G. White, Department of Bacteriology, Western
Infirmary, Glasgow, Scotland

Expert Committee on Mental Health (Services for the Prevention
and Treatment of Dependence on Alcohol and Other Drugs)

Geneva, 4-10 October

Dr K. E. Bruun, Associate Professor of Sociology; General
Secretary, Finnish Foundation for Alcohol Studies, Helsinki,
Finland

Dr D. C. Cameron, Superintendent, St Elizabeth's Hospital,
Washington, D.C., United States of America

Dr K. Evang, Director-General of Health Services, Royal
Norwegian Ministry of Social Affairs, Oslo, Norway

Dr P. Fouquet, Psychiatrist, Consultant to the High Commission
for Study of and Information on Alcoholism, Paris, France

Dr J. Horwitz, Chief of Psychiatric Services, Psychiatric Hospital,
Santiago, Chile

Dr M. Kato, Chief, Division of Adult Mental Health, and
Deputy Director, National Institute of Mental Health,
Konodai, Ichikawa-City, Chiba-Ken, Japan

Dr T. Lambo, Professor of Psychiatry, University of Ibadan,
Nigeria 1

Dr Z. N. Serebrjakova, Chief Specialist for Neuropsychiatry,
Central Department of Preventive and Curative Services,
Ministry of Health of the USSR, Moscow, Union of Soviet
Socialist Republics

Expert Committee on Health Statistics (Epidemiological
Methods in the Study of Chronic Diseases)

Geneva, 15-21 November

Dr R. M. Acheson, Professor of Epidemiology and Medicine,
Yale University School of Medicine, New Haven, Conn.,
United States of America

Dr A. V. Čaklin, Deputy Director and Chief, Epidemiological
Department, Institute of Experimental and Clinical Oncology,
Academy of Medical Sciences of the USSR, Moscow, Union of
Soviet Socialist Republics

Dr B. MacMahon, Professor of Epidemiology, School of Public
Health, Harvard University, Boston, Mass., United States
of America

Dr L. M.-F. Massé, Professor of Health Statistics, National
School of Public Health, Rennes, France

Professor J. N. Morris, Director, Medical Research Council's
Social Medicine Research Unit, London Hospital, London,
England

Dr I. Shigematsu, Chief, Department of Epidemiology, Institute
of Public Health, Ministry of Health and Welfare, Tokyo,
Japan

Dr K. B. Westlund, Director, Life Insurance Companies' In-
stitute for Medical Statistics, Oslo, Norway

Dr A. Žáček, Professor of Social Medicine, Medical Faculty,
University of Brno, Czechoslovakia

1 Unable to attend.
Expert Committee on Biological Standardization

Geneva, 28 November - 3 December
Dr D. R. Bangham, Director, Department of Biological Standards, National Institute for Medical Research, London, England
Dr L. Greenberg, Chief, Biologies Control Laboratory, Department of National Health and Welfare, Ottawa, Ont., Canada.
Dr E. N. Melikova, Chief, Bacterial Vaccines Unit, Tarasevié State Institute for the Control of Medico-biological Preparations, Moscow, Union of Soviet Socialist Republics
Dr R. Murray, Director, Division of Biologics Standards, National Institutes of Health, Bethesda, Md., United States of America
Dr G. Penso, Chief, Microbiology Laboratory, Istituto Superiore di Sanitá, Rome, Italy
Dr J. D. van Ramshorst, Director, Department of Biological Standards, National Institute of Public Health, Utrecht, Netherlands
Dr M. Rouchdi, Director-General, Public Health Laboratories, Cairo, United Arab Republic
Dr J. B. Shrivastav, Director, National Institute of Communicable Diseases, Delhi, India
Professor R. Sohier, Director, Virology Section, National Public Health Laboratory, Faculty of Medicine, Lyons, France
Dr J. Spaun, Deputy Director, Department of Biological Standards, Statens Serum Institut, Copenhagen, Denmark
Dr W. W. Wright, Deputy Director, Division of Antibiotics and Insulin Certification, Food and Drug Administration, Washington, D.C., United States of America

Expert Committee on Bilharziasis (Epidemiology and Control)

Geneva, 12-17 December
Dr L. Brumpt, Professor of Tropical Diseases, Faculty of Medicine, University of Paris, France
Dr M. Farooq, former Senior Adviser, WHO-assisted Bilharziasis Control Pilot Project and Training Centre, Alexandria, United Arab Republic
Dr R. E. Kuntz, Chairman, Department of Parasitology, Southwest Foundation for Research and Education, Southwest Research Center, San Antonio, Tex., United States of America
Professor A. O. Lucas, Head, Department of Preventive and Social Medicine, University of Ibadan, Nigeria
Dr D. B. McMullen, Scientific Adviser, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington, D.C., United States of America
Mr G. Webbe, Scientific Staff, Farbenfabriken Bayer AG, Wuppertal-Elberfeld, Federal Republic of Germany

Professor T. H. Weller, Chairman, Department of Tropical Public Health, School of Public Health, Harvard University, Boston, Mass., United States of America
Dr W. H. Wright, former Chief, Laboratory of Parasitic Diseases, National Institutes of Health, Bethesda, Md., United States of America

Joint Committees

Joint ILO/WHO Committee on Occupational Health

Geneva, 29 August - 6 September
Dr R. Asturias Valenzuela, Chairman, American Regional Medico-social Committee, Guatemala City, Guatemala
Dr E. Ebellé, Chief Medical Inspector of Factories, Ministry of Labour, Yaoundé, Cameroon
Dr J. J. Gillon, General Medical Inspector of Labour and Manpower, Ministry of Social Affairs, Paris, France
Professor L. J. Goldwater, School of Public Health and Administrative Medicine, Columbia University, New York, United States of America
Professor L. I. Medved', Director, All-Union Institute of Hygiene and Toxicology of Pesticides, Polymers and Plastics, Kiev, Ukrainian Soviet Socialist Republic 1
Dr R. Murray, Medical Adviser, Trades Union Congress, London, England
Dr H. Oyanguren, Director, Institute of Occupational Health and Air Pollution Research, Santiago, Chile
Dr M. Rouhani, Medical Director, National Iranian Oil Company, Teheran, Iran
Dr G. O. Sofuluwe, Department of Community Health, University of Lagos Medical School, Nigeria
Dr P. V. Thacker, Senior Industrial Health Officer, Tata Services Limited, Bombay, India
Dr M. Yamaguchi, Director, National Institute of Industrial Health, Ministry of Labour, Kawasaki, Japan

Joint FAO/WHO Expert Committee on Food Additives (Specifications for Identity and Purity and Toxicological Evaluation of Some Emulsifiers and Stabilizers and of Certain Other Substances)

Geneva, 11-18 October
Dr J. D. Brandner, Atlas Chemical Industries Inc., Wilmington, Del., United States of America
Mr H. Cheftel, Director of Research Laboratory, J. J. Car naud et Forges de Basse-Indre, Boulogne-Billancourt, France
Dr G. Della Porta, Head, Section of Experimental Carcogenesis, National Institute for the Study and Treatment of Tumours, Milan, Italy
Dr O. G. Fitzhugh, Deputy Director, Division of Toxicological Evaluation, Food and Drug Administration, Department of Health, Education and Welfare, Washington, D.C., United States of America
Professor A. C. Frazer, Head, Department of Medical Biochemistry and Pharmacology, University of Birmingham, England
Mr B. E. Harper, Food Industries Ltd., Walton-on-Thames, England

1 Unable to attend.
Professor K. Lang, Director, Department of Physiological Chemistry, University of Mainz, Federal Republic of Germany

Mr M. F. Loucks, Products Standards Analytical Laboratory, Dow Chemical Company, Midland, Mich., United States of America

Dr W. A. Mannell, Head, Food Additives and Pesticides Section, Food and Drug Directorate, Ottawa, Ont., Canada

Professor A. A. Pokrovskij, Director, Institute of Nutrition, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

Dr J. F. Reith, Department of Food Chemistry and Toxicology, University of Utrecht, Netherlands

Professor S. W. Souci, Director, German Food Chemistry Research Institute, Munich, Federal Republic of Germany

Professor R. Truhaut, Director, Toxicological Research Centre, Faculty of Pharmacy, University of Paris, France

Professor E. J. Underwood, Director, Institute of Agriculture, University of Western Australia, Perth, Australia

Joint Meeting of the FAO Working Party and the WHO Expert Committee on Pesticide Residues

Geneva, 14-21 November

Dr W. F. Almeida, Director, Division of Microbiology and Hygiene, Biological Institute, São Paulo, Brazil

Dr V. Beneš, Head of Department of Toxicology, Institute of Hygiene, Prague, Czechoslovakia

Mr J. W. Cook, Deputy Director, Division of Food Chemistry, Food and Drug Administration, Department of Health, Education and Welfare, Washington, D.C., United States of America

Dr J. M. Coon, Head of Pharmacology Department, Jefferson Medical College, Philadelphia, Pa., United States of America


Dr R. Goulding, Ministry of Health, London, England

Dr H. Hurtig, Research Co-ordinator (Pesticides), Research Branch, Department of Agriculture, Ottawa, Ont., Canada

Mr H. Laudani, Director, Stored Product Insect Research and Development Laboratory, Agricultural Research Service, United States Department of Agriculture, Savannah, Ga., United States of America

Dr R. Sato, Professor of Pesticide Chemistry, University of Agriculture and Technology, Tokyo, Japan

Dr B. Terracini, Institute of Anatomy and Histological Pathology, University of Turin, Italy

Dr N. van Tiel, Director, Plant Protection Service, Ministry of Agriculture and Fisheries, Wageningen, Netherlands

Professor R. Truhaut, Director, Toxicological Research Centre, Faculty of Pharmacy, University of Paris, France

Joint WHO/FAO Expert Committee on Zoonoses

Geneva, 6-12 December

Professor B. Babudieri, Istituto Superiore di Sanità, Rome, Italy

Dr M. R. Dhanda, Director, Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh, India

Dr E. H. Kampelmacher, Head of the Zoonoses Laboratory, National Institute of Public Health, Utrecht, Netherlands

Dr R. M. Mendy, Director and Co-ordinator (Zoonoses), Office of Animal Health, Secretariat of State for Agriculture and Livestock, Buenos Aires, Argentina

Dr J. A. R. Miles, Professor of Microbiology, Medical School, University of Otago, Dunedin, New Zealand

Dr G. S. Nelson, Professor of Helminthology, Department of Parasitology, London School of Hygiene and Tropical Medicine, London, England

Dr A. Rafyi, Dean, Faculty of Veterinary Medicine, University of Teheran, Iran

Dr B. Rosický, Director, Institute of Parasitology, Czechoslovak Academy of Sciences, Prague, Czechoslovakia

Dr C. W. Schwabe, Professor of Epidemiology, Department of Epidemiology and Preventive Medicine, School of Veterinary Medicine, University of California, Davis, Calif., United States of America

Professor E. J. L. Soulsby, Chairman, Department of Veterinary Biology, School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., United States of America

Dr J. H. Steele, Chief, Veterinary Public Health, Communicable Disease Center, United States Public Health Service, Department of Health, Education and Welfare, Atlanta, Ga., United States of America

Joint FAO/WHO Expert Committee on Nutrition

Rome, 12-20 December

Dr W. J. Darby, Professor of Nutrition; Director, Division of Nutrition, and Chairman, Department of Biochemistry, School of Medicine, Vanderbilt University, Nashville, Tenn., United States of America

Professor M. J. L. Dols, Adviser to the Ministry of Agriculture and Fisheries, The Hague, Netherlands

Dr A. François, Head, Department of Nutrition, National Centre for Zootchnical Research, Jouy-en-Josas (Yvelines), France

Professor Y. R. Gandra, Head, Department of Nutrition, School of Public Health University of São Paulo, Brazil

Professor B. S. Platt, Director, Human Nutrition Research Unit, London, England

Professor A. A. Pokrovskij, Director, Institute of Nutrition, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

Dr V. Ramalingaswami, Professor of Pathology, All-India Institute of Medical Sciences, New Delhi, India

Professor E. J. Underwood, Director, Institute of Agriculture, University of Western Australia, Perth, Australia

Professor B. Vahlquist, Director, Department of Paediatrics, University Hospital, Uppsala, Sweden

Professor G. Zimmermann, Head, Department of Food and Biotechnology, Technion, Israel Institute of Technology, Haifa, Israel
3. ADVISORY COMMITTEE ON MEDICAL RESEARCH

The Advisory Committee on Medical Research was established pursuant to resolution WHA12.17.

Eighth Session, Geneva, 20-24 June
Dr O. Bier, Professor of Microbiology, School of Medicine, Department of Microbiology and Immunology, São Paulo, Brazil
Professor J. T. Costero, Director, Department of Pathological Anatomy, National Institute of Cardiology, Mexico City, Mexico
Dr R. Courrier, Professor at the Collège de France; Permanent Secretary, Academy of Sciences; Member of the Academy of Medicine, Paris, France
Dr W. R. S. Doll, Director, Statistical Research Unit, Medical Research Council, London, England
Dr J. C. Edozien, Professor and Head of Department of Chemical Pathology, University of Ibadan, Nigeria
Professor M. Florkin, Biochemistry Laboratory, University of Liège, Belgium
Dr B. N. Halpern, Professor at the Collège de France; Member of the Academy of Sciences, Paris, France
Dr N. K. Jerne, Director, Paul-Ehrlich Institute, Frankfurt-am-Main, Federal Republic of Germany
Sir Aubrey J. Lewis, Professor of Psychiatry, University of London Institute of Psychiatry, London, England
Dr W. McDermott, Professor of Public Health and Preventive Medicine, Cornell University Medical College, New York, United States of America
Professor S. R. Mardashev, Vice-President, Department of Biological and Organic Chemistry, First Moscow Medical Institute, Union of Soviet Socialist Republics
Dr C. Puranananda, Director, Queen Saovabha Memorial Institute, Bangkok, Thailand
Professor B. Rexed, Science Advisory Council, Stockholm, Sweden
Professor A. Vartiainen, Department of Pharmacology, University of Helsinki, Finland
Dr A. Wolman, Emeritus Professor of Sanitary Engineering and Water Resources, Johns Hopkins University, Baltimore, Md., United States of America
Professor V. M. Ždanov, Director, Ivanovskij Institute of Virology, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

Annex 5

SCIENTIFIC GROUP MEETINGS IN 1966

Scientific Group on Basic and Clinical Aspects of Intra-uterine Devices
Scientific Group on Standardization of Procedures for Chromosome Studies in Abortion
Scientific Group on Principles for Pre-clinical Testing of Drug Safety
Scientific Group on Immunotherapy of Cancer
Scientific Group on the Ovulatory Cycle
Scientific Group on the Diffuse Connective Tissue Diseases
Scientific Group on Procedures for Investigating Intentional and Unintentional Food Additives in order to Establish their Safety to the Consumer
Scientific Group on Arboviruses and Human Disease
Scientific Group on Virus Diseases
Scientific Group on Mosquito Ecology
Scientific Group on Testing of Drugs for Teratogenicity
Scientific Group on Research in Psychopharmacology
Scientific Group on Standardization of Procedures for Studies of Glucose-6-phosphate dehydrogenase Deficiency
Scientific Group on Advanced Treatment of Wastes

Geneva, 7-11 February
Geneva, 21-26 February
Geneva, 21-26 March
Geneva, 30 May - 4 June
Geneva, 31 May - 6 June
Geneva, 27 June - 2 July
Geneva, 12-18 July
Geneva, 26 September - 1 October
Geneva, 5-12 October
Geneva, 31 October - 3 November
Geneva, 14-19 November
Geneva, 5-10 December
Geneva, 5-10 December
Geneva, 6-12 December

1 Scientific group reports published in 1966 are listed on page 77 and in Annex 15.
Annex 6

NON-GOVERNMENTAL ORGANIZATIONS IN OFFICIAL RELATIONS WITH WHO

at 31 December 1966

Biometric Society
Central Council for Health Education
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 Child Psychiatry and Allied Professions
International Association of Logopedics and Phoniatrics
International Association of Microbiological Societies
International Association for Prevention of Blindness
International Astronautical Federation
International Brain Research Organization
International Commission on Radiological Protection
International Commission on Radiation Units and Measurements
International Committee of Catholic Nurses
International Committee of the Red Cross
International Confederation of Midwives
International Conference of Social Work
International Council on Jewish Social and Welfare Services
International Council of Nurses
International Council of Scientific Unions
International Council of Societies of Pathology
International Dental Federation
International Diabetes Federation
International Epidemiological Association
International Federation of Gynecology and Obstetrics
International Federation for Housing and Planning
International Federation for Medical and Biological Engineering
International Federation of Sports Medicine
International Federation of Surgical Colleges
International Fertility Association
International Hospital Federation
International Hydatidological Association
International League of Dermatological Societies
International League against Rheumatism
International Leprosy Association
International Organization against Trachoma
International Paediatric Association
International Pharmaceutical Federation
International Planned Parenthood Federation
International Society of Blood Transfusion
International Society of Cardiology
International Society for Criminology
International Society for Rehabilitation of the Disabled
International Union of Architects
International Union against Cancer
International Union for Child Welfare
International Union for Health Education
International Union of Local Authorities
International Union of Pure and Applied Chemistry
International Union against Tuberculosis
International Union against the Venereal Diseases and the Treponematoses
International Water Supply Association
League of Red Cross Societies
Medical Women’s International Association
Permanent Commission and International Association on Occupational Health
World Confederation for Physical Therapy
World Federation of the Deaf
World Federation for Mental Health
World Federation of Neurology
World Federation of Occupational Therapists
World Federation of Societies of Anaesthesiologists
World Federation of United Nations Associations
World Medical Association
World Psychiatric Association
World Union OSE
World Veterans Federation
World Veterinary Association
Annex 7

REGULAR BUDGET FOR 1966

<table>
<thead>
<tr>
<th>Appropriation section</th>
<th>Purpose of appropriation</th>
<th>Original amount voted ¹</th>
<th>Transfers concurred in by the Executive Board ²</th>
<th>Supplementary estimates ³</th>
<th>Revised appropriations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>US $</td>
<td>US $</td>
<td>US $</td>
<td>US $</td>
</tr>
<tr>
<td><strong>PART I: ORGANIZATIONAL MEETINGS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. World Health Assembly</td>
<td></td>
<td>372 200</td>
<td>-</td>
<td>-</td>
<td>372 200</td>
</tr>
<tr>
<td>2. Executive Board and its Committees</td>
<td></td>
<td>191 300</td>
<td>-</td>
<td>-</td>
<td>191 300</td>
</tr>
<tr>
<td>3. Regional Committees</td>
<td></td>
<td>110 700</td>
<td>-</td>
<td>-</td>
<td>110 700</td>
</tr>
<tr>
<td><strong>Total - Part I</strong></td>
<td></td>
<td>674 200</td>
<td>-</td>
<td>-</td>
<td>674 200</td>
</tr>
<tr>
<td><strong>PART II: OPERATING PROGRAMME</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Programme Activities</td>
<td></td>
<td>25 898 909</td>
<td>(71 064)</td>
<td>2 156 260</td>
<td>27 984 105</td>
</tr>
<tr>
<td>5. Regional Offices</td>
<td></td>
<td>3 147 385</td>
<td>55 670</td>
<td>234 382</td>
<td>3 437 437</td>
</tr>
<tr>
<td>6. Expert Committees</td>
<td></td>
<td>261 100</td>
<td>-</td>
<td>-</td>
<td>261 100</td>
</tr>
<tr>
<td>7. Other Statutory Staff Costs</td>
<td></td>
<td>8 814 490</td>
<td>15 394</td>
<td>(794 350)</td>
<td>8 035 534</td>
</tr>
<tr>
<td><strong>Total - Part II</strong></td>
<td></td>
<td>38 121 884</td>
<td>-</td>
<td>1 596 292</td>
<td>39 718 176</td>
</tr>
<tr>
<td><strong>PART III: ADMINISTRATIVE SERVICES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Administrative Services</td>
<td></td>
<td>2 381 167</td>
<td>(11 900)</td>
<td>192 374</td>
<td>2 561 641</td>
</tr>
<tr>
<td>9. Other Statutory Staff Costs</td>
<td></td>
<td>764 749</td>
<td>11 900</td>
<td>(98 866)</td>
<td>677 783</td>
</tr>
<tr>
<td><strong>Total - Part III</strong></td>
<td></td>
<td>3 145 916</td>
<td>-</td>
<td>93 508</td>
<td>3 239 424</td>
</tr>
<tr>
<td><strong>PART IV: OTHER PURPOSES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Headquarters Building Fund</td>
<td></td>
<td>500 000</td>
<td>-</td>
<td>-</td>
<td>500 000</td>
</tr>
<tr>
<td>11. African Regional Office: Staff Housing</td>
<td></td>
<td>-</td>
<td>-</td>
<td>250 000</td>
<td>250 000</td>
</tr>
<tr>
<td>12. Revolving Fund for Teaching and Laboratory Equipment</td>
<td></td>
<td>-</td>
<td>-</td>
<td>100 000</td>
<td>100 000</td>
</tr>
<tr>
<td><strong>Total - Part IV</strong></td>
<td></td>
<td>500 000</td>
<td>-</td>
<td>350 000</td>
<td>850 000</td>
</tr>
<tr>
<td><strong>Sub-Total - Parts I, II, III and IV</strong></td>
<td></td>
<td>42 442 000</td>
<td>-</td>
<td>2 039 800</td>
<td>44 481 800</td>
</tr>
<tr>
<td><strong>PART V: RESERVE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Undistributed Reserve</td>
<td></td>
<td>2 615 590</td>
<td>-</td>
<td>-</td>
<td>2 615 590</td>
</tr>
<tr>
<td><strong>Total - Part V</strong></td>
<td></td>
<td>2 615 590</td>
<td>-</td>
<td>-</td>
<td>2 615 590</td>
</tr>
<tr>
<td><strong>TOTAL - ALL PARTS</strong></td>
<td></td>
<td>45 057 590</td>
<td>-</td>
<td>2 039 800</td>
<td>47 097 390</td>
</tr>
</tbody>
</table>

¹ Resolution WHA18.35.
² Resolution EB37.R12.
³ Resolution WHA19.8.
### Annex 8
### NUMBERS AND DISTRIBUTION OF THE STAFF
#### at 30 November 1965 and 30 November 1966

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Staff as at 30 November 1965</th>
<th>Staff as at 30 November 1966</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Regular Budget</td>
</tr>
<tr>
<td>Headquarters ²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>381</td>
<td>808</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td></td>
<td>841</td>
<td>808</td>
</tr>
<tr>
<td>Regional Offices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td></td>
<td>225</td>
<td>225</td>
</tr>
<tr>
<td>The Americas</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>33</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td></td>
<td>74</td>
<td>74</td>
</tr>
<tr>
<td>South-East Asia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td></td>
<td>172</td>
<td>172</td>
</tr>
<tr>
<td>Europe</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>84</td>
<td></td>
</tr>
<tr>
<td></td>
<td>129</td>
<td>129</td>
</tr>
<tr>
<td>Eastern Mediterranean</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td></td>
<td>137</td>
<td>137</td>
</tr>
<tr>
<td>Western Pacific</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>72</td>
<td></td>
</tr>
<tr>
<td></td>
<td>103</td>
<td>103</td>
</tr>
<tr>
<td>WHO Representatives' and Zone Offices</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Locally recruited</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td></td>
<td>111</td>
<td>111</td>
</tr>
</tbody>
</table>

¹ International Agency for Research on Cancer.
² Including Liaison Offices.
## Distribution

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Staff as at 30 November 1965</th>
<th>Staff as at 30 November 1966</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Regular Budget</td>
</tr>
<tr>
<td><strong>Field Staff in Countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>885</td>
<td>422&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>920</td>
<td>473</td>
</tr>
<tr>
<td><strong>Other Offices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Children's Centre, Paris</td>
<td>1</td>
<td>1</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>4</td>
<td></td>
</tr>
<tr>
<td><strong>Inter-regional Activities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>55</td>
<td>15</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>57</td>
<td>30</td>
</tr>
<tr>
<td><strong>2770</strong></td>
<td>2262</td>
<td>452</td>
</tr>
<tr>
<td><strong>Staff on loan to WHO, or on leave without pay</strong></td>
<td>56</td>
<td></td>
</tr>
<tr>
<td><strong>Staff on secondment or loan to other organizations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Short-term consultants</strong></td>
<td>129</td>
<td></td>
</tr>
<tr>
<td><strong>WHO GRAND TOTAL</strong></td>
<td>2955</td>
<td>2472</td>
</tr>
<tr>
<td><strong>PAHO GRAND TOTAL</strong></td>
<td>798</td>
<td></td>
</tr>
</tbody>
</table>

<sup>1</sup> International Agency for Research on Cancer.

<sup>a</sup> Including 86 agents in the Democratic Republic of the Congo.

<sup>b</sup> Including 78 agents in the Democratic Republic of the Congo.
### Annex 9

**COMPOSITION OF THE STAFF BY NATIONALITY**

**at 30 November 1966**

<table>
<thead>
<tr>
<th>Country</th>
<th>WHO</th>
<th>PAHO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Algeria</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Argentina</td>
<td>16</td>
<td>12</td>
<td>28</td>
</tr>
<tr>
<td>Australia</td>
<td>24</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Austria</td>
<td>12</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Belgium</td>
<td>33</td>
<td>3</td>
<td>36</td>
</tr>
<tr>
<td>Bolivia</td>
<td>11</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>Brazil</td>
<td>27</td>
<td>34</td>
<td>61</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Burma</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Cameroon</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Canada</td>
<td>65</td>
<td>2</td>
<td>67</td>
</tr>
<tr>
<td>Ceylon</td>
<td>13</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>Chile</td>
<td>19</td>
<td>27</td>
<td>46</td>
</tr>
<tr>
<td>China</td>
<td>24</td>
<td>2</td>
<td>26</td>
</tr>
<tr>
<td>Colombia</td>
<td>10</td>
<td>26</td>
<td>36</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>3</td>
<td>11</td>
<td>14</td>
</tr>
<tr>
<td>Cuba</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Cyprus</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>25</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td>Dahomey</td>
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<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Denmark</td>
<td>31</td>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>4</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Ecuador</td>
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<td>12</td>
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<tr>
<td>Stateless</td>
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| Total                          | 1488| 330  | 1818  |

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<th>Total</th>
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<tr>
<td>Staff on secondment to other organizations</td>
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| Grand Total                   | 3190| 871  | 4061  |
Annex 10

STATUS OF MALARIA ERADICATION

1. COUNTRIES IN WHICH CERTIFICATION OF ERADICATION OF MALARIA HAS BEEN COMPLETED FOR THE WHOLE TERRITORY

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<th>European Region</th>
<th>Western Pacific Region</th>
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<tbody>
<tr>
<td>Dominica</td>
<td>Bulgaria</td>
<td>China (Taiwan)</td>
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<tr>
<td>Grenada and Carriacou</td>
<td>Hungary</td>
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</tr>
<tr>
<td>Jamaica</td>
<td>Spain</td>
<td></td>
</tr>
<tr>
<td>St Lucia</td>
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</tr>
<tr>
<td>Trinidad and Tobago</td>
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2. COUNTRIES IN WHICH MALARIA ERADICATION PROGRAMMES WERE IN OPERATION AT 31 DECEMBER 1966

<table>
<thead>
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<th>Region of the Americas</th>
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<td>Swaziland</td>
<td>Manitoba</td>
</tr>
<tr>
<td>Portugal (Cape Verde Islands)</td>
<td>United Republic of Tanzania</td>
<td>British Honduras Republic</td>
</tr>
<tr>
<td>South Africa (Zanzibar and Pemba)</td>
<td></td>
<td>Guadeloupe 1</td>
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</table>

<table>
<thead>
<tr>
<th>South-East Asia Region</th>
<th>African Region</th>
<th>South-East Asia Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Indonesia</td>
<td>Indonesia (West Irian)</td>
</tr>
<tr>
<td>Burma</td>
<td>Nepal</td>
<td>Maldives Islands</td>
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<tr>
<td>India</td>
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3. COUNTRIES ASSISTED BY THE ORGANIZATION IN 1966 WITH ANTIMALARIA OPERATIONS OTHER THAN ERADICATION PROGRAMMES

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<tr>
<td>Congo (Democratic Republic)</td>
<td>Mozambique</td>
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<td>Dahomey</td>
<td>Réunion</td>
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<tr>
<td>Ghana</td>
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<tr>
<td>Guinea</td>
<td>Sierra Leone</td>
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<tr>
<td>Liberia</td>
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<tr>
<td>Somalia</td>
<td>Uganda</td>
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<table>
<thead>
<tr>
<th>Eastern Mediterranean Region</th>
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<tbody>
<tr>
<td>Ethiopia</td>
<td>Sudan</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>Tunisia</td>
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</tbody>
</table>

1 Whole country in maintenance phase of malaria eradication programme.
2 Major part of country entered on the WHO official register as having eradicated malaria.
3 Preparatory planning has been done for programmes in the Comoro Islands, Congo (Brazzaville), Equatorial Guinea, the Federation of South Arabia, Gabon, Madagascar and Southern Rhodesia.
## Annex 11

**FELLOWSHIPS AWARDED, BY SUBJECT OF STUDY AND BY REGION**

1 December 1965 - 30 November 1966

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<td>Sub-total — Environmental Health</td>
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<td><strong>Total — Health Organization and Services</strong></td>
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**Percentage**

| Health Organization and Services     | 38     | 66           | 38               | 56     | 38                   | 48               | 48               |
| Environmental Health                 |        |              |                  |        |                     |                  |
| Nursing                              |        |              |                  |        |                     |                  |
| Maternal and Child Health            |        |              |                  |        |                     |                  |
| Other Health Services                |        |              |                  |        |                     |                  |

252 THE WORK OF WHO, 1966
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**Clinical Medicine, Basic Medical Sciences and Medical and Allied Education**

**CLINICAL MEDICINE**

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<td>38</td>
<td>22</td>
<td>5</td>
<td>81</td>
</tr>
<tr>
<td><strong>Sub-total — Clinical Medicine</strong></td>
<td>37</td>
<td>11</td>
<td>23</td>
<td>103</td>
<td>58</td>
<td>24</td>
<td>256</td>
</tr>
</tbody>
</table>

**BASIC MEDICAL SCIENCES AND MEDICAL AND ALLIED EDUCATION**

<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>Basic medical sciences</td>
<td>13</td>
<td>12</td>
<td>24</td>
<td>44</td>
<td>25</td>
<td>12</td>
<td>130</td>
</tr>
<tr>
<td>Medical and allied education</td>
<td>3</td>
<td>67</td>
<td>7</td>
<td>12</td>
<td>15</td>
<td>6</td>
<td>110</td>
</tr>
<tr>
<td>Undergraduate medical studies</td>
<td>138</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>70</td>
<td>8</td>
<td>217</td>
</tr>
<tr>
<td><strong>Sub-total — Basic Medical Sciences and Medical and Allied Education</strong></td>
<td>154</td>
<td>79</td>
<td>32</td>
<td>56</td>
<td>110</td>
<td>26</td>
<td>457</td>
</tr>
</tbody>
</table>

**TOTAL — CLINICAL MEDICINE, BASIC MEDICAL SCIENCES AND MEDICAL AND ALLIED EDUCATION**

<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>Total</strong></td>
<td>191</td>
<td>90</td>
<td>55</td>
<td>159</td>
<td>168</td>
<td>50</td>
<td>713</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>42</td>
<td>19</td>
<td>22</td>
<td>29</td>
<td>36</td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td>464</td>
<td>482</td>
<td>254</td>
<td>537</td>
<td>468</td>
<td>371</td>
<td>2576</td>
</tr>
</tbody>
</table>
## Annex 12

### WHO COLLABORATIVE RESEARCH PROJECTS INITIATED IN 1966

<table>
<thead>
<tr>
<th>Subject of Research</th>
<th>Region</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Africa</td>
<td>The Americas</td>
</tr>
<tr>
<td>Virus diseases</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Bacterial diseases</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>—</td>
<td>4</td>
</tr>
<tr>
<td>Leprosy</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Treponematoses</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Malaria</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Parasitic diseases</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Veterinary public health</td>
<td>—</td>
<td>3</td>
</tr>
<tr>
<td>Cancer</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Human genetics</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Human reproduction</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Radiation health</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Immunology</td>
<td>—</td>
<td>2</td>
</tr>
<tr>
<td>Evaluation of drugs</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Environmental health</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Organization of medical care</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Vector biology and control</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Environmental biology</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Community water supplies</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Occupational medicine</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Biological standardization</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Nutrition</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Mental health</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dental health</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>18</strong></td>
<td><strong>30</strong></td>
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</table>
### Annex 13

**RESEARCH GRANTS FOR TRAINING AND EXCHANGE IN 1966**

**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>Virus diseases</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Bacterial diseases</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Malaria</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Parasitic diseases</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Cancer</td>
<td>8</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>Dental health</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Maternal and child health</td>
<td>6</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Human genetics</td>
<td>3</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Mental health</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Environmental health</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Environmental biology</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Immunology</td>
<td>6 (^a)</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Pharmacology and toxicology</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Radiation health</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Veterinary public health</td>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Vector biology and control</td>
<td></td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Nutrition</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Organization of medical care</td>
<td></td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Social and occupational health</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Human reproduction</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Endocrinology</td>
<td>1 (^b)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Haematology</td>
<td>1 (^b)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Nephrology</td>
<td>1 (^b)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Microbiology</td>
<td>1 (^b)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Cardiovascular diseases</td>
<td>3 (^c)</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Pneumatology</td>
<td>1 (^d)</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Biology</td>
<td>4 (^e)</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Health laboratory services</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>62</strong></td>
<td><strong>55</strong></td>
<td><strong>117</strong></td>
</tr>
</tbody>
</table>

\(^a\) One partly supported by the Government of Israel.

\(^b\) Partly supported by the Government of Israel.

\(^c\) Two supported by the Swedish National Association against Heart and Chest Diseases.

\(^d\) Supported by the Swedish National Association against Heart and Chest Diseases.

\(^e\) Partly supported by the Government of Czechoslovakia.
Annex 14

WHO INTERNATIONAL AND REGIONAL REFERENCE CENTRES, COLLABORATING CENTRES AND RESEARCH AND TRAINING CENTRES, AND THE INSTITUTIONS WHERE THEY ARE LOCATED

MALARIA

International Malaria Reference Centre
Laboratory of Parasite Chemotherapy, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md, United States of America

Regional Malaria Reference Centres
* Horton Malaria Reference Laboratory, Epsom, England
National Institute of Communicable Diseases, New Delhi, India

VIRUS DISEASES

Influenza
World Influenza Centre
National Institute for Medical Research, London, England (fifty-seven collaborating laboratories)

International Influenza Centre for the Americas
Virology Section, Communicable Disease Center, Atlanta, Ga, United States of America (seventeen collaborating laboratories)

Collaborating Influenza Centre
Department of Bacteriology, University College Hospital, Ibadan, Nigeria

Respiratory Virus Diseases other than Influenza

International Reference Centres for Respiratory Virus Diseases other than Influenza
Common Cold Research Unit, National Institute for Medical Research, Harvard Hospital, Salisbury, England
1 Laboratory of Infectious Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md, United States of America

Regional Reference Centres for Respiratory Virus Diseases other than Influenza
Epidemiological Research Unit, Fairfield Infectious Diseases Hospital, Melbourne, Australia
Institute of Epidemiology and Microbiology, Prague, Czechoslovakia
Respiratory Virus Laboratory, National Institute of Health, Tokyo, Japan
South African Institute for Medical Research, Johannesburg, South Africa
Ivanovskij Institute of Virology, Moscow, Union of Soviet Socialist Republics

Respirovirus Unit, Virology Section, Communicable Disease Center, Altanta, Ga, United States of America

Enterovirus Diseases

International Reference Centre for Enteroviruses
Department of Virology and Epidemiology, Baylor University College of Medicine, Houston, Tex., United States of America

Regional Reference Centres for Enteroviruses
Enterovirus Department, Statens Seruminstitut, Copenhagen, Denmark
Section de Virologie, Laboratoire national de la Santé publique, Lyons, France
Department of Enteroviruses, National Institute for Health, Tokyo, Japan
Department of Bacteriology, University of Singapore, Singapore
South African Institute for Medical Research, Johannesburg, South Africa
Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics

Arbovirus Diseases

International Reference Centre for Arboviruses
Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Conn., United States of America

Regional Reference Centres for Arboviruses
Queensland Institute of Medical Research, Brisbane, Australia
Institute of Virology, Czechoslovak Academy of Sciences, Bratislava, Czechoslovakia
Service de la Fièvre jaune et des Arboviruses, Institut Pasteur, Paris, France
Department of Virology and Rickettsiology, National Institute of Health, Tokyo, Japan
Institut Pasteur, Dakar, Senegal
East African Virus Research Institute, East African Services Organization, Entebbe, Uganda
Viral Encephalitides Section, Institute of Poliomyelitis and Viral Encephalitides, Academy of Medical Sciences of the USSR, Moscow, Union of Soviet Socialist Republics
Virology Section, Communicable Disease Center, Altanta, Ga, United States of America

Collaborating Centres in Arboviruses
Adolfo Lutz Institute, São Paulo, Brazil
Virology Section, Communicable Disease Center, Altanta, Ga, United States of America

* Initiated in 1966.
1 During 1966 this laboratory was also designated as an International Reference Centre for Mycoplasmas.
Trachoma

*International Reference Centre for Trachoma*

Francis I. Proctor Foundation for Research in Ophthalmology, University of California, San Francisco, Calif., United States of America

Rickettsiosis

*Regional Reference Centre for Human Rickettsiosis*

Rocky Mountain Laboratory, Institute of Allergy and Infectious Diseases, Hamilton, Mont., United States of America

Smallpox

*Regional Reference Centre for Smallpox*

* Research Institute of Virus Preparations, Moscow, Union of Soviet Socialist Republics

PARASITIC DISEASES

Bilharziasis

*Snail Identification Centre*

Danish Bilharziasis Laboratory, Copenhagen, Denmark

Leishmaniasis

*International Reference Centre for Leishmaniasis*

Department of Parasitology, Hadassah Medical School, Jerusalem, Israel

Trypanosomiasis

*International Reference Centre for Trypanosomiasis*

East African Trypanosomiasis Research Organization, Tororo, Uganda

VECTOR BIOLOGY AND CONTROL

*International Reference Centre for the Diagnosis of Diseases of Vectors*

Department of Zoology and Entomology, Ohio State University, Columbus, Ohio, United States of America

*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

*International Reference Centre for Maintenance and Distribution of Standardized Strains of Anopheles*

* Ross Institute, London School of Hygiene and Tropical Medicine, London, England

* Initiated in 1966.

ENDEMIC TRE PonEMAT OSES AND VENEREAL INFECTIONS

*International Treponematosis Laboratory Centre*

Johns Hopkins University, Baltimore, Md, United States of America

*Serological Reference Centres for Treponematoses*

Treponematoses Research Laboratory, Statens Seruminstitut, Copenhagen, Denmark

Venereal Disease Research Laboratory, Communicable Disease Center, Atlanta, Ga, United States of America

*International Reference Centre for Gonococci*

* Neisseria Department, Statens Seruminstitut, Copenhagen, Denmark

TUBERCULOSIS

*Tuberculosis Diagnostic Reference Laboratory*

Tuberculosis Research Institute, Prague, Czechoslovakia

*International Reference Centre for BCG Seed-lots and Control of BCG products*

* BCG Department, Statens Seruminstitut, Copenhagen, Denmark

BACTERIAL DISEASES

Enteric Infections

*International Salmonella Centre*

Institut Pasteur, Paris, France

*International Escherichia Centre*

Statens Seruminstitut, Copenhagen, Denmark

*International Shigella Centres*

Central Public Health Laboratory, London, England

Communicable Disease Center, Atlanta, Ga, United States of America

*International Reference Centre for Enteric Phage Typing*

Central Public Health Laboratory, London, England (sixty-seven collaborating laboratories)

*International Reference Centre for Vibrio Phage Typing*

Indian Institute of Experimental Medicine, Calcutta, India

Staphylococcal Infections

*International Reference Centre for Staphylococcal Phage Typing*

Central Public Health Laboratory, London, England (thirty-two collaborating laboratories)

Streptococcal Infections

*International Reference Centre for Streptococcus Typing*

* Streptococcus Reference Laboratory, Institute of Epidemiology and Microbiology, Prague, Czechoslovakia
Meningococcal Infections

*International Reference Centre for Meningococci*
Laboratoire de Microbiologie, Centre de Recherches du Service de Santé des Troupes de Marine, Marseilles, France

**ZOONOSES**

**Brucellosis**

*FAO/WHO Brucellosis Centres*
Department of Zoonoses, Department of Agriculture and Animal Husbandry, Buenos Aires, Argentina
Commonwealth Serum Laboratories, Parkville, Victoria, Australia
State Veterinary Serum Laboratory, Copenhagen, Denmark
Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, England
Centre de Recherches sur la Fièvre ondulante, Institut Bouisson-Bertrand, Montpellier, France (one collaborating laboratory)
Veterinary Microbiological Institute, Athens, Greece (one collaborating laboratory)
Indian Veterinary Research Institute, Mukteswar-Kumaon, Uttar Pradesh, India
Centre for the Study of Brucellosis, Institute of Hygiene and Microbiology, University of Florence, Italy (one collaborating laboratory)
National Institute of Animal Health, Tokyo, Japan
Medical Research Institute, General Hospital, Mexico City, Mexico (one collaborating laboratory)
Onderstepoort Veterinary Laboratory, Onderstepoort, South Africa
Institut Pasteur, Tunis, Tunisia
Institute of Veterinary Bacteriology and Serology, Istanbul, Turkey
Department of Medicine, University of Minnesota, Minneapolis, Minn., United States of America (one collaborating laboratory)
Brucellosis Centre, State Laboratory of Hygiene, Rijeka, Yugoslavia

*WHO Brucellosis Centre*
Gamaleja Institute of Epidemiology and Microbiology, Moscow, Union of Soviet Socialist Republics

**Rabies**

*International Reference Centres for Rabies*
* Institut Pasteur, Paris, France
* Pasteur Institute of Southern India, Coonoor, India

**Leptospirosis**

*WHO/FAO Leptospirosis Reference Laboratories*
Laboratory of the Department of Health and Home Affairs, Brisbane, Australia
London School of Hygiene and Tropical Medicine, London, England
Israel Institute for Biological Research, Ness-Ziona, Israel
Istituto Superiore di Sanità, Rome, Italy

National Institute of Health, Tokyo, Japan
Institute for Tropical Hygiene and Geographical Pathology (Royal Tropical Institute), Amsterdam, Netherlands
Division of Veterinary Medicine, Walter Reed Army Medical Center, Washington, D.C., United States of America

*WHO Leptospirosis Reference Laboratory*
Gamaleja Institute of Epidemiology and Microbiology, Moscow, Union of Soviet Socialist Republics

**COMMUNICABLE DISEASES — GENERAL ACTIVITIES**

**Serum Reference Banks**

*World Serum Reference Bank*
Department of Epidemiology and Public Health, Yale University School of Medicine, New Haven, Conn., United States of America

*Regional Serum Reference Banks*
Institute of Epidemiology and Microbiology, Prague, Czechoslovakia
South African Institute for Medical Research, Johannesburg, South Africa

**NON-COMMUNICABLE DISEASES**

**Cancer**

*International Reference Centre for Comparative Oncology*
* Armed Forces Institute of Pathology, Washington, D.C., United States of America

*International Reference Centre for the Histopathology of Bone Tumours*
Latin American Registry of Bone Pathology, Osteo-articular Pathology Centre, Italian Hospital, Buenos Aires, Argentina (seven collaborating laboratories)

*International Reference Centre for the Histopathology of Genito-urinary Tract Tumours*
Armed Forces Institute of Pathology, Washington, D.C., United States of America

*International Reference Centre for the Histopathology of Leukemias and other Neoplastic Conditions of the Haematopoietic Cells*
Institut de Cancérologie et d’Immunogénétique, Hôpital Paul Brousse, Paris, France (eight collaborating laboratories)

*International Reference Centre for the Histopathology of Lung Tumours*
Institute for General and Experimental Pathology, University of Oslo, Norway (seventeen collaborating laboratories)

*International Reference Centre for the Histopathology of Mammary Tumours*
Bland Sutton Institute of Pathology, Middlesex Hospital, London, England (twelve collaborating laboratories)

*International Reference Centre for the Histopathology of Odontogenic Tumours*
* Department of Oral Pathology, Royal Dental College, Copenhagen, Denmark

*International Reference Centre for the Histopathology of Oropharyngeal Tumours*
Sarojini Naidu Medical College, Agra, Uttar Pradesh, India (seven collaborating laboratories)

* Initiated in 1966.
International Reference Centre for the Histopathology of Ovarian Tumours
Institute of Oncology, Academy of Medical Sciences of the USSR, Leningrad, Union of Soviet Socialist Republics (six collaborating laboratories)

International Reference Centre for the Histopathology of Salivary Gland Tumours
Bland Sutton Institute of Pathology, Middlesex Hospital, London, England (five collaborating laboratories)

International Reference Centre for the Histopathology of Skin Tumours
Pathology Department, University of Western Australia, Perth, Australia (seven collaborating laboratories)

International Reference Centre for the Histopathology of Soft Tissue Tumours
Armed Forces Institute of Pathology, Washington, D.C., United States of America (ten collaborating laboratories)

International Reference Centre for the Histopathology of Thyroid Gland Tumours
University Institute of Pathology, Cantonal Hospital, Zurich, Switzerland

International Reference Centre for the Provision of Frozen Transplantable Tumour Strains
Department of Tumour Pathology, Karolinska Institute, Stockholm, Sweden

International Reference Centre for the Provision of Tumour-bearing Animals
Netherlands Cancer Institute, Amsterdam, Netherlands (three collaborating laboratories)

Collaborating Centre for Comparative Oncology of Leukosis
* University of Glasgow Veterinary Hospital, Glasgow, Scotland

Collaborating Centre for Comparative Oncology of the Alimentary Tract
Department of Pathology, Royal Veterinary College, London, England

Collaborating Centre for Comparative Oncology of Tumours of the Reproductive Tract and Mammary Gland
Department of Pathology, Netherlands Cancer Institute, Amsterdam, Netherlands

Collaborating Centre for Comparative Oncology of Tumours of the Respiratory Tract
University Institute of Veterinary Pathology, Zurich, Switzerland

Collaborating Centre for Comparative Oncology of Skin Tumours
* University Institute of Veterinary Pathology, Munich, Federal Republic of Germany

Collaborating Centre for Comparative Studies in Epidemiology of Chronic Diseases
* Royal Veterinary College, London, England

* Initiated in 1966.

Cardiovascular Diseases
Collaborating Centre for Comparative Cardiovascular Studies
Comparative Cardiovascular Studies Unit, University of Pennsylvania, Philadelphia, Pa, United States of America

Research and Training Centre for Cardiovascular Diseases
Makerere University College School of Medicine, Kampala, Uganda

Anaemias
Reference Centres for Anaemias
Department of Pathology, St Bartholomew's Medical College, London, England
University of Witwatersrand, Johannesburg, South Africa

BIOMEDICAL SCIENCES

Biological Standardization
International Laboratories for Biological Standards
Statens Serum Institut, Copenhagen, Denmark
National Institute for Medical Research, London, England
Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, England

International Centre for Information on Type Cultures
Institut d’Hygiène et de Bactériologie, Lausanne University, Switzerland

Immunology
International Reference Centre for Immunoglobulins
Institut de Biochimie, Lausanne University, Switzerland

International Reference Laboratory for the Serology of Autoimmune Disorders
Rheumatoid Research Department, Middlesex Hospital Medical School, London, England

International Reference Centre for Genetic Factors of Human Immunoglobulins
Centre départemental de Transfusion sanguine et de Génétique humaine, Rouen, 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, United States of America

Collaborating Centre for Research in Immunoglobulins
* Department of Biochemistry, All-India Institute of Medical Sciences, New Delhi, India

Research and Training Centres for Immunology
* Department of Microbiology and Immunology, School of Medicine, University of São Paulo, Brazil
Department of Chemical Pathology, University College Hospital, Ibadan, Nigeria

Human Genetics
International Reference Centre for Abnormal Haemoglobins
Medical Research Council's Abnormal Haemoglobin Research Unit, University of Cambridge, England
International Reference Centre for Serum Protein Groups
* Zoology Department, University of Texas, Austin, Tex., United States of America

Blood Groups
International Blood Group Reference Laboratory
Medical Research Council's Blood Group Reference Laboratory, Lister Institute of Preventive Medicine, London, England

* Initiated in 1966.

OTHER FIELDS

Antibiotics
International Centre for Information on Antibiotics
Laboratoire de Microbiologie générale et médicale de l'Université de Liège, Belgium

Pharmaceuticals
International Reference Centre for Chemical Reference Substances
Centre for Authentic Chemical Substances, Apotekens Centrallaboratorium, Solna, Stockholm, Sweden
Annex 15

PUBLICATIONS ISSUED BY THE WORLD HEALTH ORGANIZATION IN 1966

This annex lists the publications issued by WHO in 1966 and the language of issue. ¹

<table>
<thead>
<tr>
<th>MONOGRAPH SERIES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>23 Laboratory Techniques in Rabies, second edition,</td>
<td></td>
</tr>
<tr>
<td>by various authors (E)</td>
<td></td>
</tr>
<tr>
<td>48 Milk Hygiene, by various authors (F, S)</td>
<td></td>
</tr>
<tr>
<td>50 Snail Control in the Prevention of Bilharziasis,</td>
<td></td>
</tr>
<tr>
<td>by various authors (R)</td>
<td></td>
</tr>
<tr>
<td>51 Statistical Methods in Malaria Eradication, by</td>
<td></td>
</tr>
<tr>
<td>Satya Swaroop (E)</td>
<td></td>
</tr>
<tr>
<td>52 Trials of Prophylactic Agents for the Control of</td>
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¹ C = Chinese; E = English; F = French; P = Portuguese; R = Russian; S = Spanish; E-F = bilingual edition.
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336 Sampling Methods in Morbidity Surveys and Public Health Investigations, tenth report of the WHO Expert Committee on Health Statistics (E, F, S)

337 The Training and Preparation of Teachers for Medical Schools with Special Regard to the Needs of Developing Countries, fifteenth report of the WHO Expert Committee on Professional and Technical Education of Medical and Auxiliary Personnel (E, F, S)

338 Haemoglobinopathies and Allied Disorders, report of a WHO Scientific Group (E, F)


340 Joint FAO/WHO Technical Meeting on Methods of Planning and Evaluation in Applied Nutrition Programs, report (E, F, S)

341 Principles for Pre-Clinical Testing of Drug Safety, report of a WHO Scientific Group (E, F)

342 Prevention of Rheumatic Fever, report of a WHO Expert Committee (E, F)

343 WHO Expert Committee on Dependence-Producing Drugs, fifteenth report (E, F, S)

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345 The Training of Health Laboratory Personnel (Technical Staff), fourth report of the WHO Expert Committee on Health Laboratory Services (E, F)

346 Research on Genetics in Psychiatry, report of a WHO Scientific Group (E)

347 WHO Expert Committee on Nursing, fifth report (E, F)

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Protection of the Public in the Event of Radiation Accidents, Proceedings of a Seminar jointly sponsored by the Food and Agriculture Organization of the United Nations, the International Atomic Energy Agency, and the World Health Organization, November 1963 (F, R)

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Specifications for Reagents mentioned in the International Pharmacopoeia (F)

International Sanitary Regulations, third annotated edition (E, F)

World Directory of Schools of Pharmacy, 1963 (E)

Trends in Cancer Research (E)

Methods of Radiochemical Analysis (E)

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139 The Work of WHO, 1964
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140 Executive Board, Thirty-fifth Session
Part I — Resolutions, Annexes (R)

141 Executive Board, Thirty-fifth Session
Part II — Report on the Proposed Programme and Budget Estimates for 1966 (R)


143 Eighteenth World Health Assembly
Part I — Resolutions and Decisions, Annexes (R)

144 Eighteenth World Health Assembly
Part II — Plenary Meetings: Verbatim Records. Committees: Minutes and Reports (R)

145 Executive Board, Thirty-sixth Session (R)

146 Proposed Programme and Budget Estimates for 1967 (R)

147 The Work of WHO, 1965
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151 Nineteenth World Health Assembly
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152 Nineteenth World Health Assembly
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Executive Board, Thirty-eighth Session (E, F, S)

Proposed Programme and Budget Estimates for 1968 (E, F, S)

Basic Documents, seventeenth edition (E, F, R, S)

Handbook of Resolutions and Decisions, eighth edition (R)

PERIODICALS

World Health
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WHO Chronicle
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Bulletin of the World Health Organization
Volume 32, Nos. 1-6 (R)
Volume 33, Nos. 1-6 (R)
Volume 34, Nos. 1-6 (E-F)
Volume 35, Nos. 1-6 (E-F)

International Digest of Health Legislation
Volume 17, Nos. 1-4 (E, F)

Epidemiological and Vital Statistics Report
Volume 19, Nos. 1-12 (E/F)

World Health Statistics Annual
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1962 — Volume III (E/F)
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by subscription ................................................. 726
by exchange with WHO publications .................. 1 265
by gift ......................................................... 679 2 670

Annual reports received .................................... 2 396
Books and pamphlets ordered ............................... 1 972
Books and pamphlets received ............................ 3 975
Volumes bound .................................................. 2 135

Catalogue

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Articles in journals indexed ................................ 12 641
Documents indexed ............................................. 3 826
Index cards filed ................................................ 35 074
Index cards distributed to Headquarters Secretariat and Regional Offices .... 212 532

Loans

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Lent to other libraries ......................................... 3 117
Borrowed from other libraries ................................ 1 494
Periodicals circulated to WHO Secretariat ............. 63 249
Photocopying (number of exposures) .................... 61 050
Items consulted in reading rooms ....................... 14 015

Medical literature supply

Orders placed for

Headquarters Secretariat (number) ......................... 138
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Regional Offices (number) ................................... 1 497
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Duplicates distributed to Regional Offices and to other libraries .................. 59 906
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STRUCTURE OF THE WORLD HEALTH ORGANIZATION
at 31 December 1966

December 1966

*Also responsible for WHO activities in the Democratic Republic of the Congo.

The Pan American Sanitary Conference, through the Directing Council of the Pan American Health Organization, and the Pan American Sanitary Bureau serve respectively as the Regional Committee and the Regional Office of the World Health Organization for the Western Hemisphere.

The newly established International Agency for Research on Cancer, which is an integral part of the World Health Organization, is not reflected on this chart.
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