This chapter summarizes the Organization's activities in some of the more important chronic non-communicable diseases during its second decade, when, in addition to activities in the fields of mental health, dental health and nutrition, programmes and comparative studies were developed in cancer and cardiovascular diseases. A start was also made in 1966 with respect to rheumatic diseases when a scientific group was convened with a view to establishing internationally agreed diagnostic criteria for the diffuse connective tissue diseases. In almost all these spheres, the main emphasis has been on basic research and relevant co-ordinating activities, but the training of personnel and organization of services have not been neglected.

Much of the research assisted by WHO has consisted of epidemiological studies on population groups in various countries. These studies, based on the concept of multi-factorial etiology, require the simultaneous measurement and handling of many variables, such as personal characteristics, physiological functions and environmental factors; they call for the development and acceptance by research workers of methods suitable for international comparative studies of population groups, and the application of advanced statistical techniques. To open the way for a more extensive use of the experimental approach in research relating to the degenerative diseases, WHO has sought out and investigated spontaneously occurring conditions in animals, comparable to human non-communicable diseases — especially cardiovascular diseases and cancer.

CARDIOVASCULAR DISEASES

Some cardiovascular diseases — arterial hypertension, rheumatic heart disease, cerebrovascular lesions and certain congenital malformations — are commonly found everywhere, though each may differ in clinical manifestations, etiology and pathogenesis. Others, such as coronary heart disease, the Chagas cardiopathy and cardiopathies of unknown etiology, are found in certain geographical areas or among identifiable groups of people. Indications that ischaemic heart disease is occurring nowadays in younger age groups, and the presence of ischaemic heart
and brain disease with atherosclerosis as the underlying lesion in certain social sections of the population in developing countries, show that these conditions are becoming a universal health problem.

The Organization's programme — which aims to further the prevention and control of the major cardiovascular diseases by applying available knowledge and promoting research on etiology and pathogenic mechanisms through international co-operation — has been guided by the recommendations of various advisory groups, including two study groups and two expert committees which met towards the end of WHO's first decade.¹

**Preventive and Control Measures**

Preventive measures against rheumatic fever,² chronic cor pulmonale,³ arterial hypertension and ischaemic heart disease,⁴ as well as possibilities for rehabilitation of patients with these diseases,⁵ have been discussed by WHO expert committees and at various regional meetings, including a symposium on the pathogenesis of essential hypertension jointly organized by WHO and the Czechoslovak Cardiological Society in Prague in 1960,⁶ and a conference on the prevention and control of cardiovascular diseases held in Bucharest in 1965.

Available knowledge permits the control and prevention of rheumatic fever, chronic cor pulmonale and heart diseases connected with infections; it is also possible to control essential hypertension so as to reduce its serious complications, such as hypertensive heart disease and cerebrovascular disease.

Regarding the prevention of rheumatic fever, the expert committee which met in 1966 recommended the establishment of pilot centres to carry out preventive programmes against rheumatic fever 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.⁷

In the Region of the Americas, the Organization co-operated with the Pan American League against Rheumatism and the Chilean Rheumatism Society in convening a meeting in 1963 to consider the problem of rheumatic fever.

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Although it is not yet possible to prevent the occurrence of ischaemic heart disease of atherosclerotic origin, sufficient evidence has been accumulated to indicate that proper care of subjects with acute myocardial infarction may control or prevent lethal complications during the early stages of the disease. The provision of proper care for these patients has therefore been considered as a most urgent necessity. WHO-assisted studies have been carried out in different areas to ascertain how many subjects with acute myocardial infarction die outside the hospitals, and the time that elapses between the onset of symptoms and the fatal outcome. The majority of subjects who recover from acute myocardial infarction may be successfully rehabilitated so as to resume their previous activities.

Research

Two scientific groups were convened by WHO (in 1959 and 1961) to advise on needs for internationally co-ordinated research on cardiovascular diseases. In 1966, following a resolution of the Nineteenth World Health Assembly calling for a study of the modalities for further expansion of the Organization's programme in this field, the Advisory Committee on Medical Research reviewed the first five years of WHO's programme and discussed its future orientation.

A total of forty-six collaborating laboratories and cardiovascular research and training centres situated in twenty-four countries have been engaged at one time or another during the decade in carrying out research projects under contractual arrangements with WHO, or with assistance provided to individual research workers.

Systematic WHO-assisted epidemiological research on ischaemic heart disease and some other cardiovascular diseases was started in 1959. The programme has included selective population studies, the development of internationally acceptable nomenclature, classification and diagnostic criteria, standardization of techniques, training and exchange of research workers, and improvement of communications. Methodological investigations carried out as a preliminary to co-operative epidemiological studies included the assessment of electrocardiographic and other objective measurements such as blood pressure, serum lipids or ocular fundi, habitual physical activity or mental stress. WHO also prepared a publication on methods of epidemiological studies of cardiovascular disease.

The Organization has supported several studies on cardiovascular diseases in various population groups, including longitudinal studies of cardiovascular

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PRESIDENTS OF WORLD HEALTH ASSEMBLIES 1958-1967

Dr S. Al-Wahbi, Iraq: President of the Tenth Anniversary Commemorative Session, 1958.

Dr Leroy E. Burney, United States of America: President of the Eleventh World Health Assembly, 1958.

Sir John Charles, United Kingdom of Great Britain and Northern Ireland: President of the Twelfth World Health Assembly, 1959. Also Chairman of the Executive Board, twenty-first session, 1958; and recipient of the Léon Bernard Medal and Prize, 1962.
Dr H. B. Turbott, New Zealand: President of the Thirteenth World Health Assembly, 1960. Also Chairman of the Executive Board, thirty-fourth and thirty-fifth sessions, 1964-1965.

Dr A. L. Mudaliar, India: President of the Fourteenth World Health Assembly, 1961.

The late Dr S. V. Kurašov, Union of Soviet Socialist Republics: President of the Fifteenth World Health Assembly, 1962.

Dr M. A. Majekodunmi, Nigeria: President of the Sixteenth World Health Assembly, 1963.
Dr Monawar K. Afridi, Pakistan: President of the Seventeenth World Health Assembly, 1964. Also Chairman of the Executive Board, thirtieth and thirty-first sessions, 1962-1963; and recipient of the Darling Foundation Medal and Prize, 1964.

Dr V. V. Olguin, Argentina: President of the Eighteenth World Health Assembly, 1965.

Dr A. Sauter, Switzerland: President of the Nineteenth World Health Assembly, 1966.

Dr V. T. Herat Gunaratne, Ceylon: President of the Twentieth World Health Assembly, 1967.
ADVISORY COMMITTEE ON MEDICAL RESEARCH

The Committee in session, June 1964.

CHAIRMEN OF THE ADVISORY COMMITTEE

1959-1963

Dr A. J. Wallgren, Emeritus Professor of Paediatrics, Karolinska Institute, Stockholm.

1964-1967

Dr R. Courrier, Emeritus Professor at the Collège de France; Permanent Secretary of the Academy of Sciences, Paris.
diseases in a rural population in Jamaica, and in Polynesians; investigations of the blood pressure, arterial hypertension and ischaemic heart disease in random samples of the population in Bergen, Norway, and in subjects living at high altitudes in Peru (including some born at high altitudes and some who have come from the lowlands).

In the European Region, following recommendations made by an advisory group in 1958, WHO promoted and co-ordinated epidemiological studies of ischaemic heart diseases in selected occupational groups, and in 1965 the results from the six centres working with a standard methodology were evaluated. During 1967, proposals were drawn up for an expansion of WHO's programme of work on cardiovascular diseases in the Region.

The inter-American investigation of mortality and studies on mortality in several European countries have confirmed a wide variation in the death rates from cardiovascular diseases — especially atherosclerotic heart diseases — but further investigations are required in this field.

Since it is difficult to diagnose atherosclerotic lesions before complications arise, attention has been given to finding ways in which more revealing and precise autopsy diagnosis could be used to improve diagnosis in the living and clarify the etiology of the disease. Following the identification of areas in Europe likely to have good facilities for this kind of study, a team of scientists was formed to carry out research designed to show the relationship between, on the one hand, the type, extent and location of atherosclerosis in coronary arteries and aorta and, on the other, age, sex, cause of death, and social environment.

The study of autopsy material from about 80 per cent. of all deaths occurring in subjects over the age of 10 years in five areas commenced in 1963 and, with the exception of one area, the collection of material was completed in 1966. Results already published show correlation of different types of atherosclerosis in different anatomical sites, the poor relationship between lesions of the aorta and lesions of the coronary arteries, the high value of heart weight and coronary calcification and low value of thickness of subcutaneous fat in the prediction of coronary stenosis and myocardial infarction. One of the communities studied was found to have less tendency to develop severe forms of atherosclerosis and myocardial infarction than the others, but the relevant factors are not yet clear.

Analysis of the first data available indicated that if autopsy findings could be linked with assessment during life — preferably before illness was experienced — it would probably be possible to improve diagnosis during life, clarify etiological factors, identify subjects at great risk and test the value of prophylactic measures with small-scale trials. With a view to achieving these objectives with regard to coronary heart disease and hypertensive disease, a three-year WHO-supported study of 2000 to 10,000 persons was designed in 1964. The following year this linked clinical-morphological study — in which examination of subjects is followed by re-examination at the onset of illness and at autopsy — was extended to include cerebrovascular disease.

A number of pathological laboratories have collaborated in the international atherosclerosis project started in the Region of the Americas in 1960. This has produced a wealth of data on the geographical pathology of atherosclerosis, and the experience obtained in developing an appropriate methodology has proved valuable for other similar studies — in Europe, for example.

Cardiomyopathies of unknown etiology include conditions described under various names, often associated with the assumed etiology or pathogenic mechanisms. The common clinical manifestations appear to be cardiac enlargement with symptoms and signs of myocardial failure, and disturbances in conduction of cardiac impulse. WHO co-operative studies have been initiated in some tropical and sub-tropical areas where these conditions constitute a major health problem.

A WHO-assisted survey of a representative rural population in Jamaica revealed myocardial disease in 13.4 per cent. of males and 15.4 per cent. of females. The WHO Epidemiological Centre at Nairobi, Kenya, has carried out studies measuring the cardio: thoracic ratio in samples of urban and rural populations of West and East Africa; the proportion of X-rays showing enlarged heart shadows was similar to that revealing tuberculosis — ranging from 0.3 to 2.2 per cent. There is reason to suppose that a number of myocardial diseases of non-vascular origin are diagnosed as coronary heart disease.

Standard detailed methods for the macroscopic and microscopic examination of the heart at autopsy have been worked out, including the assessment of the coronary circulation and measurement of the size and weight of the individual ventricles. Clinical as well as anatomical diagnosis of established endomyocardial fibrosis, Chagas’ heart disease and cardiomegalies of unknown origin can be made with reasonable certainty. WHO collaborating laboratories in Brazil, India, Israel, Jamaica, Nigeria, Uganda, and Venezuela have carried out studies on

1 Bull. Wld Hlth Org., 1965, 33, 257-266.
subjects with primary myocardial diseases and on children suspected of having cardiac disease. Preparations have been made for the establishment of cardiac registries of patients with myocardial disease. Biological specimens are being sent to a central laboratory for histochemical, enzymatic and immunological investigations, and a central WHO registry is to assemble material from the collaborating centres.

As part of an inquiry into the importance of cardiomyopathy due to Chagas' disease, studies have been made in an area in Brazil where the disease is endemic.

**Comparative Studies**

WHO has co-ordinated and provided assistance for comparative studies on cardiovascular diseases in animals with a view to improving the knowledge of similar conditions in man. During the past ten years, much has been learned about degenerative arterial lesions in various animal species. The best models for human atherosclerosis of the aorta and coronary vessels are pigs and certain non-human primates, while some birds also develop lesions that are similar in many respects to those in humans. Atherosclerosis of the cerebral arteries has also been found to be common in old pigs, and often there are associated brain infarcts. In addition, comparative studies have been carried out on congenital and clotting defects, the effect of social stress and certain dietetic factors on the development of atherosclerosis, hypertension and valvular disease. A bibliography on atherosclerosis in animals was prepared by WHO and distributed to research workers.

**CANCER**

In accordance with recommendations made by a WHO scientific group in 1959, the Organization's work on cancer has been directed particularly to epidemiological and pathological studies; it has also included activities designed to promote the prevention and treatment of cancer.

In pathology, a programme on the histopathological nomenclature and classification of lesions of the more important cancer sites has been developed — an undertaking involving fourteen international reference centres in eleven countries. In epidemiology, analytical studies have been carried out in order to elucidate some of the factors associated with the development of neoplasms, particularly lung and oropharyngeal tumours and lymphomas.

The Organization's work has been carried out in co-operation with various non-governmental organizations, including the International Union against
Cancer, the International Federation of Gynecology and Obstetrics, the International Federation of Surgical Colleges, the International League of Dermatological Societies, the International Academy of Cytology, and the International Council of Societies of Pathology.

**Epidemiological Studies**

Recommendations regarding research on the epidemiology of lung cancer were made by a study group convened by WHO in 1959.¹

A WHO-assisted study on lung cancer was carried out by epidemiological research teams in Norway and Finland — two countries with common characteristics — with a view to clarifying the factors accounting for the much higher prevalence of the disease among the Finns. It showed that the differences were not due to lack of comparability of the statistics. An important factor seems to be that extensive cigarette smoking habits were established earlier in Finland than in Norway.

The relationship between breast cancer and the duration of lactation is being studied in seven population groups in various parts of the world known to have very high, medium or low incidence of breast cancer, the data for patients being compared with those for the control groups. The study indicates that there is increased risk in women with a smaller number of children and with shorter durations of breast feeding.

A comparative study on the incidence of cancer in various ethnic groups in Israel indicated that, whereas cancer of most sites is more frequent among immigrants from western countries, cancer of the larynx is more common among immigrants from the east.

The association between the high prevalence of cancer of the oropharyngeal cavity and the chewing and smoking habits in India and the Central Asian Republics of the USSR has been studied.² Initial results confirmed a relationship between cancer of the buccal mucosa and betel- and tobacco-chewing, but the role of several components of the quid still needs to be determined to indicate possible preventive measures.

In preparation for an epidemiological study on lymphomas in children in Africa (Burkitt's tumour), pathological material has been collected and circulated among pathologists in order to obtain clinical and histological criteria for the definition of this tumour. A meeting of investigators, convened by WHO in October 1967, discussed criteria for differentiating Burkitt's tumour and other lymphomas, and the definitions have been agreed upon.

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A review of present trends in cancer research published by WHO underlined the increasing application of epidemiological methods and emphasis on the mechanism of carcinogenesis.

The Organization has been responsible for the development of a monograph on epidemiological methods in cancer, to serve as a guide for clinicians and pathologists who have had no epidemiological training, and for other health personnel who might serve as members of epidemiological research teams.

**Histopathological Studies**

An essential requirement for comparability of studies is a precise definition of neoplastic growths. In 1957, following a resolution adopted by the Tenth World Health Assembly, a WHO study group prepared the basis for the establishment of a series of international reference centres which would contribute to such definition.

The procedure is as follows. A tentative histopathological nomenclature and classification proposed by a group of pathologists is evaluated by an international reference centre and its collaborating laboratories, designated by WHO. The work done is based on the study of histological slides and clinical data. After review meetings, a tentative nomenclature and classification is agreed upon. A second test of this classification is made by sending up to ten sets of histological slides to a second group of pathologists. It is only after this second review that the classification is adopted and recommended by WHO for publication. One hundred sets of histological slides are then prepared by the international reference centre and distributed to the national societies of pathology through the International Council of Societies of Pathology. Training facilities are offered at the international and collaborating centres.

International reference centres have been established for the following: lung tumours (Oslo), soft tissue tumours (Washington), mammary tumours (London), leukaemias and other neoplastic conditions of the haematopoietic cells (Paris), oropharyngeal tumours (Agra), ovarian tumours (Leningrad), bone tumours (Buenos Aires), thyroid gland tumours (Zurich), salivary gland tumours (London), skin tumours (Perth, Australia), genito-urinary tract tumours (Washington), odontogenic tumours, and oral precancerous conditions (Copenhagen), and uterine tumours and related conditions (Stockholm). In addition, international reference centres have been established in Amsterdam and Stockholm for the

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provision — respectively — of tumour-bearing animals and frozen transplantable tumour strains to research laboratories.

The first of the classifications to be published was that for lung tumours, prepared by the WHO International Reference Centre in Oslo.¹ 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.

A classification of breast tumours was prepared by the WHO International Reference Centre in London, and one for neoplastic disorders of the haematopoietic system is in preparation at the International Reference Centre in Paris.

Control and Treatment

Recommendations on the organization of various cancer control activities have been made by a number of WHO expert committees.

In 1961 an expert committee on the chemotherapy of cancer ² recognized that, in spite of certain advances, the chemotherapy of neoplastic diseases remained one of the main problems in present-day cancer research. Guidelines for future research on the immunotherapy of cancer were drawn up by a scientific group in 1966 (see page 229). An expert committee on cancer control (1962)³ advocated the introduction of national cancer control programmes and outlined general principles on which they should be based.

The importance of ensuring adequate facilities for the early detection and therapy of precancerous conditions, including mass screening, was stressed by another WHO expert committee, in 1963.⁴ Methods for use in this connexion were discussed at various meetings organized by WHO, including a technical meeting on the public health aspects of exfoliative cytology, held in Copenhagen in 1962, and a seminar in Oslo in 1965. Training was provided in courses held in Teheran for countries of the Eastern Mediterranean Region in 1965 and 1966.

In 1965 an expert committee on cancer treatment ⁵ reviewed the results obtained in surgery, radiotherapy, chemotherapy and the use of combined therapy, with emphasis on the planning and organization of cancer control services.

Comparative Studies

In comparative oncology, studies have been directed along two main lines: the histopathological and clinical investigation of animal cancers and the working out of an agreed classification and nomenclature, integrated as far as possible with that being established for human tumours; and the collection of epidemiological information on animal tumours.

Work on the first aspect has been done—in co-operation with corresponding centres for human tumours—by the WHO International Reference Centre for Comparative Oncology, in Washington, and a series of collaborating centres. With regard to epidemiological studies, information has been gathered from various sources on the prevalence of particular types of tumour of special comparative interest, and veterinary schools have been encouraged to establish modern methods of recording clinical and pathological data suitable for computer analysis.

The Organization has also supported etiological studies on certain animal cancers. It has long been known that the prevalence of the various types of cancer and the anatomical sites affected differ greatly from one species to another, and studies of the exogenous and endogenous factors associated with these patterns of incidence should produce valuable information with possible implications for human cancers. A bibliography on the epidemiology of cancer in animals has been prepared by WHO and distributed to research workers.

The type of animal cancer in which most progress has been made is leukaemia. A WHO-assisted study has produced evidence that the disease in cats is caused by a virus resembling that known to cause the disease in mice. Studies on leukaemia in cows have so far produced only equivocal evidence of a virus etiology. WHO has sponsored several meetings to co-ordinate research on leukaemia in animals and man.

International Agency for Research on Cancer

A new approach to the co-ordination of research was the establishment of the International Agency for Research on Cancer in 1965 (see Chapter 11, page 313). The Agency concentrates on environmental biology (carcinogenesis) and cancer epidemiology (etiological aspects), while WHO is expanding its activities on cancer control (prevention, early detection, treatment, rehabilitation, follow-up and evaluation), clinical research (nomenclature and histological classification of tumours, new methods of diagnosis and treatment, precancerous conditions) and training and education in respect of cancer (education of physicians and other professional health workers, and education of the public).
Although the Organization's work during its first ten years included some activities in the field of dental health, it was not until the second decade that a systematic programme of work was elaborated, with emphasis on three main aspects: the epidemiology of dental diseases, the training of personnel, and the development of dental health services.

**Epidemiology of Dental Diseases**

The results of a series of surveys by WHO on the epidemiology of periodontal disease — carried out since 1957 in Ceylon, India, Iran, Nigeria and Sudan — were discussed at a meeting in 1965. Periodontal disease was found to be highly prevalent in all five countries, and closely associated with poor oral hygiene.

The dental profession has long been concerned with the problem of international comparability of epidemiological studies of dental and oral diseases, and a considerable amount of work has been done in the past by the International Dental Federation's Commission on Oral and Dental Statistics. In 1961 a WHO expert committee considered the international standardization of the reporting of dental diseases and conditions, and made recommendations regarding the planning, implementation and reporting of surveys and epidemiological studies relating to dental caries and periodontal disease.¹

A scientific group which met in 1965 to consider the question of research in the field of dental health recommended that, initially, the Organization's programme should concentrate on epidemiological studies, including the classification of dental and oral diseases and the standardization of methods and techniques. Accordingly, work has begun on the preparation of a set of manuals to promote international comparability of dental epidemiological data. They deal with general methodology, the use of the International Classification of Diseases in dentistry and stomatology; a simplified descriptive survey for the evaluation of dental health; intensive studies of dental caries and other tooth tissue lesions; epidemiological studies of periodontal disease and of dento-facial anomalies; and geographic pathology of oral diseases.

In the Western Pacific Region, where the Organization is carrying out an intercountry programme, epidemiological surveys have been undertaken in several countries by the participants in two courses on survey techniques organized by WHO in 1964 and 1965. The surveys will provide a basis for the planning and development of dental health services in the Region.

With the assistance of the Organization, an international centre for dental epidemiology and applied research has been established at the University of São Paulo, Brazil. The functions of this centre, which serves all the countries of Latin America, include the provision of advanced training for public health dentists in dental epidemiology and research methods.

The Organization's dental health epidemiology programme has been assisted by the American Dental Association through the United States World Health Foundation.

Training of Personnel

In view of the worldwide shortage of dental manpower, the Organization convened an expert committee in 1958 to review the possibilities of increasing dental services through more efficient utilization of auxiliary personnel. The committee stressed the importance of establishing dental health teams, each working under the supervision of a dentist and comprising chairside assistants, dental technicians, dental hygienists and school dental nurses. In 1962 another expert committee on dental education made suggestions for the rapid development of local facilities, even if these are limited initially to the training of sub-professional personnel, and for the possible establishment of regional dental schools.

In 1961, with the co-operation of the International Dental Federation, WHO published the first World Directory of Dental Schools, and a second edition was published in 1967. To provide practical assistance in the training of dental auxiliaries, WHO prepared specimen lecture notes covering the basic medical and dental subjects, and including a comprehensive list of teaching and dental equipment.

Surveys carried out by the Organization revealed a number of problems in dental schools in Latin America in connexion with the teaching of the basic and clinical sciences and the social aspects of dental education and public health, as well as needs in the fields of dental research and the training of dental auxiliary personnel. In collaboration with the W. K. Kellogg Foundation, the Organization therefore sponsored a series of Latin American seminars on dental education — in Bogotá (1962), Mexico City (1964) and Petrópolis, Brazil (1966). With a view to implementing the recommendations of the seminars, the Organization helped to establish the Latin American Association of Dental Schools (ALAFO) and co-operated with the Association in organizing three international courses on

the teaching of dentistry. The Organization has also assisted in the establishment of departments of preventive and social dentistry in dental schools in several countries in Latin America.

It is now recognized that special post-graduate training in public health dentistry is essential for dentists engaged in public health services, especially those in administrative positions. In the Americas, a regional centre for training in dental public health, at the School of Public Health of the University of São Paulo, Brazil, has been operating since 1958 with the assistance of the Kellogg Foundation and the Organization. The success of this programme is indicated by the fact that dentists with post-graduate training in public health are now working in every country of Latin America as health administrators and teachers in dental schools. In the European Region, the first regional course on dental public health was held in Czechoslovakia in 1967.

A survey of dental manpower in the African Region stressed the acute lack of education and training facilities. As a first step towards meeting this need, WHO has provided assistance for the development of dental education in Lagos (to serve English-speaking countries) and Dakar (for French-speaking countries).

Since 1965 WHO has co-operated with the Royal Dental School, Copenhagen, in the organization each year of three-month courses on dentistry for children. These advanced courses have been attended by teachers of paedodontics and administrators of children's dental health services from all the six regions.

An inter-regional seminar on the training and utilization of dental personnel in developing countries was held during 1967 in New Delhi.

Development of Dental Health Services

The importance of developing dental health services as an integral part of the general public health services was stressed by an expert committee convened by WHO to consider the problem of periodontal disease.1 In all the regions, WHO has collaborated with governments in the identification of dental health problems and evaluation of resources with a view to the integration of dental health into national health plans. Primary attention has been accorded to the improvement of dental manpower resources and the application of proven methods of prevention — as recommended by another expert committee which met in 1964 to discuss the organization of dental public health services.2

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Wide variations exist in preventive and curative dentistry in different countries. In 1958 WHO convened a study group to formulate general principles for promoting greater uniformity in dental health services for children in the European Region; this was followed in 1960 by a seminar organized in Göteborg, Sweden, to consider in greater detail the practical organization of these services. In 1964 a pilot survey was made in six European countries to evaluate the progress made in following up the recommendations of the seminar.

In 1959 WHO organized an inter-regional seminar in Adelaide, Australia, to consider the development of dental health services in the South-East Asia and Western Pacific Regions during the five years that had elapsed since the previous WHO seminar, held in Wellington, New Zealand.

The value of water fluoridation as a preventive measure against dental caries has been discussed at various meetings and seminars. At the request of the International Dental Federation, WHO prepared a report on the metabolism of fluorine on the basis of contributions from twenty-four scientists in eleven countries.

The Organization also co-operated with the International Dental Federation in a survey of dental research personnel and projects. In 1965 the Federation established a co-ordinating committee with a view to promoting further close collaboration between the two organizations.

MENTAL HEALTH

The outstanding development in mental health work in recent years has been the reorientation of psychiatric services, thanks to the introduction of new forms of therapy. The modern trend is away from custodial care in an institution and towards active treatment, with the aim of returning the patient as soon as possible to the highest achievable degree of normal life in the community. The whole approach of psychiatry is in fact changing, with emphasis on social psychiatry and community care, through expansion of outpatient services, day care hospitals, domiciliary care and follow-up services. The Organization’s work in this field has been increasingly concerned with the development of mental health services as part of the public health structure, including the integration of mental health care programmes in the local health services.

With a view to establishing priorities for mental health programmes, WHO carried out a survey of resources and facilities available, and the information obtained was considered by an expert committee in 1960.1

Mental Health Services and General Public Health

The technical discussions at the Fifteenth World Health Assembly in 1962 were devoted to mental health programmes in public health planning. Several seminars were held on the same subject. In the Region of the Americas, the Organization sponsored a series of seminars on mental health and the integration of programmes into the public health services—in Mexico (1962), Argentina (1963) and Jamaica (1965). Inter-regional travelling seminars were organized in the Union of Soviet Socialist Republics in 1965 and 1967 to enable psychiatrists and public health officers from developing countries to observe the Soviet system of psychiatric care and its link with the general health services. For countries in the European Region, a seminar on public health practice and the prevention of mental illness was held in the United Kingdom in 1964.

Community attitudes to mental illness and psychiatry, as well as advances in social psychiatry, were considered by an expert committee in 1958. The newer methods of treatment can not only reduce the length of stay in hospital but also help to prevent mental deterioration and thus reduce the number of patients who remain chronically incapacitated. Improvement of psychiatric hospital care and rehabilitation techniques have therefore assumed increasing importance; a European regional travelling seminar was organized by WHO in Poland and the United Kingdom in 1967 to consider these aspects.

Modern psychiatric techniques are being increasingly directed to the family as a whole. With a view to clarifying some of the considerable theoretical and practical problems resulting from this trend, WHO organized the first Asian seminar on mental health and family life in Baguio, Philippines, in 1958, and a similar seminar for the European Region in 1962, in Athens.

Information on the epidemiology of mental disorders is, of course, indispensable for the planning of mental health services. In this connexion, WHO has published two numbers of Public Health Papers on epidemiological aspects of mental health; convened an expert committee on the epidemiology of mental disorders; and organized two inter-regional conferences on survey techniques (in Naples in 1960, and in Manila in 1962). In the European Region, a meeting on the epidemiology of mental disorders was organized in 1961, and in 1966 a survey was made of published national statistics on mental illness. In the Region of the Americas, the Organization convened a meeting in Washington, D.C. in

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1965, to draw up general guidelines for epidemiological studies on mental disorders, with special reference to epilepsy. It has sponsored epidemiological studies in Argentina and Chile, and administered a study on the interactions of schizophrenic patients and their families, financed by the Foundations' Fund for Research in Psychiatry.

Increasing urbanization and industrialization are apt to bring to light certain latent mental health problems that could previously be relatively easily handled under rural conditions. Mental health aspects were considered at the technical discussions on the challenge to public health of urbanization at the Twentieth World Health Assembly in 1967. Little attention has been given in the past to the impact of automation on mental health—one aspect of industrialization and technological development. The various problems involved, including the consequences of strain on individual workers and the repercussions of the accompanying social changes, were reviewed by a WHO study group in 1958.¹

In some industrialized countries there has been a considerable rise in admission rates of old people to mental hospitals in recent years: this is due partly to the increasing proportion of old people in many populations, and also to the fact that industrial and urban development encourage social and geographical mobility, while possibilities of home care are limited. These problems were considered by a WHO expert committee on mental health problems of aging and the aged in 1958,² and the Organization subsequently drew up a programme on geriatric psychiatry.

In the European Region, special attention has been paid to the prevention of psychiatric illness in adults through child psychiatry. WHO has organized a number of meetings on mental health work with children, including a conference on preventive aspects (in Copenhagen in 1958) and a seminar on in-patient psychiatric treatment (in Frankfurt-am-Main, Federal Republic of Germany, in 1963).

In 1962, papers on various aspects of deprivation of maternal care were printed in the Public Health Papers series.³ This was a follow-up of Maternal Care and Mental Health, a monograph published in 1951; some 25,000 copies were sold, and a second edition appeared in 1952.⁴ It was published by WHO in English, French and Spanish, and has been translated into ten other languages.

Mental retardation raises problems of serious concern to health, social welfare and education administrations—problems that are increasing as a result of rapid urbanization, the splitting up of families, and the increased expectation of life for

the severely mentally retarded. In 1965 WHO arranged a meeting of a small group of physicians and administrators experienced in this field, and the group’s findings were considered by an expert committee which met in 1967 to discuss the organization of services for the mentally retarded.

In recent years alarming increases in both alcoholism and drug abuse have been noted in several countries, especially among adolescents. The public health problems resulting from dependence on central nervous system depressants and stimulants, as well as on hallucinogens such as LSD, now overshadow the problem of abuse of narcotics. There has been a gradually developing trend towards a combined approach to the problems of dependence on alcohol and other drugs. In 1966 a WHO expert committee met to consider the establishment of services for the prevention and treatment of these conditions.¹ There are several similarities in causation and treatment, and many studies on alcoholism might be applicable to abuse of other drugs; moreover, drugs are often used in combination — for example, barbiturates together with heroin or alcohol — and transfer from one drug to another frequently occurs.

In the Region of the Americas, the Organization sponsored a seminar in Viña del Mar, Chile, in 1960, to consider the integration of programmes of treatment and prevention of alcoholism into overall health plans. In 1966 a symposium on alcohol and alcoholism was held in Santiago, Chile, and the Organization convened a study group meeting on the epidemiology of alcoholism.

With regard to the mental health aspects of crime and delinquency, the Organization has continued to collaborate with the United Nations — for example, in carrying out a study on trends in juvenile delinquency ² for the Second United Nations Congress on the Prevention of Crime and Treatment of Offenders — and in 1958 the Organization sponsored a seminar on the psychiatric treatment of criminals and delinquents for countries of the European Region.

Suicide is among the first ten causes of death in many countries, and attempted-suicide rates are increasing. In some communities, the establishment of suicide-prevention services appears to have been followed by a lowering of the suicide rate. In preparation for further work on this problem, the Organization has held consultations with a number of experts who have carried out research on suicide or who have organized suicide-prevention services.

Training of Personnel

Recognition of the high prevalence of mental disorders, recent advances in psychiatry (including the increased emphasis on social psychiatry and psycho-

pharmacology), and the realization that mental health work is not the task of the psychiatrist alone, have emphasized the need not only for a better preparation of the psychiatrist to meet his growing responsibilities, but also for the training of various categories of personnel.

The importance of including psychiatry in all undergraduate medical curricula was stressed by a WHO expert committee on the undergraduate teaching of psychiatry and mental health promotion \(^1\) held in 1960. Some of the papers presented to this committee were published in the *Public Health Papers* series.\(^2\)

The role of public health officers and general practitioners in mental health care was considered in 1961 by a WHO expert committee, which recommended the inclusion of mental health in the curricula of all public health training centres and in post-graduate training for general practitioners.\(^3\)

One of the problems facing the general practitioner is that of psychosomatic disorders. In 1963 a WHO expert committee met with a view to clarifying the concepts of psychosomatic medicine and psychosomatic disorders, and evaluating present knowledge on etiology, treatment, and prevention.\(^4\)

The acute shortage of psychiatrists was revealed by a survey carried out by WHO in preparation for an expert committee meeting convened in 1962 to discuss the question of training.\(^5\) Of the eighty-five countries for which data were available, eight (with an aggregate population of 20 million) had no trained psychiatrists, and in a further thirty-five (with an aggregate population of 890 million) the ratio was less than one per 200,000 population. The Organization has provided assistance to several countries in the training of psychiatrists through the provision of fellowships and the assignment of staff for undergraduate or post-graduate teaching in medical schools (in Ceylon, India and Nigeria, for example).

In the Region of the Americas, an intensive course in mental health was held in Barbados in 1964 under the joint sponsorship of the Organization, the Caribbean Mental Health Federation, and the Foundation for International Medical Services, Inc., and in 1967 the Organization sponsored a seminar in Lima, Peru, on the teaching of psychiatry and mental health in medical schools.

Close attention has been given by WHO to the role of various other categories of personnel in mental health work. It has carried out studies on the role and training of the psychiatric social worker and the psychologist, and on the employment of psychologists in the European health services. With regard to the training of personnel in mental health

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\(^1\) *World Health Organization (1961) Teaching of psychiatry and mental health, Geneva (Publ. Hlth Pap. No. 9).*

\(^2\) *World Health Organization (1961) Teaching of psychiatry and mental health, Geneva (Publ. Hlth Pap. No. 9).*

\(^3\) *World Health Organization (1962) 208.

\(^4\) *World Health Organization (1964) 275.*

\(^5\) *World Health Organization (1963) 252.*
psychiatric nurses, since 1962 WHO has co-operated with the Asfourieh Hospital for Mental Disorders, Lebanon, in the organization of four training courses for countries of the Eastern Mediterranean Region; it has also provided assistance for training in Burma, Ghana, Iran, Nigeria, Senegal, Thailand and Venezuela. In China (Taiwan) the Organization has assisted in the training of clinical psychologists and social workers as well as psychiatric nurses.

Research andRelated Activities

Little is known for certain about the etiology, pathophysiology and psychopathology of mental disturbances, and psychiatric treatment is therefore largely empirical. Recent advances in psychiatric practice have nevertheless resulted in shortening the duration of patients' incapacity. A scientific group on mental health research met in 1964 to discuss possibilities for co-ordinated research to provide a basis for the planning of practical programmes of prevention and therapy.

There is an urgent need for the standardization of psychiatric diagnosis, classification and statistics. A series of annual seminars, concentrating each year on a specific category of psychiatric disorder, has been organized. Diagnostic exercises are carried out by the participating psychiatrists on the basis of questionnaires and videotaped and filmed interviews. The topics covered have included schizophrenia (1965), borderline psychoses (1966) and disorders of childhood (1967). In the years 1968 to 1971 it is planned to concentrate on psychoses of old age, mental retardation, personality disorders, drug dependence and neuroses (including physical disorders of presumably psychogenic origin), and to review the material as a whole in the ensuing three years.

The definitions and criteria agreed upon for a particular disease should then be tested in the different cultural settings of various countries. For this purpose, an international pilot study of schizophrenia was started in 1966. Eight centres are collaborating in this research: in China (Taiwan), Colombia, Denmark, India, Nigeria, the Union of Soviet Socialist Republics, the United Kingdom, and the United States of America. The first year was devoted to the preparation and testing of the case-history and interview schedules, translated into the local languages.

To assist in the co-ordination of research on biological aspects of psychiatry, WHO has convened scientific groups to review research on genetics in psychiatry (1965), psychopharmacology (1966) and neurophysiology (1967).

Collaborative investigations are being carried out to follow up the recommendations of these scientific groups. They include analysis of the causes of diffe-

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The medal and prize of the Léon Bernard Foundation, established in memory of Professor Léon Bernard, one of the founders of the Health Organisation of the League of Nations, are awarded periodically for outstanding service in social medicine. Since 1950 the award has been made by the World Health Assembly.

The late Dr Thomas Parran (1958)

Professor Robert Debré (1964)

Dr Fred L. Soper (1967)

The photographs of other recipients since 1958 — Sir John Charles (1962) and Dr Karl Evang (1966) — appear elsewhere in this volume.
Dr P. E. Moore:  
twenty-second and twenty-third sessions,  
1958-1959

Professor E. Aujaleu:  
twenty-fourth and twenty-fifth sessions,  
1959-1960

Dr H. M. Penido:  
twenty-sixth and twenty-seventh sessions,  
1960-1961

Dr A. O. Abu Shamma:  
twenty-eighth and twenty-ninth sessions,  
1961-1962

The photograph of Sir John Charles, Chairman of the Board at its twenty-first session (1958), who was also President of the Twelfth World Health Assembly, appears earlier in this volume.
EXECUTIVE BOARD, 1958-1967

Dr B. D. B. Layton: 
thirty-second and thirty-third sessions, 
1963-1964

Dr Karl Evang: thirty-sixth and thirty-seventh 
Also recipient of the Léon Bernard Medal and 
Prize (1966)

Dr J. Watt: 
thirty-eighth and thirty-ninth sessions, 
1966-1967

Dr K. N. Rao: fortieth session, 1967

The photographs of Dr Monawar K. Afridi, Chairman of the Board at its thirtieth and thirty-first sessions, and 
of Dr H. B. Turbott, Chairman at the thirty-fourth and thirty-fifth sessions, both of whom were also Presidents of 
the World Health Assembly, appear earlier in this volume.
THE DARLING FOUNDATION MEDAL AND PRIZE: RECIPIENTS SINCE 1958

Dr E. J. Pampana (1959)
Sir Gordon Covell (1961)
Dr A. Gabaldón (1961)

Dr Martin D. Young (1963)
Professor M. Ciucă (1966)
Professor P. G. Sergiev (1966)

The Darling Foundation Medal and Prize are awarded periodically to a malarialogist for distinguished work. The Foundation is in memory of Dr S. T. Darling, who was killed in an accident while working for the Malaria Commission of the Health Organisation of the League of Nations. The award is made by the Health Assembly.

The photograph of Dr Monawar K. Afridi, recipient of the prize in 1964 and also President of the Seventeenth World Health Assembly, appears earlier in this volume.
rences in data obtained in studies on psychiatric genetics in twins; studies on the biological features of patients with familial forms of schizophrenia and their relatives, and also of monozygotic and dizygotic twins concordant and discordant for schizophrenia, with a view to establishing genetically-determined biochemical, immunological and neuro-endocrinological characteristics; research on the mutagenicity of various biologically effective substances (psychotropic drugs and fluids taken from schizophrenics), and on the karyotype of different kinds of cell in primary human and animal tissue culture; and assessments of the clinical effectiveness of psychotropic drugs.

WHO's work with regard to neurological disorders has been mainly confined to the preparation of a glossary of terminology on epilepsy; this work is to be extended to the compilation of a classification on epilepsy preparatory to collaborative research.

In connexion with comparative studies on neuropathology, a collaborating centre maintains a reference collection for histopathological study of a wide variety of conditions which occur spontaneously in animals.

NUTRITION

The problem of nutrition is manifold. One aspect is the fact that population growth threatens to overtake increases in food production. WHO influence in this respect is obviously through health activities, including health promotion, which result in a higher per capita output, and through the control or elimination of diseases, which often permits the farming of previously uncultivated areas.

Another aspect in which the Organization can play a direct role is that of achieving a balance in human diet in order to ensure sound nutrition. WHO's work in this sphere has been carried out in close co-operation with FAO, the United Nations/FAO World Food Programme, and other agencies concerned with the nutrition of special population groups, particularly UNICEF. Activities have included the search for further knowledge about foods and the prevention of nutritional deficiency diseases, the development of foodstuffs to redress imbalances in diet and supplies, and health education to influence dietary habits.

The Joint FAO/WHO Expert Committee on Nutrition, when it met in 1961 and 1966 to review the organizations' work and make recommendations for future programmes, considered various special aspects of nutrition — in particular, the problems affecting populations in developing countries.

The need for international standardization in the assessment of nutritional status was stressed by a WHO expert committee in 1962, and on the committee's recommendation a monograph on the subject, with special reference to field surveys in developing countries, was subsequently published. During the past ten years WHO has assisted nutrition surveys in more than twenty countries.

Studies on specific nutritional requirements have been carried out in co-operation with FAO, and joint expert groups have been convened to consider human requirements of calcium (1961), proteins (1963), and vitamin A, thiamine, riboflavine and niacin (1965).

Attention has been given to various special aspects of nutrition. Following the recommendations made by a WHO expert committee which met in 1964 to consider the problem of nutrition in pregnancy and lactation, the Organization has assisted research on this subject — a field in which available information is limited. In the European Region, a study was made on the nutrition of the elderly — a problem that is growing in importance with the aging of the population — and in the Eastern Mediterranean Region a seminar on industrial canteen feeding in the Near East was organized by FAO and WHO in Alexandria in 1965.

The public health significance of the inter-relationship between nutrition and infection was discussed by a WHO expert committee in 1965, and a monograph on interactions of nutrition and infection is in press.

**Protein-calorie Malnutrition**

In developing countries, protein-calorie malnutrition in infants and young children during weaning and the post-weaning period is one of the most widespread nutritional disorders. In the child population up to the age of five years, between 1 and 9 per cent. are reported to be suffering from severe deficiency, but a much larger proportion are known to suffer from mild to moderate deficiency. The problem of protein malnutrition in children was discussed at regional seminars organized by WHO in Hyderabad, India, in 1963, for the South-East Asia Region, and in Kampala, Uganda, in 1964, for Africa.

Animal proteins are expensive, and in some areas it is not possible to produce adequate supplies of foodstuffs such as meat and milk. In order to overcome this

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difficulty, considerable attention has been paid to the production and distribution of low-cost vegetable protein mixtures, based on cereals, pulses and protein concentrates from oilseeds and enriched with minerals and vitamins. These mixtures can be used effectively for both prevention and, in certain cases, treatment, of protein-calorie malnutrition. One such mixture — "Incaparina" — was developed by the Institute of Nutrition of Central America and Panama (INCAP — an institute assisted by the Organization), and has been in commercial production since 1960. Other products — such as fish protein concentrates and protein concentrates of sunflower seed, sesame seed, and coconut — are being studied, and efforts are being made to improve processing methods. The FAO/UNICEF/WHO Protein Advisory Group meets regularly to advise on the safety and suitability of new products intended for use in infant and child feeding.

In Algeria WHO has collaborated with UNICEF and FAO in the preparation of protein-rich foods that can be manufactured from local products. Preparations are in progress for the manufacture of similar foods in Morocco and Turkey.

But malnutrition is not a purely economic problem. Particular attention has been paid to instructing mothers attending health centres on the appropriate use of supplementary protein-rich foods and other nutritious foods locally available, and correct feeding practices and methods of infant weaning.

During recent years WHO has encouraged the organization of nutritional rehabilitation centres in areas where the malnutrition of young children is prevalent. The aim is to restore the under-nourished children to health as quickly as possible and at low cost, while at the same time teaching their mothers to use the local foodstuffs. Such centres — which usually take the form of day nurseries or kindergartens, where the children take their three daily meals for six days a week while mothers attend and help to prepare the meals — are now in operation in nine countries in Latin and Central America, as well as in a number of countries in other regions.

Nutritional Anaemias

Following recommendations made by a WHO study group on iron deficiency anaemia,¹ collaborative studies were started in 1961 with the aim of focusing particular attention on the determination of tissue stores of iron; the absorption of food iron; dermal and total loss of body iron; the role of hookworm infection; and anaemias associated with pregnancy.

A brief survey was made in order to obtain an overall view of the problem of nutritional anaemias, including those characterized by megaloblastosis. Studies

were carried out in India, Israel, Mexico, Poland, South Africa, the United Kingdom of Great Britain and Northern Ireland, the United States of America, and Venezuela, and progress was reviewed at a meeting in 1963. Subsequently, plans for studies on nutritional anaemia in Latin America and the Caribbean area were outlined at a meeting in Caracas.

In 1967 WHO convened a meeting on iron deficiency and megaloblastic anaemias to review overall progress in the collaborative studies, which use carefully standardized methods, and to discuss other relevant problems such as nutritional requirements of iron, folate and vitamin B₁₂.

Avitaminosis A and Xerophthalmia

Xerophthalmia exists as a severe form of nutritional disease in several countries in South and East Asia; milder forms have been reported from countries in Africa and in Central and South America and the Caribbean area. However, little is known of the total prevalence of the disease, including its milder manifestations.

In 1961, WHO carried out a study on its prevalence in different regions of the world on the basis of hospital statistics, census figures on blindness, the results of examinations of a limited number of the child population, and governments' replies to a questionnaire. The data obtained, although incomplete, confirmed that xerophthalmia occurs in varying degrees of severity, often in association with protein-calorie malnutrition, in the majority of developing countries. Previously, a WHO-assisted study had been made in Zambia on the role of parasitism in precipitating acute manifestations of avitaminosis A.

In Jordan, a WHO-sponsored survey on the epidemiology of xerophthalmia was carried out with the participation of local physicians in all parts of the country, and trials were conducted to explore the feasibility of preventing xerophthalmia by the administration of massive doses of vitamin A.

Endemic Goitre

The Organization has provided assistance in the prevention and control of endemic goitre in the Region of the Americas, where a collaborative study has been under way since 1962 and a reference laboratory and training centre has been established in Santiago, Chile. The technical, legal and administrative aspects of large-scale iodization of salt for the prevention of endemic goitre were discussed at a regional seminar held in Salta, Argentina, in 1965.

In Asia, WHO organized a regional seminar in New Delhi in 1967, and has provided technical help in connexion with UNICEF-assisted projects for the production and distribution of iodized salt in areas affected by endemic goitre in China (Taiwan), India and Thailand.
Applied Nutrition Programmes, including Training

In co-operation with FAO and UNICEF, and sometimes with UNESCO, the Organization has assisted countries in the development of applied nutrition programmes with a view to raising nutritional standards, particularly in rural areas, through the co-ordinated action of the authorities for education, agriculture and health. During the past ten years such projects have been implemented in more than sixty countries — the largest programme being in India, where every state is now involved. In the Region of the Americas, where programmes are in operation in sixteen countries, emphasis has been laid on training.

The Organization has given close attention to the evaluation of nutrition programmes. A joint FAO/WHO meeting on methods of planning and evaluation in applied nutrition programmes, held in 1965, was followed by a number of regional seminars — in New Delhi, for countries in Asia and the Far East, in Nairobi, for African countries, and in Popayán, Colombia, for the Americas. In addition, during 1966 an appraisal was made of some of the programmes being carried out with the assistance of FAO, UNICEF and WHO.

Together with FAO and UNICEF, the Organization has assisted in the establishment of several centres for the training of professional and auxiliary personnel. The work of the Institute of Nutrition of Central America and Panama (INCAP) has expanded considerably in the past ten years, and some 500 people have received training during this period. WHO has also provided assistance for research and training in teaching institutions in a number of countries (for instance, in Algiers, in Dakar and in Hyderabad, India), often through the provision of fellowships (as for the courses in London/Ibadan, and in Paris/Dakar). Several ad hoc training courses have also been sponsored by the Organization.

Following a symposium on education and training in nutrition sponsored by FAO and WHO in Bad Homburg (Federal Republic of Germany) in 1959, the two organizations carried out a joint study on nutrition education in six countries in the European Region.

Efforts have also been directed to the dissemination of information on nutrition — for instance, through INCAP in Latin America, and through the joint FAO/WHO/STRC Regional Food and Nutrition Commission for Africa. A booklet on malnutrition and disease prepared by WHO as one of the Basic Studies series supporting the FAO Freedom from Hunger Campaign was widely distributed. Reference to work on health education in relation to nutrition will be found on page 54, and co-operation with the United Nations/FAO World Food Programme on page 282.

Food Standards

An important step towards the development of a system of internationally acceptable standards for food was made in 1962, with the establishment of a joint FAO/WHO food standards programme. A commission was set up to prepare the international Codex Alimentarius — a collection of internationally adopted food standards presented in a uniform manner for all the principal foods, whether processed, semi-processed or raw. The Codex Alimentarius will include provisions in respect of food hygiene, food additives, pesticide residues, contaminants, labelling and presentation, and methods of analysis and sampling. These food standards aim at protecting the consumer's health and ensuring fair practices in the food trade.

Between 1963 and 1967, four sessions of the Codex Alimentarius Commission were held, and draft standards were prepared in respect of a large number of food commodities. The food hygiene aspects of this work have been referred to a special sub-committee. (For work on hygiene of food of animal origin, see page 157.)
The discovery of new fundamental knowledge in biology during the last decade has brought about advances on many fronts, particularly in the area which has come to be known as molecular biology. The determination of the structure of biologically active macromolecules such as polysaccharides, proteins, including nucleoproteins, and the interpretation of function in structural terms, as well as the application of newly developed techniques and methods, have opened new approaches to the solution of many problems in the fields of immunology, human genetics and other branches of biomedical (or biological) sciences. The decade has also seen a marked expansion of interest in problems of fertility and sterility and, more generally, in the health aspects of human reproduction. In these fields WHO has initiated new programmes, concentrating in each case on the aspects that can be applied rapidly to the solution of important health problems.

The increased range of pharmaceuticals, although of great value in the prevention and treatment of disease, has also given rise to public health problems: in some cases, access to drugs has led to their abusive consumption; in others, adverse reactions and unforeseen side-effects have constituted serious health risks. In the Organization’s programmes in pharmacology and toxicology the common objective is to protect the individual and the community against the avoidable risks presented by substances normally used for the maintenance or improvement of health conditions. WHO’s work in promoting the safety and high quality of drugs and other allied substances is developing as these substances become more easily available and as international trade in them increases.

This chapter deals with WHO’s activities in these and related matters under the following headings: immunology, human genetics, human reproduction, biological standardization, pharmaceutical substances, drug safety, drug dependence and abuse, and food additives.
IMMUNOLOGY

At the start of this century immunologists were preoccupied with the mechanisms through which animals acquire immunity to infectious diseases; today, the importance of the immune response is recognized in areas as diverse as tissue transplantation, cancer, genetics, allergy and conditions associated with immunologically-produced tissue lesions (immunopathology). In 1962 WHO convened five scientific groups on research in immunology\(^1\) to review the numerous advances made in this discipline and to indicate areas in which internationally co-ordinated research was especially needed.

In view of the potentially short step between the current advances in basic knowledge about the molecular structure and function of the immunoglobulins — the group of serum proteins that includes antibody molecules — and application of this knowledge to public health, WHO established an International Reference Centre for Immunoglobulins (in Lausanne, Switzerland), and a number of other reference and research centres. These centres are concerned not only with the supply of reference reagents but also with research on the structure and biological properties of immunoglobulins. The WHO nomenclature for human immunoglobulins,\(^2\) which is now widely used, has been followed by agreed notations for genetic factors of human immunoglobulins\(^3\) and for human immunoglobulin subclasses.\(^4\)

The WHO International Reference Centre for Immunoglobulins has carried out research on such subjects as antibody purification on insoluble adsorbents and purification and characterization of immunoglobulin A.\(^5\) The public health applications were reviewed by an expert committee which met in 1965 to consider the use of human immunoglobulin.\(^6\) In 1967 a meeting of investigators was organized and a memorandum subsequently published on the suppression of Rh immunization by passively administered human immunoglobulin (IgG) anti-D (anti-Rh\(_D\)).\(^7\)

With a view to promoting research and the teaching of immunology, especially in the developing countries where parasitic and other tropical diseases not only represent pressing public health problems, but also offer opportunities for fruitful investigations, WHO is establishing research and training centres for immunology.

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\(^2\) *Bull. Wld Hlth Org.*, 1964, 38, 447-450.
\(^3\) *Bull. Wld Hlth Org.*, 1965, 33, 721-724.
\(^7\) *Bull. Wld Hlth Org.*, 1967, 36, 467-474.
The first was started in 1964 in Ibadan, Nigeria, and the second in 1966, in São Paulo, Brazil. A third centre, in Lausanne, was designated in 1967.

Although the value and usefulness of tissue-typing (leukocyte-typing) in organ transplantation have been clearly demonstrated, there are considerable difficulties in applying this technique to clinical use. The limited availability of human sera with high titres of antibodies to tissue-antigen, the problems of storage and the difficulties that arise in formulating criteria for monospecificity of the antibodies and the measurement of antibody content are the principal obstacles to the establishment of the required standards in this field. WHO helped to organize meetings of investigators on this subject in Leiden in 1965, and in Turin in 1967, and has been assisting research in Italy and the Netherlands.

In 1966 a scientific group on the immunotherapy of cancer reviewed animal and human studies in the field of cancer immunology and drew up guidelines for future research.1 Although there is a firm basis in animal experimentation for the immunotherapy of cancer, and clinical studies are in progress, there have been no definitive developments as yet, and evaluation of results in this field will require much time.

In collaboration with WHO, the Gamaleja Institute of Epidemiology and Microbiology, in Moscow, which was designated as WHO International Reference Centre for Tumour-Specific Antigens in 1967, has been carrying out studies on tumour-specific antigens — the basis for research on cancer immunology. A serum protein of embryonic origin has been isolated in experimental animals with hepatoma; it is antigenically distinct from the serum proteins that are normally present in healthy individuals. In collaboration with the International Agency for Research on Cancer, in Lyons, France, the Institute in Moscow has been investigating a similar protein found in certain cases of human hepatoma.

The Medical Research Council, London, is collaborating with the WHO International Reference Laboratory for the Serology of Autoimmune Disorders in developing reference reagents and standardized techniques for studies in immunopathology. Courses on the techniques used in this field were held at the WHO International Reference Laboratory in London in 1966 and 1967. A meeting at Punta Ala, Italy, held in conjunction with the Fifth International Symposium on Immunopathology, considered the possibilities of treatment of autoimmune disorders through the use of purine and folic acid antimetabolites.2

The close contact that has been maintained between immunology and bacteriology since the beginning of the present century has not been paralleled in the case of parasitology. In 1964 an expert committee considered recent develop-

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ments in immunological research and the application of modern immunological concepts to parasitic diseases.\(^1\) A scientific group on the immunology of malaria which met in 1967 considered, in particular, research which might lead to active immunization, the development of improved diagnostic tests, and a better understanding of the immunopathology associated with malaria.

An expert committee convened by WHO in 1966 recommended measures to ensure that the teaching of immunology in medical schools is kept up to date with the rapid progress being made in this field.\(^2\)

There is a need for further knowledge of problems of protection against infection, of allergy, of immunopathology, of tissue transplantation and of tumour immunology, and research on the basic immunological mechanisms common to all of these problems offers promise for the future.

**HUMAN GENETICS**

The last ten years have witnessed an increased recognition of the importance of genetics in relation to disease. An expert committee convened by WHO in 1963 pointed out that "genetic considerations add a new dimension to public health work: a concern not only for the health and well-being of persons now living, but also for the genetic endowment of generations yet to come".\(^3\) This concern is reflected in the Organization's programme in human genetics, which has expanded considerably since 1957. WHO's activities in the field of human genetics have developed out of its interest in the effects of radiation on human heredity (see pages 263 to 267). In 1963, the expert committee defined those subjects on which the efforts of WHO might most appropriately be concentrated. One such area includes the three groups of haematological diseases: haemoglobinopathies, thalassaemias and glucose-6-phosphate dehydrogenase (G6PD) deficiencies. These conditions represent a major public health problem. It is estimated that in tropical Africa alone sickle-cell anaemia is responsible for 80,000 infant deaths annually. At present there are in the world probably as many as 100,000 cases of thalassaemia major that will result in early death; homozygous \(\alpha\)-thalassaemia, resulting in hydrops foetalis, is lethal antenatally, at least in East and South-East Asia, and is a major problem in some other areas, although frequency data are scanty. In addition, there are millions of individuals with G6PD deficiency,
some of whom may experience acute attacks of favism or fall victim to haemolytic crises if exposed to certain commonly used drugs.

In 1965 a scientific group reviewed knowledge of the world distribution of these defects. Considerable lacunae emerged, regarding not only data on the frequency of these disorders in certain regions, but also the understanding of their clinical symptoms. Moreover, the urgent need to study possibilities of treatment became apparent. The group also outlined the requirements for diagnostic facilities and further genetic studies.

The Organization has contributed to surveys of these diseases in thirteen African countries. As a result, assistance has been given in setting up diagnostic facilities in Cameroon and Upper Volta; genetic studies have been supported in Ghana and Senegal; basic research on the structure of the G6PD molecule and clinical studies of G6PD deficiency have been sponsored in Nigeria; and a clinical study of G6PD deficiency and favism has been assisted in Lebanon. Comparative studies of G6PD deficiency in monkeys and in man have been supported in Brazil. A WHO-assisted survey in a previously malarious area of Chile did not reveal a single case of G6PD deficiency.

In Greece WHO assisted a mass screening programme for thalassaemia, sickle-cell haemoglobin and G6PD deficiency; sickling rates of about 25 per cent., with 20 per cent. G6PD deficiency, were found in the Orchomenos area. Preliminary surveys of thalassaemias in India, Malaysia, Pakistan, Singapore and Thailand indicated that accurate figures on incidence are available only in the last-named country. Following these surveys, WHO supported investigations of the frequency of thalassaemia in India and in Singapore. A collaborative study on the basic defect in haemoglobin synthesis in thalassaemia has been started in Thailand.

WHO-supported studies have been made of populations of particular genetic interest, including some with high incidence of haemoglobinopathies. One such study was conducted in Andhra Pradesh, India, another is under way among three groups (Faditchi, Arabs and Konoze) in Egyptian Nubia, and two others — on different ethnic groups in Surinam and among the Maya Indians of Yucatán, in Mexico — have just begun. The genetic interest of such groups derives from their relative isolation and the opportunities they afford for the study of the effects of inbreeding and for discovering new diseases or concentrations of rare diseases. Other WHO-assisted studies of inbreeding have included the investigation of three isolated groups in eastern Slovakia, and a comparative study of certain population groups in Brazil and Portugal.

A scientific group convened by WHO in 1962 stressed the importance of making similar studies among the few remaining primitive populations, especially nomadic

and pastoral groups, which represent, both in size and level of economy, the closest approximation still to be found to the conditions under which man has lived for the greater part of his existence.\(^1\) WHO has supported studies of this kind among the Chavante Indians of Brazil, the Babinga pygmies of Central Africa, the Hadza tribe in East Africa, the Tongariki Islanders of the New Hebrides, and the northernmost population in the world — the Thule Eskimos of Greenland. During 1967 the Organization convened a meeting of experts to consider the scientific implications of genetic data collected among such isolated and socially primitive groups and to review, in the light of recent experience, the conduct of such studies.

Population studies directed at specific genetic traits, such as abnormal haemoglobins, require standardized procedures and terminology and access to laboratories in which elaborate identification of genetic variants can be carried out. Accordingly, in recent years the number of WHO international reference centres for this purpose has been increased; they are listed in Annex 12.

A standardized methodology for the study of G6PD\(^2\) and a revised nomenclature for G6PD in man\(^3\) were recommended by a scientific group in 1966. A scientific group on genes, genotypes and allotypes of immunoglobulins (1965) recommended a system of notation for genetic factors of human immunoglobulins.\(^4\) Standardized procedures for chromosome studies in abortion were recommended by a scientific group which met in 1966 to discuss the reasons for the very wide variation in the reported rates of chromosomal anomalies found in cases of spontaneous abortion.\(^5\) It appears that these anomalies may be significant factors in many abortions; they have been demonstrated in 19 per cent. of a total of nearly 800 spontaneous abortions, but in only 2 per cent. of another group of more than 450 induced abortions.

Another field in which a need for uniformity of procedures has been acknowledged is that of studies on twins, which for nearly a century have been one of the geneticist’s means of distinguishing between hereditary and environmental factors. In 1965 a WHO-sponsored meeting of geneticists and epidemiologists discussed the use of twins in epidemiological studies, a method hitherto insufficiently applied for this purpose. The group indicated the areas in which such studies might be valuable — for example, cancer and cardiovascular diseases — and recommended standardized methods of presenting and analysing data.\(^6\) To

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\(^3\) *Bull. Wld Hlth Org.*, 1965, 33, 721-724.


provide background information for this meeting, WHO prepared a survey of twin registers and studies.

Computer methodology permits studies of population genetic structure which were unthought of only a few years ago. An advanced course on the use of computers in human genetics research was organized by WHO in 1966 in collaboration with the University of Michigan, USA, and the lectures have been published.\(^1\) WHO has also made time available on its own computer and co-operated with the University of Aberdeen, Scotland, in a project to map the world distribution of various genetic markers, to develop the automatic construction of pedigrees from genetic data, and to elaborate models for the flow of genes in populations. Assistance has been given to the University of Birmingham, England, in preparing computer programmes for record linkage, and to the Copenhagen Institute of Medical Genetics in the preparation for computer processing of the information contained in the Danish Heredity Register, and in linking it with other social and medical registers. The importance of record linking was stressed at a seminar on the use of vital and health statistics for genetic and radiation studies, jointly organized by the United Nations and WHO in Geneva in 1960.\(^2\)

An expert committee in 1961\(^3\) considered the teaching of genetics in the undergraduate medical curriculum and in post-graduate training. With a view to improving teaching in genetics, WHO organized three-month courses for teachers in medical schools at the University of Copenhagen in 1962, 1964 and 1966; these have contributed in several countries to the development of new units of human genetics research and to the integration of this discipline into the medical curriculum. Other training assisted by WHO has included a laboratory course held in 1960 at the University of Basel, Switzerland, on methods of human cell culture and cytology, and a course in Bombay, India, in 1963, on laboratory and field methods in human population genetics.

Since genetic considerations are fundamental to health and disease, they have been taken into account in the various aspects of the Organization's programme — in particular, in its work on mental health, cardiovascular diseases, maternal and child health, human reproduction and leprosy. During 1967 two scientific groups convened by WHO considered the genetics of the immune response, and screening procedures and detection of carriers of inborn errors of metabolism.

The results of a WHO-sponsored study of the frequency of congenital malformations in different parts of the world were published in a supplement to the *Bul-

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\(^1\) *Amer. J. hum. Genet.* 1967, 19, No. 3, Part I.


Forty hospitals in sixteen countries participated in the study, which covered a total of more than 420,000 pregnancies. Significant variations in the incidence of malformations of various types as between the different centres were observed. WHO has also supported research on the association of smallpox and typhoid fever with genetic markers. The pursuit of studies on such conditions as malformations and infectious diseases, in which a strong genetic component interacts with environmental factors, should help to determine their various roles.

Since 1965 WHO has participated in the International Biological Programme, initiated by the International Council of Scientific Unions. The Programme is concerned with “the biological basis of productivity and human welfare”, with particular reference to human adaptability to changing conditions.

**HUMAN REPRODUCTION**

The lines for WHO’s programme of activities in the field of human reproduction were laid down by the Eighteenth World Health Assembly in 1965 after its discussion of a report (presented by the Director-General at the request of the Executive Board) on programme activities in the health aspects of world population that might be developed by WHO.

The Assembly took cognizance of the resolution adopted by the Economic and Social Council the previous year on population growth and economic development. During its review of the replies to an inquiry addressed by the Secretary-General to Member States of the United Nations, the Council had noted the concern expressed by many governments of developing countries about the slow rate of economic growth of their countries in relation to the high rate of their population increase, and had suggested that the specialized agencies concerned should take these findings into account in formulating their own programmes. The Health Assembly also noted that the United Nations Population Conference, in April 1965, had attached high priority to the research and other activities in the field of fertility.

In the preamble to its resolution the Assembly set out certain principles having a bearing on WHO’s activities in this field. It considered, for example, that it was for national administrations to decide whether and to what extent they should support the provision of information and services to their people on the health aspects of human reproduction; and accepted that it was not the responsibility of

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WHO to endorse or promote any particular population policy. It further noted that scientific knowledge with regard to the biology of human reproduction and the medical aspects of fertility control was insufficient. It approved the report of the Director-General, requesting him to develop further the programmes proposed: (a) in the fields of reference services, studies on medical aspects of sterility and fertility control methods and health aspects of population dynamics, and (b) in the field of advisory services as outlined in Part III, paragraph 3, of his report "on the understanding that such services are related, within the responsibilities of WHO, to technical advice on the health aspects of human reproduction and should not involve operational activities”.

As reported to the World Health Assembly, WHO's activities until then had consisted mainly of the convening of scientific groups to clarify certain health aspects of human reproduction (see below) and a limited amount of research.

The Nineteenth World Health Assembly noted that several governments were embarking on nationwide schemes of family planning and that the activities of WHO and its scientific groups had already played their part in collecting and making available information on many aspects of human reproduction. It confirmed that the role of WHO was to give Members technical advice, upon request, in the development of activities in family planning, as part of an organized health service, without impairing its normal preventive and curative functions. In 1967 the Twentieth World Health Assembly requested the Director-General to continue the programme and to assist on request in national research projects on health aspects of human reproduction and in securing the training of university teachers and of professional staff.

The programme of WHO has included a number of meetings of scientific groups, whose findings have influenced its development. Twelve scientific groups met between 1963 and 1967 to review existing knowledge of various aspects of human and comparative reproductive physiology and to indicate areas in which further research was required, and in which WHO might most usefully participate. The subjects covered by these groups have included the following: biology of human reproduction (1963), physiology of lactation (1963), the effects of labour on the foetus and the newborn (1964), neuroendocrinology and reproduction in the human (1964), mechanism of action of sex hormones and analogous sub-

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1 The paragraph in question stated that "WHO should be prepared to give advice, on request, to the health administrations of its Members and Associate Members on the medical aspects and treatment of sterility and the medical aspects of family planning. It should also be in a position to advise on the place such subjects should have in the health services of the community”.

stances (1964), the biochemistry and microbiology of the female and male genital tracts (1965), immunological aspects of human reproduction (1965), chemistry and physiology of the gametes (1965), clinical aspects of oral gestogens (1965), basic and clinical aspects of intra-uterine devices (1966), biology of fertility control by periodic abstinence (1966), and standardization of procedures for chromosome studies in abortion (1966).

Material has been assembled for a bibliography of the world literature of the past twenty-five years on ethnic, geographical and secular variations of certain indices of the human reproductive function. An inventory of research institutions and scientists working in various fields related to human reproduction, providing a survey of current research activities throughout the world, is being compiled in a form analogous to similar tabulations established by WHO in other biomedical sciences (see page 271).

WHO-assisted research projects in reproductive physiology have been concerned with the assessment of mechanisms through which hormonal steroids modify the synthesis and release of pituitary gonadotrophins; the relationship between the chemical structure of certain steroids and their biological effects; the clinical and serological aspects of auto-antibodies to sperm in men; the development of simple methods of detection and prediction of ovulation in women; the analysis of plant materials for their effects on fertility; the duration of lactation amenorrhoea and postpartum infertility in tropical countries; and the introduction of new experimental animals into the laboratory for investigation of reproductive phenomena.

WHO has supported a programme designed to facilitate the collection of human pituitary glands and the extraction, purification and distribution of the hormones obtained from them for biological and medical research.

Studies of an epidemiological nature assisted by WHO included one on population dynamics in Peru, and another on the human reproductive function and fertility in Senegal. These and others being planned, including a study on abortion in São Paulo (Brazil), aim at a better understanding of the determinants and consequences of fertility trends and of their relationships to mortality and to changes produced by population movements.

Data are being assembled on such subjects as sexual maturation, menstrual phenomena, the menopause, multiple ovulation, non-ovulatory cycles, and the relationship of reproductive health or morbidity to maternal age, parity, spacing of pregnancies, total number of children, miscarriages, paternal age, general health, and infant health.

The Organization has also been called upon to provide information requested by Member States and health workers on a wide range of biological, clinical and public health questions related to human reproduction. Advisory services provided at the request of governments have covered such subjects as family planning and fertility regulation, sterility problems and the development of research in reproductive biomedicine. WHO has also provided a number of research training grants. Training activities are expected to increase following the resolution adopted by the Twentieth World Health Assembly, placing special emphasis on the training of university teachers and professional staff.

**BIOLOGICAL STANDARDIZATION**

The main object of WHO’s programme in the field of biological standardization is to ensure an adequate level of efficacy and safety of biological products used in medicine. The work, which has expanded considerably in recent years, comprises a number of new activities as well as the traditional programme, taken over from the League of Nations Health Organisation, of establishing or replacing international standards and international reference preparations used in the laboratory assay of potency of biological substances. By the end of 1967, 150 international standards and reference preparations had been established.¹

A recent activity has been the establishment and continuous development of a new category of substances, namely international reference reagents — generally antisera of high specificity used for the identification of micro-organisms. Over the last ten years ninety-six such reference reagents have been established.

The programme now also includes the formulation, publication and periodic revision of requirements (specifications) for manufacture and testing which must be fulfilled if biological products used in human and veterinary medicine are to have a minimum level of efficacy and safety. At the close of 1967, seventeen individual sets of requirements had been formulated and published by WHO.

¹ A complete and up-to-date list of the International Standards and International Reference Preparations is annexed to each report of the Expert Committee on Biological Standardization. For the latest list, see the twentieth report, *Wld Hlth Org. techn. Rep. Ser.*, 1968, 384.
Action has also been taken to promote the widest possible use of international biological standards and requirements for biological substances and the application of international recommendations by national control authorities.

In the course of this work, details of which appear in the following pages, contacts have been developed with national control laboratories for the exchange of information on such matters as the use and applications of international standards and requirements, difficulties encountered, and methods of testing and control.

**International Biological Standards and Reference Preparations**

International standards and reference preparations are established by the WHO Expert Committee on Biological Standardization (which meets annually), after international collaborative assays organized by the three WHO International Laboratories for Biological Standards.

The primary purpose of this aspect of the work is to provide a means of ensuring uniformity throughout the world in the designation of potency of many important preparations which are used in the prophylaxis, therapy or diagnosis of human and animal disease and which cannot be characterized adequately by chemical and physical tests. Biological assay methods (tests on animals, animal organs or micro-organisms) are therefore necessary. Because the susceptibility of animals varies the concept of "relative potency" has been introduced in order to achieve uniformity — the effect of a substance being measured in comparison with that of a standard preparation of the same substance.

The international biological standard is a preparation to which an international unit has been assigned after an exhaustive collaborative study undertaken by selected national control laboratories and co-ordinated by one of the three International Laboratories for Biological Standards, which reports to the Expert Committee. When the results are conclusive, the standard is established by the Expert Committee and the international laboratory concerned holds the stock of the preparations and distributes samples as required, free of charge, to national laboratories for biological standards, or to other biological laboratories. The potency of a substance tested can be specified in terms of the standard and conveniently expressed in international units.

Because of the large number of laboratories involved and the hundreds of assays often needed, the procedure for establishing an international standard is slow in most cases.

An international reference preparation, on the other hand, which may be used for a similar purpose, is established either prior to completion of the lengthy study described above or when such a study has shown that the preparation is not entire-
ly suitable to serve as an international standard. Formerly, international units were not assigned to reference preparations. However, with the introduction and widespread use of many new substances the need to express these in units has become evident, since the introduction of an international unit notation obviates the risk of a variety of units being established by individual laboratories and countries. For this reason international units of potency are in certain cases assigned to reference preparations.

Of the three WHO international laboratories the Statens Seruminstitut, in Copenhagen, is the custodian and distributor of the international standards and reference preparations of sera and vaccines used in human medicine, and also of the international reference reagents; and the National Institute for Medical Research, London, acts in a similar capacity for substances such as antibiotics, hormones, vitamins, enzymes and other pharmacologicals. These two laboratories have carried out these functions since the programme was started under the League of Nations. The third WHO International Laboratory for Biological Standards — the Central Veterinary Laboratory, Weybridge, England — was designated in 1962, in consultation with FAO. It is responsible for the custody and distribution of international biological standards and international reference preparations of various kinds, primarily of veterinary importance, and has, in addition, carried out a programme for the establishment of several new standards and reference preparations, and the formulation of minimum requirements for biological substances used mainly in veterinary practice.

**Antigens:** During the past ten years eleven new international standards or international reference preparations have been established, and four replaced. A further five antigens are under consideration for establishment as new reference preparations or for replacement (Newcastle disease vaccine (live), two cholera vaccines (Ogawa and Inaba), cardiolipin and lecithin).

Although the general policy is to establish a substance as a standard or a reference preparation when it is of acceptable stability during storage under proper conditions, it is sometimes necessary to establish a material before enough knowledge is available as to its long-term stability. This is the problem in the case of rabies vaccine. The inherent instability of this vaccine necessitates continuous examination of its potency at regular intervals for possible deterioration.

**Antibodies:** Twenty-three new international standards or international reference preparations have been established, and two replaced. A further fifteen are under consideration for possible establishment or replacement, including antitrichinella human serum, anti-toxoplasma serum, anti-anthrax serum, anti-echinococcus human serum, tetanus antitoxin for flocculation test, some snake antivenins (in addition to the already established *Naja* antivenin), long-acting
thyroid stimulator, various blood-typing sera, and certain auto-antibody preparations.

**Antibiotics:** The rapid development in the field of antibiotics, including the discovery and mass production of new therapeutically potent substances, is reflected in the number of established standards or reference preparations. Since 1958 twenty-three new ones have been established, and five replaced. The establishment of further new standards (such as Capreomycin, Rifamycin SV, Lyne-cycline, Methacycline, Gentamycin and Rolitetracycline) and the replacement of the standards of the two bio-synthetic penicillins most widely used for therapeutic purposes — benzylpenicillin and phenoxymethylpenicillin — are under consideration.

Most of the recently developed semi-synthetic penicillins and cephalosporins of well-known chemical structure, widely used in the therapy of infectious diseases, are prepared in such a high degree of purity that they can be assayed by chemical and physical methods and do not necessitate biological standards. They belong to the class of pure chemical substances and are in the custody of the WHO Centre for Chemical Reference Substances in Stockholm (see page 244).

**Hormones, Vitamins, Enzymes:** Four new international standards or reference preparations have been established, and seven replaced. A further eleven are under consideration for possible establishment. Many of them are hormones of human origin, such as human growth hormone, human thyrotrophin, human pituitary gonadotrophins, and human insulin. To the classical bio-assays and chemical assays have now been added various immunochemical methods, including the radio-immunochemical method which is proving particularly valuable for the standardization and assay of hormones of human origin.

**Other Substances:** An international reference preparation has been established for Pyrogen, and the opacity reference preparation has been replaced twice. The establishment of a haemoglobin cyanide reference preparation is also under consideration, with a view to reducing variations in results of haemoglobinometry.

**International Reference Reagents**

This new category has been introduced to provide biological diagnostic reagents of high specificity for the identification of micro-organisms or their products. Since these reference reagents are not used for the quantitative assay of biological products, an international unit is not assigned to them. Of the ninety-six preparations established since this programme was started in 1958, fifty-four are
various antiviral sera, and there are forty-two established anti-Leptospira sera, of which four have been replaced. A further sixteen antisera are under consideration. Lists of the established reference reagents are published with the reports of the Expert Committee on Biological Standardization.¹

**International Requirements for Biological Substances**

The formulation of requirements (i.e. specifications) that can be internationally recommended is a valuable factor in promoting uniformity in the production of vaccines and other biological substances and in ensuring that these products are safe, reliable and potent. Such requirements also facilitate the exchange of these biological preparations between countries.

WHO's work of formulating requirements for vaccines and other biological substances has been developed considerably since it was started in 1957. The need for such requirements has grown from the expansion of public health programmes relying wholly or partly on the use of substances that have to be assayed biologically. By the end of 1967 seventeen sets of requirements had been formulated and approved by the Expert Committee and published (or were in press) (see list on page 242).

Further sets of requirements are in course of preparation. The procedure followed in formulating requirements has been to prepare an initial draft, which is circulated widely to members of expert advisory panels and other experts (including technical staff of national control laboratories) for comments and suggestions. A revised draft is then prepared for consideration by the Expert Committee on Biological Standardization, which adopts the requirements when they are judged suitable for international use. The accepted requirements are published in the *Technical Report Series*, as integral parts of the reports of the Expert Committee on Biological Standardization, or separately.

The use of accepted requirements for biological substances has proved valuable, not only nationally in public health practice, but also internationally, for example in mass campaigns and eradication programmes against certain communicable diseases. Thus, the criteria applied for vaccines used in the WHO smallpox eradication programme are those of the Requirements for Smallpox Vaccine. International certificates of vaccination and revaccination against smallpox must state that the vaccine used conforms to the Requirements for Smallpox Vaccine recommended by WHO (published in 1959 and revised in 1966).

The establishment of an International Reference Preparation of, and the formulation of Requirements for, Procaine Benzylpenicillin in Oil with Aluminium

INTERNATIONAL REQUIREMENTS FOR BIOLOGICAL SUBSTANCES

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Monostearate (PAM) have been important for the programme against treponemal diseases, especially yaws, assisted by UNICEF and WHO (see also pages 120 to 126). The insistence on conformity with these requirements has ensured that only effective PAM preparations were used. Checks on samples of PAM used in the field have shown that the quality of the preparations was satisfactory. The second international reference preparation of PAM was established in 1966, with consequent revision and modifications of the requirements. Studies are continuing in some collaborating laboratories on other long-acting penicillin preparations.

The Development of National Control Laboratories for Biological Products

The control of biological substances used in prophylactic and therapeutic medicine has been practised in developed countries for many years. Many of the developing countries, however, are facing for the first time the necessity of exercising judgement over products available from any world source, and of ensuring an acceptable level of quality in products manufactured in their own territory. In order to help them solve the problem of acquiring the technical facilities necessary for the national control of biological products, WHO has provided advice on the establishment and development of national control laboratories.

The Organization also supplies information to Member States whenever international standards and reference preparations are established or replaced, and whenever sets of requirements for biological substances are published for the first time, or revised.

PHARMACEUTICAL SUBSTANCES

The ever-growing quantity and variety of drugs and the vastly increased amounts moving in commerce across frontiers are evidence of the need for international co-operation in controlling their quality. Six meetings of the Expert Committee on Specifications for Pharmaceutical Preparations, several meetings of specialists, and a European technical meeting on the quality control of pharmaceutical preparations (Warsaw, 1961) helped to work out principles and details relating to such control. Relevant publications included the Supplement to the

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The continuous development of methods used in pharmaceutical quality control necessitated the preparation of a second edition of the International Pharmacopoeia. It includes monographs giving specifications for the identity and purity of 555 pharmaceutical preparations, as well as sixty-nine appendices describing modern physico-chemical methods used in quality control, among them determination of infra-red absorption spectra, chromatography, non-aqueous titration, and polarography. Of the monographs, 162 are on new products, while 114 monographs that appeared in the first edition have now been omitted.

In the preparation of the second edition, consultations were held with the World Medical Association and the International Pharmaceutical Federation, and members of the WHO Expert Advisory Panel on the International Pharmacopoeia and Pharmaceutical Preparations. The Expert Committee on Specifications for Pharmaceutical Preparations reviewed the methods and specifications proposed and already subjected to tests in various laboratories and in medical and pharmaceutical institutes.

Discussions at the Eighteenth, Nineteenth and Twentieth World Health Assemblies underlined the need for further international action to improve the quality of drugs manufactured for domestic use and for export; and, in accordance with a resolution adopted by the Twentieth World Health Assembly, the Organization has begun preparatory work on the formulation of principles for quality control procedures with a view to their incorporation into good drug manufacturing practice.

The creation of independent control laboratories in Member States where such facilities do not yet exist presents a major problem by reason of the cost involved and the scarcity of expert personnel. Studies have been made of ways and means of establishing — possibly with assistance from the United Nations Development Programme — control laboratories in certain areas to serve several governments collectively.

Some of the new analytical methods used in pharmaceutical quality control require the use of chemical reference substances. In accordance with recommendations made by the Expert Committee on Specifications for Pharmaceutical Preparations, the WHO Centre for Chemical Reference Substances, in Stockholm, has established thirty-nine such substances in connexion with some of the monographs included in the second edition of the International Pharmacopoeia.

The need for a single non-proprietary name for any given drug throughout the world has been widely recognized. The use of such names avoids the confusion that inevitably arises from the use of multiple designations, and facilitates the labelling of pharmaceutical products, the formulation of regulations governing their production and use, the national and international control of dependence-producing drugs, and the supply of information on adverse reactions to drugs.

More than 2000 international non-proprietary names have now been proposed by the Organization; eighteen lists of such names were printed in the WHO Chronicle and, in addition, two cumulative lists were published (in 1962 and 1967). Over 1700 names have been published as "recommended international non-proprietary names".  

The selection of non-proprietary names has been greatly facilitated by the active co-operation of national nomenclature commissions, which act as intermediaries with the manufacturers.

**DRUG SAFETY**

It is difficult to envisage a truly safe drug, since an increased dosage or prolonged use of even the most innocuous pharmaceutical product may cause an untoward reaction in some individuals. The basic problem is to ensure that the normal use of a given drug is not liable to produce a detrimental biological change, either immediately or long after administration. A striking example of possible dangers has been provided by the damaging effect of thalidomide on embryonic development.

In order that its therapeutic potential might be explored, a substance is customarily subjected to a range of tests in animals or animal preparations. Even a far-reaching experimental study, however, cannot always establish its therapeutic value and all possible side-effects, and the final judgement can be made only after observation in human beings.

In 1962 the Fifteenth World Health Assembly, recognizing the need to establish a system for the evaluation of the safety and efficacy of drugs, requested that a study be made of the feasibility of WHO's developing a programme with the following main aspects: the formulation of internationally acceptable principles and requirements for drug evaluation; the exchange of information on drug safety and efficacy; and the promotion of rapid transmission of information on serious adverse reactions to drugs. Subsequently a scientific group convened by WHO to consider the question advised that such a programme was feasible.

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1 For procedure for selecting and recommending international non-proprietary names, see The first ten years of the World Health Organization (1958), Geneva, p. 405.
Accordingly, a programme for the promotion of safety of drugs has been developed with the guidance of the Advisory Committee on Medical Research and the collaboration of the International Union of Pharmacology. One feature is a communication service, by which Member States exchange, through the Organization, information on governmental decisions to limit the availability of certain therapeutic substances on account of adverse reactions observed during their clinical use.

Following upon the recommendations of various scientific groups convened by WHO, a pilot research project has been initiated for the purpose of developing a system for international monitoring of adverse reactions to drugs. This project has the benefit of data-processing facilities offered by the Government of the United States of America.

Of particular importance has been the formulation, with a view to international acceptance, of basic principles for the experimental and clinical evaluation of the safety and efficacy of drugs. Thus, in 1966 a scientific group outlined the principles that should govern the first phase of the testing of drugs, in animals. It discussed, inter alia, studies on the metabolism and distribution of drugs in the body, and the importance of integrating them into the relevant clinical studies at the earliest possible stage. The same year another group outlined principles for the testing of drugs for teratogenicity.

At a symposium on the toxicology of drugs organized by WHO for countries of the European Region in Moscow, in 1964, it was stressed that national authorities responsible for statutory or other forms of drug safety control should be assisted, in the evaluation of data on preliminary toxicity testing and clinical trials, by an independent body of highly qualified experts.

**DRUG DEPENDENCE AND ABUSE**

One aspect of WHO’s activities in this field relates to international arrangements for the control of narcotics. The existing international conventions on the subject are gradually being replaced by the Single Convention on Narcotic Drugs, 1961; WHO participated in the preparation of this treaty instrument and has assumed certain functions and responsibilities under it.

The Organization has continued to perform its statutory functions with regard to dependence-producing drugs in collaboration with the United Nations Commis-

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sion on Narcotic Drugs, the Permanent Central Narcotics Board and the Drug Supervisory Body. In the course of seven meetings, the Expert Committee on Dependence-Producing Drugs (formerly known as the Expert Committee on Addiction-Producing Drugs) has made recommendations for decisions taken by the Organization as to the appropriate status for international control of some sixty substances, or preparations made from them.

The increasing variety of substances producing dependence and leading to abuse called for a review of the traditional terminology, and the proposal made in 1963 by the expert committee — that the general term “dependence” be used, qualified by the type of drug involved — has been widely accepted. The committee described the following specific types of drug dependence: morphine, barbiturate, cocaine, amphetamine, and cannabis. Subsequently descriptions were formulated of two further types — namely, drug dependence of khat and hallucinogen (LSD) types.

A scientific group reviewed and evaluated the methods available for detecting in advance, by pharmacological experiment or clinical observation, the dependence-producing properties of various types of drugs.

In addition to carrying out its functions in connexion with the international control of dependence-producing drugs, the WHO expert committee has reviewed the specifically medical aspects of drug dependence prevention, treatment and rehabilitation. The problem is not solely a matter of national or international control of dependence-producing drugs; there is need for study of the reasons why people have recourse to drugs. The psychological and social factors involved lend ever-increasing importance to the combination of treatment with education — of the community as well as of the individual. In this connexion, WHO produced a film in 1967 on the dangers of opium and heroin.

At a meeting in 1966, the Expert Committee on Mental Health advocated a combined approach to drug dependence and alcoholism, in view of the many similarities in causation and treatment of these conditions (see also page 218).

The high rate of consumption of drugs — whether antibiotics or tranquilizers — has been causing concern in many countries. It may result in adverse reactions to some drugs, or some form of dependency on others. It involves a threat to health and a waste of resources, and information is required on the size and nature of the problem. To provide a basis for considering whether the particularly high

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consumption of drugs in certain countries in the European Region corresponds to real needs or represents an appreciable over-consumption, WHO has made a study in six countries in the Region, taking into account such factors as over-prescription, self-medication and health insurance schemes.

FOOD ADDITIVES

The chemical industry has greatly increased the number of substances — formerly mainly of vegetable origin — that are added to foods and drinks as preservatives or to enhance colour or taste. The widespread utilization of pesticides in agriculture and the use of antibiotics and other biological substances in animal husbandry have created another group of additives — those which are unintentional, but remain in foods prepared for human consumption.

These intentional and unintentional food additives may create risks to health, and many countries have introduced legislation for their control. For some substances the evidence has been clear, and governments have forbidden their use. Some have proved innocuous, and are among those permitted. Others, especially the new ones, require systematic study to ensure that they have no adverse effect on health. Finding out whether a substance may be carcinogenic, for instance, is not as simple as establishing in animals its degree of crude toxicity.

A scientific basis for legislation is necessary. WHO, often in co-operation with FAO and other agencies, has attempted to help by co-ordinating experience and knowledge available, assisting in the development of criteria and methods for international use — thus facilitating the comparison of studies — and indicating topics in which further research is required. WHO's activities in the field of food additives have therefore mainly taken the form of international meetings and assistance to research.

WHO and FAO have jointly convened several meetings of expert committees with a view to evaluating the toxicity of food additives and pesticide residues, as recommended by the first 1 and second 2 joint FAO/WHO conferences on food additives and by a joint meeting of the FAO Panel of Experts on the Use of Pesticides in Agriculture and the WHO Expert Committee on Pesticide Residues, held in 1961.3

The Joint FAO/WHO Expert Committee on Food Additives has established the main criteria for toxicological evaluation of food additives 4 and the basis for

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testing for carcinogenicity.\textsuperscript{1} It has evaluated toxicological data and drawn up specifications for a number of antimicrobials and antioxidants, emulsifiers and stabilizers, food colours, acids and bases, flour-treatment agents, flavours, non-nutritive sweeteners and other food additives.\textsuperscript{2}

Recommendations regarding future research on food additives were made by a scientific group convened by WHO in 1960 to consider methods of evaluating carcinogenicity, and by a group of consultants at a meeting in 1963. Another scientific group, which met in 1966, reviewed toxicological testing methods and the interpretation of experimental results, and made recommendations concerning the choice of appropriate test animals, guidelines for observations in man, the duration of toxicity studies, and the margin of safety to be applied in estimating acceptable daily intakes.\textsuperscript{3}

The public health aspects of the increasing use of antibiotics in animal foodstuffs, and for plant disease control and food preservation, were considered by a WHO expert committee in 1962.\textsuperscript{4} In 1961 FAO, IAEA and WHO sponsored an intergovernmental meeting on the wholesomeness of irradiated food, and in 1964 a joint FAO/IAEA/WHO expert committee discussed the technical basis for legislation on the subject.\textsuperscript{5} WHO has now begun to collect data relevant to the evaluation of the wholesomeness of irradiated food and to the necessary technical controls.

Joint meetings of the FAO Committee on Pesticides in Agriculture (or the FAO Working Party on Pesticide Residues) and the WHO Expert Committee on Pesticide Residues were held in 1963, 1965 and 1966.\textsuperscript{6} Acceptable daily intakes were estimated for about half of the fifty pesticides and fumigants considered, and recommendations were made on the additional toxicological investigations necessary for a safety evaluation of the remainder.

WHO has recently begun to sponsor research aiming to ascertain which pesticides can suitably be used in place of those that have been found to produce an unusually high toxicity when ingested by persons suffering from malnutrition.

As part of the Organization’s service for the collection of data on current research in medical and related sciences, and to assist in the co-ordination of research on food additives, the Organization has compiled information on the investigators working in this field and on the research projects on which they are engaged. This information is kept up to date and is available on request.

Work on the \textit{Codex Alimentarius} is described on page 226.

\textsuperscript{1} \textit{Wld Hlth Org. techn. Rep. Ser.}, 1961, 220.
In a comprehensive review of the Organization’s work in assisting governments in the environmental health field, submitted to the Twelfth World Health Assembly in 1959, it was pointed out that, despite some substantial achievements, progress was too slow to make a significant impact on the vast problem of environmental health. More than half the world’s population was still without elementary sanitation; hundreds of millions of people were without safe water; and in too many countries as many as one quarter of the hospital beds were occupied by patients suffering from water- and filth-borne diseases. The Health Assembly endorsed the principles and proposals set forth in general terms in the report, laying stress on the development of community water supplies not only for their own value but as a spearhead for other activities.

During the last decade, though community water supply has been given special emphasis, the other environmental deficiencies that endanger health have also received attention: air and water pollution control, sewage and solid wastes disposal, health aspects of housing and physical planning, and radiation health protection. The determination of the research required, the stimulation and support of such research, the collection and dissemination of results, are fundamentals —along with training—of environmental health activities.

Factors that underlie the world’s water supply problem and also accentuate other environmental health problems are the phenomenal increases in population growth, in urbanization and industrialization, as a result of which many more people are living in congested conditions and are exposed to increasing pollutants in the air and in water, food and soil. At the same time developing industrial technology means more atmospheric pollution and liquid and solid wastes which, in the absence of proper management and control, endanger public health.

The establishment of environmental health units in ministries of health and the enrolment of qualified sanitary or public health engineers and other specialists are prerequisites for an environmental health programme. Progress in these directions has been slow but encouraging. Many of the countries of Central and

South America have such units with sanitary engineers. Several countries in Africa and Asia now have at least the nucleus of an environmental health structure. WHO is assisting Member States to establish such structures and to develop programmes and plans by granting fellowships and by supporting training institutions as well as by providing advice.

WHO has also participated in work on extreme climates. For instance, it contributed to UNESCO's programme on arid zone research in 1960 and to a symposium on environmental physiology and psychology in arid conditions organized by UNESCO at Lucknow, India, in 1962. In the same year, a conference on medicine and public health in the Arctic and Antarctic was convened by WHO. It was attended by eleven Member States and representatives of the World Meteorological Organization and the Scientific Committee on Antarctic Research of the International Council of Scientific Unions. Selected papers presented at the conference have been published in the Public Health Papers series.¹

The Organization is developing its environmental health programme in co-operation with the United Nations (including the United Nations Development Programme), UNICEF, IAEA, the specialized agencies concerned, the International Bank for Reconstruction and Development and the Inter-American Development Bank.

GENERAL SANITATION SERVICES,
EDUCATION OF ENVIRONMENTAL HEALTH PERSONNEL,
HOUSING AND URBAN DEVELOPMENT

WHO has continued to provide assistance to countries in the promotion of environmental health services. Apart from its activities under the community water supply programme (see page 255), WHO is now assisting seventy-two Member States in establishing or developing environmental health services at central, provincial or municipal levels, or in training personnel for such services. In addition, ninety sanitary engineers and fifty sanitarians are attached to forty-four WHO-assisted projects for the control of communicable diseases or the promotion of maternal and child health. In Africa, where, before 1957, there were few activities in environmental sanitation, sixteen projects were operational in 1967.

Some WHO activities are for the benefit of specific groups. A study undertaken in collaboration with ILO and the Inter-Governmental Maritime Consultative Organization (IMCO) resulted in the publication in 1967 of a Guide to Ship

Sanitation. The preparation a few years before of a similar Guide to Hygiene and Sanitation in Aviation is dealt with in Chapter 4 (see page 100). At the request of the United Nations Conference on International Travel and Tourism (held in Rome in 1963) a study was undertaken on the sanitation of tourist establishments.

Education of Environmental Health Personnel

Since the development of sanitation services is hampered in many countries by the lack of qualified personnel, an important part of WHO's activity has been directed to the promotion of education and training of personnel at all levels.

Various forms of assistance have been provided for the creation of new courses in sanitary engineering and environmental sanitation, for example in Iran (at Teheran), India (at Madras), Lebanon (at Beirut), and in Italy, at the University of Naples, where an academic course in sanitary engineering for civil engineers is now given in French, chiefly for engineers working in developing countries. A similar course in English has been organized at Delft in collaboration with the Netherlands Universities' Foundation for International Co-operation, UNESCO and the Organization for Economic Co-operation and Development. Japan, the Philippines and Thailand are among the countries in which graduate and undergraduate courses in sanitary engineering have been established, and in the European Region a number of courses on specific engineering subjects have been organized.

Further impetus was given to the establishment of new sanitary engineering educational schemes in Brazil and Venezuela with financial assistance from the Special Fund component of the United Nations Development Programme. In Latin America, education, training and research in sanitary engineering have since 1962 been planned as a single regional programme, in which various academic programmes, courses and seminars have been carried out in sequence, although held in different countries. Altogether thirty-four universities in twenty-one countries of Latin America have agreed on such a programme.

Steps have also been taken with a view to setting up in 1968 in a French-speaking country on the African continent an environmental health centre, to provide training, research facilities and services. Moreover, the Organization has awarded fellowships to the staff of training and research institutions in various countries, since one of the greatest obstacles to the development of education programmes in public health engineering is the dearth of qualified teachers.

A WHO inter-regional symposium on engineering education and training programmes for environmental health, in 1965, drew attention to the need for


engineers and planners to receive teaching in environmental health during their university education, in order to make them aware of the health and sanitation implications of their future work.

In 1967 an expert committee emphasized the other aspect of the question, namely that of training "environmental health engineers" and other specialists called upon to deal with the widening range of environmental hazards, utilizing the newer methods and technologies that are now being introduced into university education.¹

Both the inter-regional symposium and the expert committee referred to the important role of sanitation personnel other than public health engineers in controlling environmental risks to health. WHO has sponsored the establishment of advanced courses for public health inspectors in India, Kenya, the Philippines and Syria. The training of other sanitation personnel, such as engineering subordinates, health (sanitation) assistants, sanitarians, sanitary aides, and waterworks operators, has gone forward with assistance from WHO in countries in all regions. In the African Region, for example, fourteen projects for training assistant health inspectors in sanitation were in operation by 1967. In addition, field training has been provided in connexion with WHO-assisted projects for community water supplies, sewage and waste disposal.

Housing and Urban Development

Since 1956 WHO's work in housing and urban development has been closely linked to that of the United Nations, the specialized agencies and the Organization of American States on programmes of concerted international action in housing, building and regional planning.

The nature and scope of the public health factors involved in these programmes have been discussed by three expert committees convened by WHO: the first, in 1961, dealt with the public health aspects of housing;² the second, in 1964, with the environmental health aspects of metropolitan planning and development;³ and the third, in 1966, with the appraisal of the hygienic quality of housing and its environment.⁴ Preparations for this last committee were made in close co-operation with the United Nations Statistical Office, the United Nations Centre for Housing, Building and Planning, and the Economic Commission for Europe.

The reports of these committees bring out the importance of environmental factors — inadequate water and sewerage systems, pollution, unhygienic dwellings, etc.— in the current deterioration of housing conditions and show how that deterioration can be avoided by proper attention to environmental aspects at the planning stage. This can be achieved by the close association of health authorities with public works agencies and others concerned with housing programmes.

A similar point is made in Housing Programmes: the Role of Public Health Agencies\(^1\) which also discusses the establishment and maintenance of housing standards.


In cooperation with the United Nations Centre for Housing, Building and Planning (New York) WHO participates in country projects financed from the Special Fund component of the United Nations Development Programme in various parts of the world. These have included housing, city and regional planning schemes in Lagos in 1962, in Entebbe-Kampala in 1964, in Caracas in 1965, in Taipeh and Kabul in 1966. Similar projects are in the planning stage in East Pakistan and Singapore.

As part of its own programme, WHO assisted in surveys of the public health aspects of housing in Ethiopia, Iran, Iraq, Sudan, the United Arab Republic and the countries of the Caribbean and Central American area in 1962 and 1963; advised on sanitation and public health for the general reconstruction plan for Skopje, in Yugoslavia, which was devastated by earthquake in 1963; and has provided advice on rural planning to Venezuela since 1965. Assistance in sanitary engineering and training was provided to housing and planning agencies in Iraq in 1965 and 1966 and in Libya in 1967, and to the Inter-American Centre of Housing and Planning in Colombia since 1966. The Organization participated in a course on housing, given in 1966, at the Latin American Institute for Economic and Social Planning in Santiago, Chile.

"The challenge to public health of urbanization" was the subject of the technical discussions at the Twentieth World Health Assembly in 1967 (see also page 42).

COMMUNITY WATER SUPPLY

Because safe and adequate supplies of water for the inhabitants of communities constitute an important measure for the protection and improvement of health and are indispensable to economic and social development, the Twelfth World Health Assembly in 1959 sanctioned a programme for the improvement of community water supplies. At the same time, it requested the Director-General to establish a Special Account for Community Water Supply.

Previously WHO's assistance in the field of water supplies had been aimed at rural communities; from 1959 onwards the programme was expanded to include large urban communities; this entailed assistance on all aspects of water supplies—engineering, financial, economic and managerial.

To ascertain the nature and extent of the needs of urban areas, a study was made in 1962 of the situation in seventy-five developing countries with a total urban population of 320 million. It showed that only about 33 per cent of the urban population and certainly less than 10 per cent of the total population were supplied with piped water in their homes or premises, and that even these supplies were in many cases deficient in quality, quantity or continuity. An additional 25 per cent of the urban population obtained water from public outlets often several hundred metres from their homes, while over 40 per cent of the urban population had no access to any safe and reliable source of water.

The seventy-five developing countries concerned have an annual population growth considerably greater than the world average, and an urban growth-rate about one and a half times higher than that of their rural communities. Hence in the very areas where the situation is at present most serious the problem is becoming rapidly worse.

Taking these factors into consideration, the community water supply programme was designed to help developing countries in assessing their needs, in formulating policies and programmes for meeting those needs, and in creating national and regional organizations for planning, financing, constructing, managing and operating community water supplies.

Since its inception in 1959, this programme has grown rapidly and in 1967 it included WHO-assisted projects in eighty-three countries, involving the services of 121 full-time WHO engineers. Of these projects three-quarters are financed from regular WHO funds and the remaining quarter from the United Nations Development Programme and the WHO Special Account for Community Water Supply.

Shortage of skilled manpower is a major obstacle in most of the countries concerned. WHO has assisted in training a variety of professional and sub-professional personnel through fellowships, the organization of seminars and training courses, the provision of instructors for on-site training, and by other means. All the Organization's field activities include training of counterpart staff and instruction classes for all grades of personnel. Consulting engineering firms which are sub-contractors to WHO take members of government staffs into their headquarters offices for training in waterworks planning and design.

These instruction programmes are usually aimed at "training the trainers", and local instructors are taught various techniques which will enable them to pass on the knowledge they acquire, in their own language, to local staff. Teaching is supported by manuals and course notes, as well as by WHO publications. Monographs such as Water Supply for Rural Areas and Small Communities and Operation and Control of Water Treatment Processes have proved valuable for training and serve as reference books for national staffs.

International Standards for Drinking-Water, first published in 1958, was revised and re-issued in 1963, incorporating the findings of an expert committee. Many governments have officially adopted these standards, while others have used them as a basis for national standards. A similar publication, European Standards for Drinking-Water, was the outcome of WHO-assisted studies in Europe.

Most developing countries lack funds for the construction of waterworks facilities. WHO, although not itself a financing agency, assists Member governments in a number of ways in this respect. Pre-investment surveys financed by the Special Fund component of the United Nations Development Programme have been undertaken, with WHO assisting both in the preparation of the government's request and as executing agency for the project. Such surveys have been completed or are in progress in Ghana (for Accra-Tema), India (Calcutta), Senegal (Dakar), Turkey (Istanbul), Uganda (Kampala), and also in Ceylon, Malta and Morocco. In other cases, government studies and surveys assisted by WHO have led to projects being financed by the International Bank for Reconstruction and Development or under bilateral assistance programmes, as in Burundi (Bujumbura), Dahomey (Cotonou and Porto Novo), Togo (Lomé), Liberia (Monrovia), Turkey (Adana and Mersin) and the Republic of Korea (Seoul). In all such sur-

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veys, the aim is a viable water undertaking, staffed by trained personnel, adequately managed, with a financial structure which will ensure its operation as a self-supporting investment capable of amortizing its original cost. The establishment of a national water corporation in Ghana, and a similar authority for Calcutta, are examples of institutions of this kind set up with guidance from WHO.

Since the consumers normally bear the whole, or at least a substantial part, of the cost of the treatment, storage and supply of water they use, WHO has assisted in setting up rate structures and internal financial arrangements which will enable the authorities concerned to obtain revenue on an equitable basis.

The progress achieved through comprehensive technical, managerial and financial assistance can be seen in the countries of Latin America that subscribed in 1961 to a specific health programme. It aimed to provide water supplies to a minimum of 70 per cent. of the urban and 50 per cent. of the rural populations by the end of the decade in 1971. Programmes were prepared for each of the nineteen countries involved and, in 1965, fourteen of these countries were ahead of schedule in respect of their urban water supplies, though progress in respect of the rural populations was less satisfactory. In these countries more than US $1100 million of national and international funds were invested between 1961 and 1967, for the benefit of about fifty-three million people (see also page 11). The stimulat-ing effect of national targets, support from international capital development agencies, the creation of revolving funds and other financial devices, have all helped in accelerating progress. The assistance of the Organization has been a factor in achieving this result.

For rural communities, international assistance has also been available in the form of equipment and supplies by UNICEF. These are now being provided in some sixty countries, with WHO assisting in the preparation of the project and in the installation of the water supply system. In Pakistan, for example, UNICEF made available materials for rural water supplies to the value of over $1 million.

Research into all aspects of community water supply is also being promoted as part of the assistance to developing countries. Here the general objectives are the reduction of construction and operation costs through increased use of local materials and skills, the simplification of designs and processes, field trials of methods which have been evolved under laboratory conditions, and the interchange of ideas which have proved successful in practice.

Among national research institutions which, with WHO assistance, are studying water supply problems peculiar to their countries, are the Central Public Health Engineering Research Institute at Nagpur (India) and the Centre for Sanitary Engineering Research at the University of Alexandria, United Arab Republic.
ENVIRONMENTAL POLLUTION

In some countries huge capital investments are made annually to control pollution. WHO's programme aims at assisting countries by determining those levels of pollution which are compatible with health and by advising on measures to prevent the growth of pollution into a major hazard in the course of economic and social development.

Air Pollution

Following the meeting in 1957 of the first expert committee to discuss air pollution, WHO has been mainly concerned with the measurement of air pollution and with its effects on health.

Since one of the difficulties in assessing pollution levels is the lack of standardized sampling and analytical procedures, the work on measurements was directed to the elaboration of methods that can produce accurate and comparable data and be internationally acceptable. Studies on this subject, which was discussed by an expert committee in 1963 and a scientific group in 1965, have led to the preparation of a guide to the selection of measuring methods.

The influence of air pollution on health was discussed at a number of meetings convened by WHO, mainly in the European Region where the problem is most acute. At a European symposium held in Copenhagen in 1960, it was agreed that convincing evidence of the effects of specific air pollutants could best be obtained from internationally co-ordinated epidemiological investigations carried out under varying climatic and environmental conditions.

During the last decade a remarkable increase in research in this field has taken place, including large-scale epidemiological studies, studies on the action of pollutants upon the central and autonomic nervous systems and research into biochemical and immunological responses to stimuli.

At a symposium on the health effects of air pollution, held in Prague in 1967, progress was reviewed and an attempt made at evaluation of methods used to measure air pollution. New approaches to the determination of the short- and long-term effects of air pollution on health, and standards, criteria and guides were also discussed.

A European seminar for sanitary engineers, held in Brussels in 1962, provided a forum for the exchange of information on technical and administrative measures.

for the prevention and control of air pollution. The following year an inter­
regional symposium discussed fundamental principles on which "air quality
criteria and guides" should be based and their relative importance as a basis for
formulating national legislation and local regulations and standards.

WHO publications on air pollution and its control have included a survey of
existing legislation,¹ a monograph presenting up-to-date knowledge on various
aspects of the subject,² and papers on air pollution control, published in the
Bulletin.³

The Organization has assisted a number of countries, including China (Tai­
wan), Cyprus, India, Iran, Israel, Japan, Kuwait, Lebanon and Turkey, in matters
of air pollution by providing fellowships for study abroad and advisory services,
including help in identifying the causes of specific cases of pollution.

In Latin America there now exists a network of air sampling stations linking
the following cities: Buenos Aires, Rio de Janeiro and São Paulo, Bogotá, Sant­
iago de Chile, Kingston, Mexico City, Lima, Montevideo, and Caracas. For the
first time it will be possible to compare results using the same standards for the
sampling and analysis of air in all cases. Successful control programmes have
also been established in Santiago, Lima and parts of São Paulo's industrial com­
plex.

Water Pollution

The first WHO expert committee to discuss water pollution control, in 1965,⁴
estimated that the few countries where effective pollution control existed would
have to double their water treatment facilities in the next twenty years. It advo­
cated the use of statistical analysis to compare the cost of pollution prevention
and abatement with the resulting economic benefits. It also recommended research
on certain pollutants and control methods.

A second expert committee on the same subject, in 1967, concentrated mainly
on pollution in arid and semi-arid regions and in those developing countries where
wide seasonal variations in precipitation create special pollution problems. It
paid special attention to problems of water re-use and to the effects on water qua­

³ Int. Dig. Hlth Leg., 1963, 14, 187-229.
³ Barker, K. et al. (1961) Air pollution, Geneva (World Health Organization: Monograph Series
No. 46).
larly acute and their solution often requires international collaboration. Surveys have been undertaken and meetings organized with a view to promoting greater national and international action. Several years' co-operation on this subject between the United Nations Economic Commission for Europe, FAO, IAEA, and WHO culminated in a conference in Geneva in 1961 to identify the most important water pollution problems in Europe and consider the technical, legal, financial and economic aspects of water pollution prevention. A selection of the papers presented at the conference was later published by WHO on behalf of the agencies concerned.\(^1\) WHO took part in a travelling seminar on the Rhine to study at first hand pollution problems on a river flowing through several countries. A WHO conference organized in 1966 in Budapest discussed the regional planning of water pollution control and the creation of authorities to administer control programmes for a whole region or river basin.

A comparative study of legislation governing water pollution control in thirteen countries was published in the *International Digest of Health Legislation*.\(^2\)

WHO has provided assistance to a number of countries on water pollution problems. For example the Organization is assisting Israel in pollution prevention; Iraq, Pakistan, Sudan and Syria in pollution surveys; and India, in the organization of water pollution control and its prevention. Thailand has received technical advice on the organization of water pollution control and prevention, and China (Taiwan) on the legal, administrative and technical aspects of control.

In Latin America assistance has been given to Argentina, Brazil, Costa Rica, Jamaica, Peru, Uruguay, Venezuela and several territories in the Caribbean area regarding the pollution of individual stretches of water and ocean beaches. In Brazil, WHO has co-operated with the municipal authorities of the state of São Paulo in planning and executing air and water pollution control programmes and in exploiting water resources to the full.

As executing agency for projects financed from the Special Fund component of the United Nations Development Programme, WHO has assisted India in developing the Central Public Health Engineering Research Institute at Nagpur as the country's major research centre for environmental sanitation problems, with particular reference to water pollution control; and Poland in research into methods for combating the pollution of the Oder and Vistula rivers in a highly industrialized area.

This direct assistance to countries is supplemented by fellowships and courses in various institutions supported by WHO or set up with its help (at the Univers-

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\(^2\) *Int. Dig. Hlth Leg.*, 1966, 17, 627-834.
A study of methods for surveying water pollution and the re-use of water in developing countries is also receiving WHO assistance. Similarly the study on coastal pollution continues; the first phase, completed in 1967, included a comprehensive review of the pathogenic and other organisms discharged with sewage into coastal waters, their survival and health significance.

In addition, and in order to fill gaps in existing knowledge, WHO has given assistance to research on specific subjects, for example the long-term effects on health of pesticides used in agriculture; methods for the identification and measurement of non-ionic detergents in water; methods for the identification and measurement of other synthetic organic compounds in water; drinking-water standards in relation to new pollutants.

At the request of the United Nations Economic and Social Council, WHO prepared a report on research into environmental pollution and measures for its control in collaboration with the United Nations, ECE, ILO, FAO, UNESCO, WMO, IMCO and IAEA.

WASTES DISPOSAL

Many communities do not yet have engineered systems of waste-water collection or treatment facilities of any kind. The need becomes particularly acute when piped water becomes available. WHO assistance for national water supply programmes has therefore often included help in the planning, financing and administration of sewerage and waste disposal. Large capital investments are required, administrative and organizational structures must be created and, above all, adequately qualified personnel must be trained to cope with the local problems of waste water and solid refuse.

A major part of the Organization's work in developing countries consists of advisory services, sometimes over a period of years, to national, regional or local authorities on various aspects of wastes management. Much of it takes the form of surveys and the preparation of requests to the United Nations Development Programme for the financing, from the Special Fund component, of the necessary pre-investment and engineering feasibility studies. Studies carried out by consulting engineering firms serve as a basis for securing from international sources the loans essential for the implementation of the long-term plans.
WHO is executing agency for a number of Special Fund projects in which the engineering feasibility reports cover sewerage and sewage disposal facilities as well as water supply. Examples of such projects are found at Accra-Tema, Calcutta, Istanbul and Kampala, in Malta and in the south-west coastal area of Ceylon. The Malta project envisages a form of sewage treatment yielding an effluent for irrigation purposes and sludge in the form of a compost which can be used as soil conditioner and fertilizer for horticulture.

The first large-scale Special Fund project devoted exclusively to wastes disposal is at Manila, where a master plan for a sewerage system is being prepared. A similar project being planned for Ibadan (Nigeria) includes engineering studies for sewerage, surface water drainage and solid wastes collection and disposal, as well as subsequent assistance in the managerial and operational aspects.

The Organization has provided assistance on wastes disposal to many other countries, including Argentina, Barbados, Brazil, Burundi, Chad, China (Taiwan), Colombia, Cyprus, Dahomey, Ethiopia, Guam, Iran, Jamaica, Jordan, Lebanon, Malta, Panama, Peru, Syria, Thailand, Trinidad and Tobago, and Venezuela. In some cases the assistance was concerned with the collection and disposal of refuse and industrial solid wastes. For example, advice was provided to Dahomey on refuse collection and processing in Cotonou and Porto Novo, and to Venezuela on the planning and construction of incinerators; and along the border between the United States of America and Mexico a survey was conducted in cities where different methods of solid-wastes disposal have been demonstrated.

With increasing urbanization and industrial development the disposal of the growing quantity of refuse and solid wastes of all kinds is becoming a complex and expensive process which in some industrial countries can account for 20 per cent. of the municipal budget. It was one of the problems considered in 1964 by an expert committee convened to discuss the health implications of environmental change.\(^1\) It was also the subject of the technical discussions at the meeting of the Directing Council of PAHO/WHO Regional Committee in 1960.

In the European Region, WHO sponsored seminars for sanitary engineers to discuss the disposal of waste into the sea and coastal waters (at Nice, France, in 1958), and the design, operation and economics of sewage treatment plants for small towns and the problems of collection, treatment and disposal of refuse (at Naples in 1965).

A WHO scientific group on the treatment and disposal of wastes\(^2\) met in 1966 to review present knowledge and problems. It made recommendations regarding research on simplified waste collection, treatment and disposal designed

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to make the best use of local resources in manpower and materials; the management and disposal of waste-water solids and their integration with community and industrial solid wastes; recovery and recycling of liquid and solid wastes; methods and processes of on-site waste management, and other topics related to basic design criteria, technology, administration and management of wastes disposal systems.

Research is now being conducted into so-called "tertiary" methods of treatment — new and improved processes, such as activated carbon filters, distillation and electrodialysis — to remove a higher percentage of the pollutants and to allow greater re-use of waste water for agriculture, industry, recreation, and even municipal water supply in areas of water shortage. Although the greatest concern in the developed countries is with the potential health effects of new chemical pollutants, in the developing countries the problem is still essentially one of microbiological pollution of the soil and of water-sources through insanitary sewage disposal.

In 1967 a review was made of the latest technical information available on the adequate storage, collection, disposal and utilization of urban solid wastes, including new methodology for proper management and control. On the basis of information collected during 1964 and 1965 a guide was prepared on the construction and operation of waste stabilization ponds, which are being used increasingly either as a complete treatment process for raw sewage and industrial wastes, or as a further purification process for the effluent of conventional treatment plants.

A study was started in 1967 of simplified, low-cost designs for water-borne sewage disposal systems suitable for small communities and housing developments in developing countries. The construction of excreta disposal systems in rural areas is dealt with in a monograph ¹ published by WHO and addressed to public health administrators and engineers engaged in health work.

**RADIATION HEALTH**

The development of nuclear energy and the application of radiation and radioactive materials in many fields have considerably increased the possibility of exposure to ionizing radiations. Protection against such radiation is now a recognized public health problem calling for government action. A WHO expert

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committee on radiation concluded in 1962 that it was the responsibility of the health agency "to provide a single focal point for evaluation of the total health impact of all sources of radiation and to ensure that adequate measures for health protection are taken".¹

Radiation protection has therefore been one of the main concerns of WHO in this field. The Organization's activity has also been directed to the measurement of radiation units, the use of radiation in medical research and therapy, the environmental health aspects of radiation, and studies on the biological effects — both somatic and genetic — of radiation. The work has involved close contact with other international organizations concerned with the increasing use of radiation, radioactive material and nuclear energy, particularly the International Atomic Energy Agency and the two non-governmental organizations dealing respectively with the scientific study of radiation protection and the establishment of appropriate units of radiation and their measurement (the International Commission on Radiological Protection and the International Commission on Radiation Units and Measurements).

In this new field a large element of WHO's work consists of sponsoring meetings of experts, of publications, and of assistance in training and research.

**Radiation Measurements and Standards**

With the increase in the quantity and variety of the radionuclides being released into the environment, reliable and practical assay techniques are required for the assessment of the resulting health hazards. The methods available in 1958 for measuring the radionuclides in the human body and the environment, with special reference to food, were reviewed by a joint WHO/FAO expert committee on methods of radiochemical analysis, which selected those thought to be most practical for laboratories new to radiochemical work.² These methods have since been improved and new ones developed, and in 1966 WHO published, jointly with IAEA and FAO, a new compendium, *Methods of Radiochemical Analysis*.³ This is the outcome of a scientific meeting convened by the three agencies in 1964 to revise and expand the earlier recommendations.

An example of WHO's contribution to the establishment of standards in this field is the inclusion in *International Standards for Drinking-Water* ⁴ (see also page 256) of a section on the measurement of radioactive pollution of water supplies. In 1967 WHO produced recommendations for routine surveillance for radio-

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nuclides in air and water. The detailed procedures for monitoring air and water are designed for implementation by public health administrations.

A study on ionizing radiation and health, which was prepared in 1960 at the request of the Executive Board for discussion by the Thirteenth World Health Assembly, deals chiefly with the interpretation of physical exposure levels, and the present radiation pattern as described in physical terms.

Since 1962, and in co-operation with the United States Public Health Service, the Organization has been assisting countries in South America to monitor their environment for radioactive material. This programme is being extended to other areas. Also, an international network for environmental radiological monitoring is being established to provide systematic data on levels of radioactivity to which populations are exposed.

**Biological Effects of Radiation**

The populations of areas where the natural background radiation is abnormally high appear to offer a valuable source of information on the biological effects of radiation. Studies of these populations have been advocated by a number of expert groups convened by WHO, including an expert committee in 1958. The latter discussed the effects of radiation on human heredity and outlined a protocol for investigation, with particular reference to the situation in Kerala state, India, where the levels of natural radiation are many times higher than average. Measurements have since been carried out in several areas with high natural radiation—in Ceylon, India and the United Arab Republic—and the possibility of the necessary multidisciplinary studies has been explored. In Brazil, some of the results of investigations being undertaken with technical advice from the Organization have been discussed by the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR).

In order to increase knowledge about the effects of radiation, WHO has been sponsoring research in several countries on the incidence of leukaemia in women who had been subjected to deep X-ray treatment.

WHO has collaborated with IAEA and UNESCO on aspects of basic biology and the effects of radiation, for example in a symposium on the cellular basis and etiology of late somatic effects of ionizing radiation, held in 1962 in London. WHO also participated in the second and third international conferences on the peaceful uses of atomic energy, convened by the United Nations in Geneva in 1958 and 1964.

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Medical and other Uses of Radiation

The medical applications of radiation and radioisotopes and the dosimetry of different techniques applied in medicine have been discussed at several meetings convened by IAEA and WHO. For instance, joint study groups discussed, in 1959, the use of radioisotope teletherapy units and in 1964 the planning of radiotherapy facilities.

In the Americas methods based on radioanalysis were used to elucidate the mechanism of chronic manganese poisoning in miners.

Joint work by FAO, IAEA and WHO on the wholesomeness of irradiated food is mentioned on page 249.

Radiation Health Protection

A major part of WHO's activity was naturally concerned with the medical uses of radiation and was aimed at securing the maximum benefit from medical radiology while reducing as far as possible the hazards of exposure. This was discussed by the Expert Committee on Radiation in 1964¹ and was the subject of a number of seminars, including one in Athens in 1963 for directors of health laboratories and members of health services from the European and Eastern Mediterranean Regions, and one in Lund (Sweden) in 1965 for physicians, physicists, radiologists and public health administrators from Europe. Practical demonstrations on ways of reducing the radiation dose received by patients and medical personnel were given in seminars by travelling teams of experts in radiological health which visited, in 1962, centres in Iran, Lebanon, Pakistan and the United Arab Republic, and in 1964 centres in Burma, Ceylon, India, Singapore and Thailand.

Collaboration between WHO and industry with a view to producing better X-ray units in order to minimize the radiation dose received has been continuing for several years. On advice from WHO several manufacturers produced prototypes of general purpose diagnostic units designed to meet the radiological needs of the smaller hospitals and clinics receiving assistance from UNICEF and WHO and the standards recommended by WHO with regard to protection against radiation hazards. After the prototypes had undergone several inspections by WHO at the factories, four models (one each from four manufacturers) were approved for use in programmes assisted by UNICEF and WHO (see also page 312).

Public health responsibilities for radiation protection were reviewed by the WHO Expert Committee on Radiation which met in 1962.² It discussed the admin-

nistractive structure of radiation protection services and advocated the introduction of flexible legislation to facilitate their operation. A survey of existing legislation regarding protection against ionizing radiation was published in 1964. The organization of radiation protection services was considered also at an inter-regional conference, held in Düsseldorf, Federal Republic of Germany, in 1962 and at a seminar held in Singapore in 1965 for participants from the Eastern Mediterranean and Western Pacific Regions.

In 1959 an expert committee considered medical supervision in radiation work and basic health questions associated with occupational exposure to ionizing radiation. The main emphasis was on training. A world survey of the available post-graduate training facilities in the medical uses of radiation was completed in 1966.

In addition, WHO has co-operated in the provision of training and has assisted individual countries in the development of radiation protection services. Examples are an international course on radiological health inspections organized in 1966 in Rockville, Md. (USA), and assistance given to Thailand for the establishment of a division of radiation protection in the Ministry of Health.

Guidance on action to be taken in the event of radiation accidents was given at two international seminars sponsored jointly by FAO, IAEA and WHO: the first held in Scheveningen, Netherlands, in 1961, on agricultural and public health aspects of radioactive contamination in normal and emergency situations; and the second held in Geneva in 1963, on the protection of the public in the event of radiation accidents. The proceedings of the second seminar were later published by WHO.

In addition to the joint activities already mentioned, there has been continuing collaboration with IAEA on such matters as a study on methods of surveillance of environmental radiation exposure, on the management of radioactive waste produced by the users of radioisotopes, and on regulations for the transport of radioactive materials. With FAO work has continued on all matters relating to the radioactive pollution of agricultural products and to the remedial measures required.

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1 Int. Dig. Hlth Leg., 1964, 15, 209-376.
Co-ordination within WHO and with other organizations with which WHO co-operates is a main element in the activities described in this chapter.

For instance, where a piece of research is carried out simultaneously in various laboratories throughout the world, co-ordination implies an attempt to ensure comparability of results, to establish an order of priorities, and to encourage reciprocally beneficial activities; when many are engaged in education and training, each in his own limited area of concern, their pooled experience may be of value to all; or again the organization of a meeting on a particular topic, in a particular year, may call for a choice as to whether it should be regional or inter-regional.

Programme co-ordination of one type or another, and planning itself, are more effective when based on a review and assessment of past activities.

Activities in health often have considerable impact in such diverse fields as economic development or general education, which are the responsibility of other international agencies. The activities of the latter, in such matters as industrialization or agricultural development, have their effect on human health. Co-ordinated action, or even concerted action in a number of projects and programmes, has thus necessarily taken place, to common advantage.

CO-ORDINATION OF MEDICAL RESEARCH

During the first ten years of its existence, WHO conducted some research as an integral part of its programme activities, but there was no special effort to promote and co-ordinate medical research on a large scale. Many research activities were simply one aspect, or by-product as it were, of projects of assistance to governments.

The Eleventh World Health Assembly, held in Minneapolis in 1958, called for "a special study of the role of WHO in research and of ways in which the Organ-
Work at the International Reference Centre for Immune-globulins, at the University of Lausanne, Switzerland.

Freezing of serum samples at -196°C in liquid nitrogen at the WHO Serum Reference Bank, Institute of Epidemiology and Microbiology, Prague, Czechoslovakia.

MEDICAL RESEARCH PROGRAMME: REFERENCE CENTRES

WHO's programme of co-ordination of medical research owes much to an extensive network of reference centres. The centres, both international and regional, are responsible for the standardization of techniques, reagents, etc., and are focal points for consultations between research workers throughout the world.
In its work on cardiovascular diseases, WHO has sponsored a large-scale study on the possible bearing of environmental factors on coronary heart disease, with a view to improving diagnosis during life. Autopsy specimens (aortas and coronary arteries) from different communities are examined and pathological changes are graded at periodic meetings by collaborating pathologists from various countries.
A notable event in WHO's cancer programme was the issue in 1966 of Histological Typing of Lung Tumours, the result of six years' work on the part of the WHO International Reference Centre for the Histological Classification of Lung Tumours in Oslo, assisted by pathology departments in fifteen countries. The volume, in which the colour microphotographs and accompanying colour transparencies are identified by nomenclature in English, French, Russian and Spanish, is the first in a series of histological classification of tumours to be issued by WHO with the help of the network of reference centres.
RESEARCH ON LEPTOSPIROSIS

Work at the WHO/FAO Leptospirosis Reference Laboratory at the London School of Hygiene and Tropical Medicine, one of the eight reference centres co-operating in research on this disease. Studies co-ordinated so far have mainly dealt with the problem of diagnosis and typing of leptospirosis — a disease transmitted from animals to man.

BIOLOGICAL STANDARDIZATION

The establishment and promotion of international standards for biological, pharmaceutical and other products is one of the constitutional functions of WHO. Biological assay methods are used to measure the potency of some substances, and the international standards and reference preparations necessary for this purpose are established by the WHO Expert Committee on Biological Standardization after international collaborative assays organized by the WHO International Laboratories for Biological Standards. Some of the international standard preparations are shown here.
CO-ORDINATION OF MEDICAL RESEARCH

Organization might assist more adequately in stimulating and co-ordinating research and developing research personnel". During the ensuing months two meetings of internationally recognized leaders in medical research were held, and after consideration of the Director-General's report the Twelfth World Health Assembly decided to start an intensified WHO programme of medical research. This new programme got under way as from 1960. A report, published in 1964, on the early development of the Organization's intensified medical research programme, includes a short review of trends in research in various subjects.

Organization and Objectives

In 1959 the Twelfth World Health Assembly decided to establish an Advisory Committee on Medical Research. Its nineteen members meet once a year, review the WHO research programme and advise the Director-General on research policy, priorities, and the need for additional research in certain fields. Past and present members are shown in Annex 5.

The choice of research activities to be promoted and assisted by WHO is guided by the discussions of the Advisory Committee, the reports of scientific groups and problems in the field requiring new knowledge for their solution.

The objectives of the programme are fourfold: support of national research, provision of services for research, training of research workers and improvement of communication among scientists.

Support of National Research

This is reflected in two types of activities, namely "collaborative research" and "grants to individual investigators".

Collaborative research, by far the largest single item in the WHO research programme, is based on the premise that some problems are better resolved by the co-ordinated efforts of workers in various countries, sometimes representing several disciplines. These research projects are WHO-initiated, but contracted out to established institutions. Since 1960 some special research activities have been partly supported by grants from the Government of the United States of America. They have included research on certain aspects of schistosomiasis; virus diseases; vector control; prevalence and types of anaemia; hypovitaminosis A, xerophthalmia and keratomalacia; human gamma-G immunoglobulins for intravenous injection; human reproduction; and also an international pilot study of schizophrenia.

Unlike the previous category of activities the grants to individual investigators are not WHO-initiated projects. Although WHO is not a financing institution, small complementary grants are awarded to promote the research of individual scientists working on subjects of interest to WHO.

The subjects of collaborative research projects undertaken in the period 1958-1967 are shown in Annex 10.

**Provision of Services for Research**

WHO facilitates the research efforts of the scientific community through indirect assistance such as the services of reference centres and the recommendations of scientific groups.

A reference centre is a national institution selected by WHO to perform certain work of international utility, ranging from standardization of techniques or reagents, the maintenance of reference strains of micro-organisms, and the provision of special strains of laboratory animals, to the standardization of nomenclature. The WHO network of reference centres includes international and regional centres; these, in their turn, are connected with a large number of national or collaborating centres. The institutions that have served during the decade as international and regional reference centres are listed in Annex 12. They make available to WHO and the international research community their highly developed competence in specific subjects.

Apart from the expert committees which advise on various fields of health, scientific groups have been convened to review aspects more specifically related to research, identify gaps in knowledge and help in selecting subjects most suitable for international collaborative investigation. Although the scientific groups are convened primarily to advise the Director-General on the development of the research programme, reports on subjects considered to be of wider concern are published in the *Technical Report Series*. Annex 7 lists the scientific groups and also the expert committees convened during the decade.

**Training of Research Workers and Exchange of Information**

To increase the research potential of countries, a number of research training grants have been awarded. A few of these have been supported by the Government of Czechoslovakia, the Government of Israel, and the Swedish National Association against Heart and Chest Diseases. Also, scientists engaged in research are enabled to visit their colleagues working on similar projects in other countries to discuss common problems and exchange ideas, for periods of up to three months. (See also page 89 and Annex 11.)
Since 1965 information on research institutions, scientists and research projects in certain fields has been collected systematically by WHO. Some of this information has been coded and classified and stored by the WHO computer; it is selectively retrieved and made available to scientists and research institutions upon request. The first list, on cancer research, was distributed in 1966. Similar lists are being established for research on cardiovascular diseases, dental health, human reproduction and veterinary public health.

Communication among scientists has been further promoted by the many meetings organized by WHO (see Annexes 7 and 15), by the fellowships awarded (see Annex 9) and through its technical publications (see Chapter 10 and Annex 13). Papers based on WHO-sponsored research appear frequently in other scientific journals also, but it has not been possible to refer to more than a very few of these in the compass of this volume.

Some of the salient features of the WHO research programme are outlined below; further details of these and other research activities are given under the various subject titles elsewhere in this book.

Fields of Research

Communicable Diseases

The larger part of WHO's research effort has been directed towards the solution of problems related to communicable diseases. The spectrum of diseases covered ranges from virus infections through bacterial and parasitic infections to the zoonoses. There are, however, wide variations of emphasis. Furthermore, the emphasis has shifted from one sector to another in accordance with circumstances. Thus in the field of bacterial diseases, emphasis in the early years was placed on tuberculosis, venereal disease, yaws and enteric infections. However, the spread of cholera El Tor from its endemic focus in the Celebes to countries in South-East Asia and the Western Pacific Region, reaching the Middle East in 1965, called for an intensified effort for the elucidation of the epidemiological, immunological and therapeutic aspects of this disease. Similarly in the field of parasitic diseases, schistosomiasis was a major concern of WHO for several years, while trypanosomiasis — both African and American — has now also become a focus of interest. In the field of vector control, the main effort remains directed towards the study of insecticides and insecticide resistance, although much attention is beginning to be paid to the biological aspects of vector control.

WHO's approach to communicable diseases is, initially, epidemiological in the widest sense of the term. Field surveys and ecological studies of all kinds are

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combined with fundamental research on the genetic, immunological and bionomic aspects of the causative agents, of the vector and of the host. Thus, the malaria research programme has involved the Organization in such studies as the relation of human haemoglobin variants, sickle-cell haemoglobin and glucose-6-phosphate dehydrogenase (G6PD) deficiency to the prognosis of malaria; in attempts to grow the exo-erythrocytic forms of plasmodia in vitro; in the development of a fluorescent protein tracing method for the measurement of circulating antibody; and in studies on the genetic factors involved in insecticide resistance in various species of *Anopheles*.

A second aspect of communicable diseases studied by WHO is that of chemotherapy and chemoprophylaxis. In tuberculosis, for example, these studies led to a number of operational research projects aimed at better public health strategies in tuberculosis control. In African trypanosomiasis, the search is being pursued for a less toxic drug than those at present in use. In malaria, a large number of drugs are being tested for their prophylactic and therapeutic properties.

The introduction of griseofulvin has called for an intensive study of the susceptibility of dermatophytes to new antibiotics. WHO is giving support to a number of field trials as well as in vitro studies related to the chemotherapy of mycotic infections.

Recent advances in the understanding of immunological mechanisms have led the Organization to promote research on the immunology of communicable diseases. New diagnostic methods have been developed through WHO-supported research. The development of more effective vaccines has been encouraged. A world serum reference bank has been established at New Haven (USA) and two regional banks at Johannesburg and Prague, so that epidemiological studies based on modern immunology can be developed.

In addition to such means as reference centres, collaborative research and grants, an additional mechanism became necessary to facilitate study under field conditions in areas with a shortage of qualified personnel. WHO has established field units and teams such as the filariasis research unit at Rangoon, the *Anopheles* control research unit at Lagos, the *Aedes* research unit in Bangkok, and the inter-regional treponematoses epidemiological team. These units not only provide qualified personnel for research on the spot, but also contribute to developing a nucleus of co-operating local scientists.

**Non-communicable Diseases**

Among the non-communicable diseases, priority has been given to cancer and to cardiovascular and nutritional diseases. Work on the first two diseases is concentrated mainly on the epidemiological and histopathological aspects, start-
CO-ORDINATION OF MEDICAL RESEARCH

ing with standardization of definitions and nomenclature to permit international and sequential comparisons.

Certain tumour types have been intensively studied; a classification of lung tumours has been published and classifications of breast tumours and of neoplasmic disorders of the haematopoietic system are in preparation. Field epidemiological teams are studying the prevalence and distribution of oropharyngeal tumours and of Burkitt’s tumour. In cardiovascular research, attempts have been made to clarify the epidemiological and histopathological aspects of atherosclerosis, arterial hypertension, ischaemic heart disease, the cardiomyopathies and chronic cor pulmonale.

In the field of nutrition, extensive studies of nutritional anaemias and protein-calorie malnutrition have been undertaken. The role of the various deficiencies, such as iron, folate, vitamin B₁₂, etc., is now better understood. The problem of protein malnutrition is, however, much more complex. WHO works closely with the Institute of Nutrition of Central America and Panama (INCAP), as well as with FAO and other organizations, in an attempt to develop protein-rich foods that are readily available and acceptable to the population of developing countries (see pages 222-223).

The Organization has also developed in recent years a research programme in the field of mental health; it includes studies on the epidemiology of mental disorders and the determination of diagnostic criteria.

**Public Health Practice**

Under this heading, WHO research programmes include studies in the field of public health practice, organization of medical care, maternal and child health, and nursing. The approach is mainly operational. Thus, the Organization supports studies on the assessment of community health, the utilization of health services and the deployment of health personnel.

**Biomedical Sciences**

The standardization of biological substances is one of the traditional functions of WHO and has always involved a certain amount of research. Evaluation and monitoring constitute a new approach by WHO to the problem of drug safety and the role of WHO in this field is still evolving.

Immunology, human genetics, and human reproduction, although fairly new fields for WHO, are on the way to becoming major areas of research. The approach to the study of human reproduction has followed essentially two main lines: (a) the basic physiological and endocrinological aspects of reproduction,

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and (b) the problem of population dynamics, especially the demographic aspects and questions of fertility control.

**The Research Programme of the Pan American Health Organization**

The countries of the Americas, which contribute to the Pan American Health Organization independently of their contributions as Member States of WHO, operate a supplementary research programme through PAHO. Parts of this programme receive additional finance in the shape of grants made by foundations, governmental authorities and others. It is oriented towards the solution of specific problems of the Region and is co-ordinated with the WHO research programme. Within the guidelines and the recommendations of the PAHO Advisory Committee on Medical Research, it emphasizes research projects involving multinational participation.

PAHO has promoted studies on nutrition, communicable diseases, zoonoses, environmental health, and such broad fields as scientific communication and national research policies. Specific subjects of research receiving assistance were endemic goitre, nutritional anaemias, epidemic typhus, plague, malaria, schistosomiasis, arboviruses, Chagas' disease, dental health, radiation hazards, human adaptability, population dynamics, and migration of scientific personnel.

PAHO also sponsors organized discussions on special topics recommended by the Advisory Committee. Five areas of inquiry have thus far been reviewed: tuberculosis research, population and health problems of "shanty" towns, factors in deprivation likely to influence mental development and intellectual functions, life at high altitudes, and immunological aspects of parasitic infections.

**Recent Developments in the WHO Research Programme**

Recent years have seen two important developments in the medical research programme.

The first was the establishment of the International Agency for Research on Cancer, with headquarters at Lyons (France). Details will be found on pages 211 and 313.

The second development was the establishment within WHO of a Division of Research in Epidemiology and Communications Science, following a resolution of the Nineteenth World Health Assembly. In 1967, preparatory work was begun which should strengthen the Organization's research programme through increased contributions from the mathematical sciences and computer technology, behavioural and communications sciences, methodology of operational investigations and general ecology.
The method of preparation of the programme of the Organization, as outlined in the history of the Organization's first ten years, has not undergone major change. It provides for guidance as to areas of emphasis, while limited funds compel choices. Primary review of needs and requests is done within the countries themselves; co-ordination of the requests of countries is undertaken at the regional level; overall co-ordination is then assured centrally, before the World Health Assembly reviews the proposed programme.

One element which has been strengthened is that of co-ordination at national level. In many countries national co-ordinating and planning committees have come into existence, and WHO is appointing country representatives whose main function is to help these national co-ordination efforts in the health field.

A major development has been in the systematic evaluation or review of projects and programmes. From the beginning, attention had been paid to evaluation, and in 1954 and 1955 the Executive Board made an organizational study on "Programme analysis and evaluation" at the request of the World Health Assembly. It is since 1955, however, that experience in evaluation (other than for fellowships, which were assessed since the earliest days) started to be consolidated centrally and the process systematized.

There is still much to be learned on the methodology of evaluation, and the fourth general programme of work, covering the period 1967-1971, states:

"The introduction of evaluation criteria into the plans of programmes will facilitate both the assessment of their evolution and their retrospective analysis. A continuing review of projects and the experience gained in the field, including follow-up studies of past assistance, should provide the basis on which programme formulation and project planning can be better developed. Efforts will also be made to advance the understanding of the interplay of health factors and economic development in countries."

Reporting, first established on a systematic basis in 1950, has provided the foundation for project evaluation. Prepared according to specific instructions and designed to facilitate assessment, field reports are normally drafted by the national and WHO officers collaborating on the project. These reports are sent to the national health authority, to the Resident Representatives of the United Nations Development Programme, as well as to the responsible regional office.

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3 Off. Rec. Wld Hlth Org., 143, 64.
and to WHO headquarters. At local level they have permitted a continuing assessment of field activity in the light of each project's objectives. Regionally, they have made possible a continuous technical and operational supervision and review of ongoing and terminated projects. In their totality at headquarters, they have enabled the Organization to keep its programme policies under constant scrutiny.

In certain fields, such as malaria, tuberculosis, leprosy, or venereal diseases, this continuous evaluation has been supplemented by an assessment on the spot, carried out by teams of independent experts recruited for the purpose.

The Organization has kept its extensive fellowships programme under constant review (see page 87). Every fellow is required to complete a report at the termination of his or her studies, and a comprehensive questionnaire about three years after returning home. The comments thus received have helped to improve policies and procedures concerning fellowships and to determine the usefulness and long-term impact of the training given. Similar procedures have been used to evaluate the results of other educational activities, such as seminars, in the light of comments by participants and staff.

The evaluation by individual governments of their own health programmes has been much facilitated by the Organization's assistance to many of them in the development of their epidemiological and statistical services and national health plans. More direct assistance has also been provided to several governments, at their request, for an overall evaluation of their national health situation and services.

With the installation of the electronic computer at headquarters the accumulated experience from the field, as recorded in hundreds of project reports reaching headquarters from all regions, can now be analysed, abstracted and stored for retrieval whenever required for purposes of assessment and programme formulation.

The retrospective evaluation of programmes, as distinct from projects, has also been undertaken. WHO programmes are based on three sources of guidance: policy directives and resolutions of the World Health Assembly and Executive Board, technical recommendations of expert committees and similar groups, and the needs of Member States as recorded by the Organization. A review of these sources of guidance makes it possible to ascertain the extent to which the execution of a programme reflects policy directives, technical recommendations and the health needs of Member States. To start with, the experience gained in the programmes on maternal and child health and on education and training has been systematically reviewed. Another type of programme evaluation is known as operations research. In this, a set of projects is first examined, each project being broken down into its component elements. From these analyses it is then possible to construct a composite, theoretical project profile containing all the
different elements of the entire set. Finally, each project is compared with this theoretical profile to determine its degree of conformity or variance and the reasons accounting for the findings. This type of evaluation has been applied to various programmes, notably in the fields of communicable diseases and health protection and promotion.

It is obvious that what has been done is only a beginning. The methodology is still crude. It can be applied to some activities and not to others. In many ways it is not an evaluation in the strict sense, but an attempt at a critical review of completed activities in order to avoid past errors and to improve the content of the programme and current methods of work. Progress in evaluation may be affected by current exploratory studies, including the identification of criteria on which evaluation may be based, the development of easier computerized systems of information retrieval from reports, the clarification of the role of evaluation in the planning of health programmes and the establishment of methods for utilizing econometric and sociometric data in evaluating the impact of health programmes.

CO-OPERATION WITH OTHER ORGANIZATIONS

This book contains many references to activities undertaken in co-operation with the United Nations, the specialized agencies and a variety of non-governmental organizations. The basis for such co-operation and the arrangements made to ensure co-ordination were outlined in The First Ten Years of WHO and have not changed; and the whole field of co-ordination was reviewed by the WHO Executive Board in an organizational study presented to the Assembly in 1962.1

Co-operation with the United Nations and other organizations is frequently a necessity, either because the action contemplated goes beyond the areas in which WHO is competent and calls for combined efforts, or because the necessary resources can only accrue to WHO through some other financing body.

It is also a legal obligation under Article 69 of the WHO Constitution and Article 58 of the United Nations Charter. Articles 62 and 63 of the Charter, also, give the Economic and Social Council, one of the three main organs of the United Nations, certain powers of co-ordination and guidance in the non-political field vis-à-vis the specialized agencies. Accordingly, as recorded in the history of the first ten years of the Organization, WHO has a formal relationship agreement

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with the United Nations, and similar agreements with those specialized agencies with which it most frequently undertakes joint action, namely ILO, FAO, and UNESCO. Early in this decade an agreement was also concluded with IAEA.

In accordance with Article 64 of the Charter, WHO, like the other specialized agencies, reports annually to the Economic and Social Council, to which its representatives supply orally any additional information on its work which the Council may require. The Council may also call for special reports on particular topics, as in 1962, when it requested a study on research into pollution of every kind and its control (see page 261). Again, a specialized agency may of its own initiative seize the Council of any problems falling within its own sphere of competence, which it considers of critical importance; WHO thus called the Council’s attention, in 1966, to the spread of certain communicable diseases and other deficiencies in health work.

Lastly, the continuing need to increase efficiency and ensure concerted action by members of the United Nations system has led to considerable development of the work of the Administrative Committee on Co-ordination (ACC); this was created in the early days of the United Nations by its Secretary-General and is composed, under his chairmanship, of the Directors-General or Executive Heads of all specialized agencies and of certain other related organizations.

ACC now has a network of subordinate bodies promoting inter-agency co-operation and co-ordination in specific fields of general concern, such as science and technology, education and training, outer space, water resources, marine sciences, rural and community development, housing and urbanization, industrialization, population questions, youth and statistics. A parallel network ensures co-ordination and uniformity of procedures in the administrative, budgetary and personnel fields (see page 312).

In some cases the pursuit of co-ordination has entailed assignment of WHO staff to other agencies or undertakings governed by them, for instance UNICEF, IAEA and UNRWA, all of which are mentioned in other chapters of this book. WHO has also provided health administrators for the staff of the United Nations regional development institutes in Santiago, Dakar and Bangkok, and sanitary engineers have been stationed at the headquarters of ECA and ECLA to co-operate with these Commissions.

The United Nations Development Decade (1960-1970) proclaimed by the General Assembly in 1961 has helped to draw attention to the vast needs in all economic and social fields, including health, and has in some cases already shown results. Achievements, however, have mostly lagged behind expectations. Speaking before the Twentieth World Health Assembly, the Director-General reported: “The main obstacle to reaching the objectives of the Development Decade, U Thant said during the 1966 summer session of the Economic and Social Council,
was the inadequacy of the support given to the developing nations for the greater utilization of their socio-economic potential."

Many references to concerted action will have been found in earlier chapters in this volume. Attention may again be drawn to two operations of an emergency character, assistance to Palestine refugees (see page 281) and to the Democratic Republic of the Congo (see page 44).

**United Nations Development Programme (UNDP): Special Fund and Technical Assistance Components**

The creation of the Special Fund in 1958 reflected the desire of the General Assembly to enlarge the scope of assistance through pre-investment projects which could lead to an early result, with the widest possible impact on the economic, social and technical progress of a developing country and capable, on completion, of attracting capital investment.

The Expanded Programme of Technical Assistance, created in 1949, well before the Special Fund, developed noticeably during the decade. Its objectives did not undergo any appreciable change and it served effectively in assisting governments to meet specific needs. It is worth mentioning that the WHO share of Technical Assistance funds will have decreased from 17.6 per cent. in 1958 to a probable 14.6 per cent. in 1968, owing to increased emphasis on industrialization and the participation of new agencies in the programme.

The Expanded Programme of Technical Assistance and the Special Fund were merged into the new United Nations Development Programme by the General Assembly in 1965, but it was stipulated that the characteristics and operations of the two components should remain separate. The Governing Council, which had provided policy guidance for the Special Fund, was accorded overall authority over both components of the programme. An Inter-Agency Consultative Board was set up, consisting of the Executive Heads of all participating and executing agencies.

So far WHO has been designated executing agency for about 2.2 per cent. only of the Special Fund programme, mainly for work in environmental health (see Chapter 8). Coupled with the marked downward trend already noted in WHO's share in the Technical Assistance component, this situation led the Twentieth World Health Assembly to adopt resolution WHA20.53, drawing attention to the importance of national health planning as part of overall economic and social development, and to the need to ensure that health authorities were properly represented in national planning bodies.

In June 1967, at the fourth session of the Governing Council of the United Nations Development Programme, the Administrator called for increased attention to health projects in the Special Fund component.
WHO's participation, however, extends to UNDP projects executed by other agencies in such fields as land reclamation, irrigation, river-basin development, water resources, housing and urban renewal, food production, animal health and occupational health institutes. WHO comments on these projects and provides consultants to identify public health implications.

In 1966 the Governing Council of the United Nations Development Programme decided to amalgamate into a single revolving fund the Technical Assistance funds used to finance contingency requests, Special Fund preliminary operations and Special Fund preparatory assistance missions. From these funds WHO has received resources to finance its action in such urgent cases as the Chilean earthquake in 1960 and the cholera outbreak in 1965-1966. In addition it participated in the Special Fund preliminary operations in Ceylon to survey the south-west coastal area for water-supply and sewerage projects. It took part in a number of other UNDP missions to assist governments in preparing or reformulating proposals for assistance from the Special Fund component.

New fields for assistance from the Special Fund component which are under discussion include medical education, pharmaceutical quality control of drugs, and health institutes.

After the Technical Assistance Committee and Economic and Social Council had reviewed the role of the Resident Representatives of the United Nations Technical Assistance Board in 1961, the ACC formulated the principles governing their functions. Over the years these principles constituted a working basis for collaboration, but they were revised in 1967 to take account of the rapidly expanding responsibilities of Resident Representatives. WHO continues to collaborate with Resident Representatives in joint programming activities of the two components of the UNDP.

United Nations Children's Fund (UNICEF)

In accordance with the co-operative principles established in 1950, the UNICEF/WHO Joint Committee on Health Policy has continued to give guidance respecting UNICEF-assisted health projects for which WHO retains technical responsibility. These projects now absorb some two-thirds of UNICEF's operational budget (in 1966, for example, 117 health projects accounted for some US $19 million of expenditure). They are divided between maternal and child welfare (about 60 per cent. of the total) and disease control — malaria in the first place, then tuberculosis, yaws, trachoma and leprosy. Poliomyelitis, measles and smallpox also receive attention. Among other topics recently discussed by the Joint Committee figure the need to strengthen health components in nutrition programmes, a review of the fluoridation of water in connexion with dental health, and the health aspects of family planning.
United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA)

WHO continues to be responsible for the planning, implementation and supervision of UNRWA’s health programme through the assignment of certain senior staff members, including the Director of Health, a physician/epidemiologist and a public health nurse.

International Labour Organisation (ILO)

The most important area of co-operation between WHO and ILO is occupational health, including the health of seafarers. WHO also advises ILO on other matters such as the organization of medical care within social security systems, and working conditions for women and adolescents. Further references to work with ILO will be found in other chapters of this book, particularly on pages 50 to 52.

With the United Nations, FAO and UNESCO, WHO has continued to participate in ILO’s Andean Region Development Programme, a collective project, pursued over many years, designed to promote the economic, social and health development of an unfavoured population group in the Andean highlands.

Food and Agriculture Organization (FAO)

Co-operation with FAO centres largely on nutrition and the zoonoses (see pages 149 and 221). Joint expert committees have continued to examine these subjects and their recommendations provide the basis for a number of joint FAO/WHO activities such as nutritional surveys, training courses, seminars and co-ordinated research programmes. The WHO Protein Advisory Group became a FAO/UNICEF/WHO group in 1961. These organizations also contributed to a report on increasing the production and use of edible protein which was presented to the Economic and Social Council in July 1967.

Other FAO/WHO expert groups have reported on calcium and vitamin requirements, and on methods of planning and evaluation in applied nutrition programmes. More than sixty projects in applied nutrition were started during the last ten years, some of them involving co-operation not only with FAO but with UNICEF and UNESCO. WHO, FAO and UNICEF have together established several nutrition training centres for workers in developing countries.

Another area of joint concern relates to the health implications of agricultural development. With FAO and the United Nations, WHO has studied the health aspects of land and water surveys, irrigation schemes and projects involving land reclamation.
On the initiative of several European countries, a joint FAO/WHO Codex Alimentarius Commission is drafting standards for various foodstuffs. Joint FAO/WHO expert committees and other meetings have drawn up specifications for the identity and purity of a number of food additives (see page 248).

**United Nations / FAO World Food Programme**

The World Food Programme, launched jointly by the United Nations and FAO in 1962, is aimed at making available to developing nations commodities contributed by participating governments on a voluntary basis. From 1963 until August 1967, more than US $250 million worth of food, services and cash, including some $45 million for emergency feeding operations made necessary by natural catastrophes, were contributed.

Since 1963 a liaison arrangement with WHO has facilitated the scrutiny of the health implications of the projects under consideration. WHO has reviewed its own programmes and identified those which could benefit from food aid. Several such schemes are under study with interested governments, but only a few have yet reached the implementation stage (see, for example, page 160).

**United Nations Educational, Scientific and Cultural Organization (UNESCO)**

UNESCO's programmes are of interest to WHO in a variety of spheres, including education at all levels, in and out of school, technological training and certain fields of pure research, such as cell biology and brain research.

Within the experimental literacy programme being sponsored by UNESCO in five developing countries with UNDP aid, WHO's interest is again to contribute subjects such as health in the home, family nutrition, accidents and injuries at work, to the reading materials which are being produced in large quantities for new literates.

The introduction of an adequate element of health education in school curricula, in teacher-training courses, in "fundamental education" (now known as rural and community development) centres, and in literacy campaigns, has entailed increasing UNESCO and WHO co-operation, ranging from joint publication activities (see page 56) to the seconding of health personnel to training centres set up by UNESCO in Mexico and the United Arab Republic.

**International Civil Aviation Organization (ICAO)**

Application of the International Sanitary Regulations remains the principal area of collaboration between WHO and ICAO. ICAO takes part in the work of
the WHO Committee on International Quarantine, and the two organizations maintain close contact on such matters as airport sanitation and aircraft disinsection.

*World Meteorological Organization (WMO)*

WMO and WHO have co-operated mainly in work relating to environmental pollution.

*International Atomic Energy Agency (IAEA)*

IAEA signed a relationship agreement with WHO in 1959. Liaison officers were later exchanged in accordance with a resolution of the Economic and Social Council calling for co-operation on the peaceful uses of atomic energy. References to joint activities will be found in the section on radiation health (page 263).

*Inter-Governmental Maritime Consultative Organization (IMCO)*

Contact is maintained with IMCO regarding the international code of signals for medical treatment at sea, enforcement of the International Sanitary Regulations, and pollution of the seas.

*International Telecommunication Union (ITU)*

Co-operation with ITU concerns notifications under the International Sanitary Regulations and the broadcasting of epidemiological radio bulletins. ITU also participates in work relating to the health of seafarers.

*Universal Postal Union (UPU)*

The Organization co-operates with UPU in regard to transport of dangerous goods, including therapeutic substances, insecticides, etc., and the shipment of perishable biological and pathological substances.

*Other Intergovernmental Organizations*

WHO is in contact with such intergovernmental organizations as the Council of Europe, the Organization of American States, the League of Arab States, the Organization of African Unity, the Organization for Economic Co-operation and Development, the Inter-American Development Bank, the Inter-American Committee of the Alliance for Progress, and the Colombo Plan Bureau.
Non-Governmental Organizations

At the end of 1967 seventy-one non-governmental organizations were in official relations with WHO, an increase of twenty-eight over the past ten years. A full list is contained in Annex 14. Non-governmental organizations admitted to relationship fall into two main categories: those engaged in some particular branch of medical science or research, and those representing a more general interest, such as the World Federation of United Nations Associations (WFUNA), the League of Red Cross Societies, or the Council for International Organizations of Medical Sciences (CIOMS).

References will be found in other chapters to many WHO activities which have the support of the competent non-governmental organizations. The World Health Assembly has recognized the value of this support and called for its continuance and further expansion.
This chapter summarizes two types of activity designed to convey information, the first to health authorities and to the medical and other health professions, the second to the general public.

The first type includes the selection, editing and translation of a wide range of technical material for publication; the selective acquisition, indexing and cataloguing of serial and non-serial publications in all fields of interest to WHO; and the provision on request of information both on the published literature and on the documents of WHO and other agencies. Reference to individual publications has already been made, as appropriate, in the various chapters of this volume. A general summary is presented here and details of some publications may be found in Annex 13.

The second type of activity, public information, is concerned with the use made not only of the printed word, but also of the other media, mainly radio, television and films, in order to bring health work to the attention of the general public.

PUBLICATIONS AND LIBRARY SERVICES

In 1958, WHO published a special volume on The First Ten Years of the World Health Organization,¹ which constitutes an official history of the Organization's first decade, preceded by a review of the circumstances that led to its establishment, from 1851, the year in which the first of the series of International Sanitary Conferences was held. At the same time it published a bibliography of Publications of the World Health Organization, 1947-1957, and it was decided that further bibliographies of WHO publications should be issued every five years.

In the following year a new series—Public Health Papers—was inaugurated. It had been evident for some time that the pattern of WHO publications was

incomplete in that it lacked a vehicle for material of broad public health interest, and the new series was intended to fill this gap. A total of thirty-two titles (listed in Annex 13) has been published in this series.

In the same year appeared the First Report on the World Health Situation. Such reports are published every four years after submission in provisional form to the World Health Assembly; three of them have now appeared.1

In that year also the Executive Board started an organizational study of WHO publications, based on a detailed report 2 in which the development of the publishing programme was summarized, and the characteristics, purpose and distribution of each type of publication were described. In a synoptic table the publications were functionally classified as periodicals; monographs and brochures; specifications and standards; directories; bibliographies; manuals; advisory reports; special publications; and official publications.

Reporting to the Thirteenth World Health Assembly (1960), the Chairman of the Executive Board indicated that the “Board had specially appreciated the Technical Report Series and the Bulletin, the Monograph Series and the International Digest of Health Legislation”.

In addition to reports of expert committees, reports of scientific groups considered to be of sufficient general interest to warrant publication have recently been issued in the Technical Report Series, which by the end of 1967 comprised 380 titles.

The Monograph Series, the Organization’s main vehicle for books on public health subjects of international significance, consists generally of systematic and full presentations of specific subjects. Up to the end of 1967 a total of fifty-five monographs had been published (see Annex 13).

The scope of the Bulletin of the World Health Organization—the chief scientific organ of WHO—has been enlarged to include papers on such subjects as cancer, cardiovascular diseases and medical genetics, which were not represented in earlier years. The format and cover were redesigned in 1959, starting with volume 21; since then the Bulletin has appeared with a larger page area and in smaller print in double columns. Because of the increased flow of contributions there has been no reduction in the size of issues, over 15000 pages of the larger Bulletin having been published in the second (as in the first) ten years. It has now reached its thirty-seventh volume. Since 1964, a complete translation in Russian has been published.

Of the International Digest of Health Legislation, eighteen volumes have now been published, containing nearly 8000 legislative texts. An index is published

1 Off. Rec. Wld Hlth Org., 94; 122; 155.
annually for each volume, but access to this legislative material is further facilitated by the publication of cumulative five-year indexes, of which the third covers the volumes published in 1960-1964.

A new feature of the Digest since the first number of volume 15 (1964) is an introduction, which points out and describes the major innovations in the legislation appearing in the current number. This introduction is then used as the basis for a regular section in the WHO Chronicle, entitled “Recent changes in health legislation”.

The documentation provided by the Digest, together with other bibliographical sources such as public health codes and specialized works on health legislation, has made it possible to reply to more than 600 requests for information during the past ten years. These requests related to a wide range of health legislation problems, including different aspects of pharmaceutical legislation, legislation relating to the medical and paramedical professions, sanitation, and foodstuffs.

Since 1958, comparative surveys of legislation on the following subjects have been published in the Digest and subsequently issued as offprints: notification of communicable diseases; communicable diseases in schools; classification of pharmaceutical preparations; endemic goitre; pharmaceutical advertising; treatment of drug addicts; distribution of and trade in pharmaceutical preparations; air pollution; the control of tuberculosis; protection against ionizing radiations; auxiliary personnel in nursing; control of water pollution.

The Executive Board discussed at its twenty-fifth session (1960) the question of increasing the number of WHO publications issued in Russian, the only publication issued then in that language being the WHO Chronicle. On the recommendation of the Board, the Thirteenth World Health Assembly decided that the number of publications issued in Russian should be progressively increased during the years 1961-1963. To put this decision into effect involved many problems, not the least of which was the relative lack of local facilities for printing in Russian. The solution adopted was a contractual arrangement whereby the USSR Ministry of Health, Moscow, undertook the entire work of translating and printing the Russian editions of WHO publications, and an agreement to this effect was signed in 1960. This arrangement has worked very well.

During this period most WHO publications have accordingly been issued in four languages: English, French, Russian and Spanish, and their distribution has continued to develop. A regular three-yearly postal check is made of certain categories of recipients of free documents and publications to keep the mailing lists of some 37,000 addresses up to date.

The value, at list price, of sales of WHO publications was US $120,000 in 1958, and had risen to US $360,000 in 1967. The latter figure does not take account of the net sales of publications in the Russian language, which amounted in 1967 to US $26,000.
At the thirty-ninth session of the Executive Board and the Twentieth World Health Assembly (in 1967) the question of introducing Russian and Spanish as working languages of these organs was discussed. The Health Assembly considered a three-phase plan for these languages to become working languages, in addition to English and French. It decided that the first phase of this plan should be initiated in 1968 and reviewed by the Twenty-second World Health Assembly.

Apart from the question of languages of publication, the Organization has received requests from several international and national non-governmental organizations for advice or assistance in the standardization of medical terminology in various fields. A survey was made of recent or current medical terminological activities, both within and outside WHO, with a view to determining whether this was a field in which the Organization might usefully play a co-ordinating role. The subject is very complex and no final conclusions have yet been reached.

A distinct, but related, problem is that of arriving at an internationally acceptable standard list of medical terms for the purpose of indexing, storing, and retrieving medical information, especially in relation to computerized retrieval systems. The Organization accepted the offer of the National Library of Medicine, Bethesda (USA) to supply magnetic tapes of its Medical Literature Analysis and Retrieval System (MEDLARS) for use with the WHO computer. In this connexion the possibility of developing, in consultation with interested international and national groups, an international list of indexing terms (descriptors) is under study.

The WHO Library

The Organization's capacity to deal quickly with requests for information will be greatly enhanced by the use of a computerized system, but a considerable improvement has also resulted from the move to the new WHO building, of which a prominent feature is the WHO library.

The planning of the new library started in 1961, and before plans were established visits of inspection were made to modern university and special libraries in several countries. At the end of 1967 the collection in the new WHO library comprised over 80 000 volumes, 20 000 reports and 2800 current medical and scientific periodicals, all easily available for rapid consultation by readers.

In 1960 WHO initiated a scheme for the international exchange of duplicate literature in medicine and allied sciences, in which today seventy-nine libraries in thirty-nine Member States are participating. Since its inception, 118 lists of duplicate medical literature available for donation have been distributed. Although the total number of pieces dispatched by the other libraries as a result of the scheme is not known, WHO alone has sent 66 876 items to fifty-three libraries.
With the new facilities it is possible to receive WHO fellows in medical librarianship, and in 1966 a six-week course for twelve medical librarians from the Eastern Mediterranean Region was held in the WHO library. This course was the third of its kind, the previous two having been held in Beirut in 1964 and 1965 in co-operation with the American University of Beirut, the specialized instruction in medical librarianship being provided by WHO lecturers.

Publications of the Pan American Sanitary Bureau

From the funds derived from the Pan American Health Organization, the Pan American Sanitary Bureau/WHO Regional Office for the Americas finances a publications programme, which has grown rapidly in volume and scope in the past ten years. It is designed to complement, without duplicating, the publications of WHO distributed in the Americas. The programme comprises the Special Publications series (Scientific Publications, Official Documents, and Miscellaneous Publications) and the periodical publications: the monthly Boletín, and a new quarterly journal on medical education, Educación médica y salud.

In the Scientific Publications series the Bureau has made available to health services throughout the Americas an increasingly broad selection of technical literature. The programme has practically tripled in volume in the past decade. While twenty-six publications were issued in 1958, the figure rose to sixty-one in 1966.

Apart from the Official Documents, material is selected for publication primarily to fill Latin America's needs in technical handbooks and guides and to disseminate information on the results of field projects, seminars, and other technical meetings of the Organization. The emphasis has been on literature that will stimulate the practical application of new methods in public health.

In addition to original material in both Spanish and English, a number of texts are selected each year for translation into Spanish or Portuguese in order to respond to specific needs in Latin America.

The monthly journal, Boletín de la Oficina Sanitaria Panamericana completed its forty-sixth year of publication in 1967. It has continued to serve the purpose for which it was created by the Sixth International Sanitary Convention (Montevideo, 1920), namely the notification of current technical literature on all

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1 The Scientific Publications series of the Pan American Health Organization includes such titles as Live poliovirus vaccines (Nos 44 and 50, 1959 and 1960); Plague in the Americas (No. 115, 1965); Science policy in Latin America (No. 119, 1966); Environmental determinants of community well-being (No. 123, 1965); Man and his environment: biomedical knowledge and social action (No. 131, 1965); Deprivation in psychobiological development (No. 134, 1966); Life at high altitudes (No. 140, 1966); Migration of health personnel, scientists, and engineers from Latin America (No. 142, 1966); First international conference on vaccines against viral and rickettsial diseases of man (No. 147, 1967); Immunologic aspects of parasitic infections (No. 150, 1967); and The unreasonable man (No. 152, 1967).
international aspects of health in the Americas. With the steady growth in the number of readers, the press-run increased from about 8400 copies in 1958 to 11 200 in 1967.

The *Boletín*, while primarily a Spanish-language journal, has included an increasing amount of material in English, Portuguese, and French. The selection of contents has focused more and more on the needs of the public health administrator and the health worker in the field. Increasing emphasis has also been given to studies relating directly to operating projects and to the work of the Organization. Special arrangements are maintained for publishing articles selected from the *Bulletin* of WHO simultaneously in Spanish in the PASB *Boletín*.

The new quarterly journal on medical education, *Educación médica y salud*, was launched in 1966 as a joint project of PASB and the Pan American Federation of Associations of Medical Schools.

In the past ten years the volume of publications distributed by the Regional Office, including WHO publications, has increased from approximately 180 000 copies in 1958 to 300 000 in 1966.

The principal functions of the library of the Pan American Sanitary Bureau are to collect and co-ordinate materials in the health-related sciences and to correlate these with the needs of the Organization and of the staff. The library meets requests from governments, received directly or through the zone offices, and from individual physicians and researchers.

Although the collection is not numerically large, it has frequently been reviewed so as to reflect the aims of the Organization. Material no longer needed or not germane is offered to medical libraries in all parts of the Americas through the United States Book Exchange, the Medical Library Association Exchange, and the National Library of Medicine.

In 1965 the library was transferred from its former cramped quarters to its modern and functional premises in the new office building.

PUBLIC INFORMATION

With the aim of informing the public about health problems generally and about the Organization's activities, WHO provides press, photo and radio services, publishes a magazine, and makes films. In addition, the trend has been to encourage and assist independent writers, reporters and film makers to produce their own material on the work and achievements of the Organization. The reasons for such an approach include smaller cost to WHO and improved distribution facilities through ordinary commercial channels. The problem of non-commercial distribution of information material remains acute, as for all members of
the United Nations system, but some progress has been made as a result of discussions by the Consultative Committee on Public Information (an inter-agency body).

WHO has been able to develop close association with a number of reporters, feature writers, and television and radio contacts who are kept informed of the work of WHO, and who turn to the Organization for dependable information on health questions.

The task of informing the public about the work of WHO has been made easier by the growing popular interest in economic, social and, above all, scientific affairs, including health. The mass media in general are also contributing to this educational process. Information emanating from WHO is accordingly in greater demand and finds a more receptive audience. The Organization is solicited more and more for information not only about its own activities but about health questions in general. As compared with the situation ten years ago the initiative has now passed to the individual journalist, editor, or radio or television producer. The number of private persons and groups that address themselves to the Organization for information has also increased. Nevertheless the stimulation of interest among those who command a mass audience will no doubt remain the principal task. United Nations Information Centres throughout the world have been of great help and United Nations radio, film and television services have provided valuable technical facilities.

**Press**

In addition to briefings for individual journalists, three categories of material are provided to meet the demand not only for news of topical interest but also for background information. Press releases cover current meetings, staff appointments, technical reports and other publications, statistics and notable events in the day-to-day work of the Organization; background articles treat specific health problems in greater detail than a press release; and a monthly digest of news (Around the World with WHO) summarizes developments of current interest.

The regular mailing lists for this material include the corps of foreign correspondents in Geneva and the local press. The increasing number of permanent news correspondents in Geneva—five in 1948, 120 in 1958 and over 200 at the end of 1967—reflects the importance of this city as an international source of news and secures WHO a worldwide audience. The Organization has participated in a number of meetings (such as editors' round tables) organized by the United Nations from time to time to reinforce contacts with the press.

A review of press cuttings received from all parts of the world indicates that the World Health Assembly, its decisions and personalities continue to attract
widespread notice. Other topics related to WHO's programme that have received attention in the press include cancer, cardiovascular diseases, smallpox eradication, cholera, influenza, the growing accident rate, family planning, medical research and the shortage of medical and nursing personnel.

World Health

In 1958 World Health changed its character and format from an eight-page newspaper with pictures to an illustrated magazine of up to forty pages or more per issue. The contents were diversified: WHO and WHO projects continue to be regularly featured, but articles and photographs on health work not directly sponsored by WHO are now included. Much space has been given, over the years, to the activities of related organizations, including those of the Red Cross, UNESCO, the Freedom from Hunger Campaign, the work of the United Nations High Commissioner for Refugees, UNICEF, and the Intergovernmental Committee for European Migration.

The magazine commissions articles by independent writers and attempts to present technical matters in pictorial form, to appeal to health workers and laymen alike, and to describe health problems in a regional or worldwide setting. Supplements giving general information about WHO are added from time to time.

The topicality of the magazine suffers, however, from the long preparation needed for several language editions. A Russian version was added to the English, French, Spanish and Portuguese editions in 1960. It is translated and printed in Moscow in 10,000 copies. In 1967, a German edition was started by the German Green Cross. Taking into account all language editions, World Health appears in about 120,000 copies in ten issues a year.

Sales have made slow progress and now stand at 5000 subscribers. The free distribution list includes health departments, health workers, secondary schools, United Nations associations, journalists, newspapers and periodicals. Some of the non-governmental organizations in official relations with WHO (such as the International Union against Cancer, the International Society of Cardiology and the International Union against Tuberculosis) have greatly helped to make the magazine known, and pictures and articles appearing in its pages are republished by many other periodicals.

Books

Though their value for public information purposes is recognized, few books for the general reader can be produced by WHO because of cost and distribution difficulties. Efforts have been made instead to interest established writers in studying the work of the Organization at first hand.
Thus for WHO's tenth anniversary *Voyage chez les vivants*, by Pierre Gascar, appeared in France and the USSR; *Doctors to the World*, by Murray Morgan, was published first in the United States, then in England, and was later translated into Italian; and Fraser Brockington's general survey, *World Health*, was published in England. As the malaria eradication campaign progressed, *Fever Peaks*, by Wayne Mineau, was published in England. For the twentieth anniversary Joseph Kessel, Boris Izakov and Lucjan Wolanowski have visited a number of countries to gather material for books on health work in which WHO is participating.

**World Health Day**

The celebration of World Health Day on 7 April, the anniversary of the coming into force of the Constitution of WHO in 1948, has continued to provide an occasion for focusing public attention on important health problems. Primary responsibility for World Health Day activities rests with the governments and in many countries the event is widely celebrated. The practice, established during the first ten years, of building up a campaign around a theme, has been continued since. Preparations include the production of articles in a number of languages, which are distributed to governments, the press, non-governmental organizations, etc.; an issue of *World Health* is devoted to the theme; recordings are made in a number of languages and broadcast in all WHO regions; help is given to government and private television networks to produce appropriate programmes; photographic material is sent, on request, to all parts of the world; if finances permit, a short film is produced.

The themes of World Health Day in the past ten years have been: Ten years of health progress (1958); Mental illness and mental health in the world of today (1959); Malaria eradication—a world challenge (1960); Accidents and their prevention (1961); Preserve sight, prevent blindness (1962); Hunger: disease of millions (1963); No truce for tuberculosis (1964); Smallpox, constant alert (1965); Man and his cities (1966); Partners in health (1967).

**Photographs and Exhibits**

The WHO photo library is probably the world's most extensive collection of pictures on the health situation. It includes over 15,000 registered negatives, of which a catalogue was brought out, presenting individual photographs and photo stories from 110 countries. Thus the photo library can produce and edit photographic documents to illustrate health activities and achievements in almost any area of the world.
In addition an average of twelve photo stories have been produced each year, many of them the work of photographers of international repute. Nearly all WHO photo stories first appear in *World Health*, and are then available for general reproduction. A growing number of publishers and photo agencies all over the world have shown interest and now receive these photographs regularly. In 1967, nearly 4000 requests for pictures were received, mainly from the press but also from book publishers. The photographic laboratory installed in the new headquarters building produces about 40,000 prints a year.

As regards exhibitions, WHO follows the policy developed by the inter-agency Consultative Committee on Public Information which limits participation in international exhibitions to those of a universal character whose policy is in line with that of the United Nations, and which do not involve expense, such as space rental, for the agencies.

Primarily for financial reasons, WHO does not take part in national exhibitions, but material is prepared for them on request, when the theme is related to the Organization's work.

Films and Television

Ten films have been produced in the past ten years, some as joint productions with government film offices, and others in co-operation with the United Nations and specialized agencies, thus reducing the cost to WHO, which has also continued to sponsor film-production by private companies, either by giving help with scripts or by sharing expenses. WHO films have been widely used on television and television networks have received help in producing their own programmes on the work of WHO: many networks, especially in Europe, have sent teams abroad to collect film material for use in programmes on a wide variety of health subjects.

Experience with animated cartoons has been favourable. A short colour cartoon is often more successful than an ambitious feature film and presents no major language problem. "To your Health", a cartoon film on alcohol and alcoholism made in 1956, is still in wide use; 160 copies were sold in 1966 alone.

Distribution involves difficulties: WHO films are offered to the developing countries as far as possible without charge or at small cost. It has not yet been possible to organize a film loan service.

Recent WHO films include two on communicable eye diseases—"Open your Eyes", a dramatization of the trachoma control campaign in Morocco, and "Visit in the Desert", on trachoma in Sudan—and one, "Speciosa", on the training and work of nurses in Burundi. Other films concern schistosomiasis and leprosy. Four animated cartoons have as their themes tuberculosis, smallpox, drug dependence and urbanization.
Radio

Radio continues to reach increasing numbers of listeners, through its extension in developing countries and the rapid spread of cheap receiving sets.

The number both of sound recordings made and of copies dispatched has grown steadily: recordings rose from thirty-eight in 1959 to 217 (distributed in 504 copies) in 1967. Copy tapes are made and distributed solely at the request of broadcasters and there are indications that about 90 per cent. of all copies dispatched are used.

In Geneva WHO has continued to use the recording facilities of the United Nations in the Palais des Nations and has received valuable assistance from United Nations radio officers and technicians. English and French are the languages most frequently used, but recordings have also been made in many other languages.

Malaria Eradication Postage Stamps

A philatelic project, organized in 1962, transmitted an appeal for support for malaria eradication to all parts of the world through millions of postage stamps and cancellations with the message “The world united against malaria”. Stamps were issued by ninety-eight postal authorities, sixteen postal administrations provided special cancellations, and many countries made donations to WHO in stamps, philatelic material and money. Pamphlets and booklets were issued by postal administrations, commercial and voluntary groups. Radio stations all over the world carried programmes on malaria eradication. Exhibitions were organized by WHO and philatelic associations.

Visitors

While WHO had its offices in the Palais des Nations a few visitors each year came for briefing, members of the secretariat occasionally addressed groups and film shows were arranged. In 1963, when records were first kept, there were 220 visitors. After the move to the WHO building in May 1966, 2000 visitors that year and over 2250 in 1967 were shown round the building and heard talks on the Organization’s work.
For the organizational structure at headquarters at 31 December 1967, see Chart 4.

Headquarters units provide technical advice and guidance in their respective fields of responsibility to regional and other offices.

1 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.
In administrative matters the first ten years of the Organization may be regarded as the formative stage. Because international administration was still a relatively new concept, work had to be carried on by trial and error, with much improvisation because of the necessity of dealing with new problems promptly. In the period which followed, systematic efforts were pursued to create an efficient and economic administrative machinery based on modern managerial concepts and tools, and suited to support the increasing programme activities of the Organization.

There were numerous elements involved in this process. The administration, its functioning and practices, as they emerge at the end of the second decade, are the results of a complex process which required constant awareness of the factors of growth, of financial problems, the development of human resources and the impact of evolving administrative science and technology on the established organizational structure and procedures.

Critical examination of the administrative performance has become a standard feature in the Organization's life. Numerous management surveys have covered headquarters and regional activities and many WHO representatives' offices. But it is not through these surveys only that the Organization's efficiency is being tested. Continuous scrutiny of the work is carried out at all levels of the secretariat to find shortcomings and introduce improvements (see also pages 275 to 277).

Constitutional, administrative and financial developments proceeded under the guidance and direction of the World Health Assembly and the Executive Board, which yearly review the financial position of the Organization and its administrative and managerial evolution.

The Executive Board, in addition to its regular consideration of the programmes of WHO, its financial policy and internal organization, continued to undertake organizational studies at the request of the Health Assembly in a search for the most efficient and effective operational and administrative functioning of the Organization. The subjects of studies by the Board during the last decade were: Publications (the second study on this subject, 1959-1960); Co-ordination with
the United Nations and the specialized agencies (1961-1962); Measures for providing effective assistance in medical education and training to meet the priority needs of the newly independent and emerging countries (1962-1963); Methods of planning and execution of projects (1962-1965); Co-ordination at the national level in relation to the technical field programme of the Organization (1964-1967).

Throughout the decade the financial situation of the Organization remained sound. This soundness was achieved and maintained owing to the deliberate policy and co-operation of Members in meeting their financial obligations. The annual collection of contributions to the total assessment of active Members has most often been approximately 96 per cent. The unpaid portions are collected subsequently (see Table 2, page 308). The yearly obligations against the effective working budget varied between 97.06 per cent. and 98.59 per cent.

Membership

On 31 December 1967 the membership comprised 126 Members and three Associate Members, compared with eighty-five Members and three Associate Members in 1957. The new Members came primarily from the African continent and more particularly from that part of Africa served by WHO's Regional Office in Brazzaville; the number of Member States in this region grew from three in 1957 to twenty-nine in 1967.

Of the present Members, Byelorussian SSR and Ukrainian SSR continue to be inactive; they do not participate in the work of the Organization nor do they pay their assessed contributions.

During the decade thirty-nine Members acceded to the Convention on the Privileges and Immunities of the Specialized Agencies together with its Annex VII, which relates specifically to WHO, thus bringing the total to sixty-two. The Convention defines the legal capacity and the privileges and immunities the Organization should enjoy in the territory of each Member in order to fulfill its objectives and to exercise its functions with the necessary degree of independence and freedom of action, thus enabling it to operate without interference or outside pressure.

Amendments to the Constitution

In October 1960, amendments to the Constitution increasing the number of Members entitled to designate a person to serve on the Executive Board from eighteen to twenty-four entered into force. From the Fourteenth World Health Assembly (1961) onwards, the Board has accordingly consisted of twenty-four persons designated by as many Members.
In view of the recent increase in the membership of the Organization, a further amendment to the Constitution designed to bring the number of persons serving on the Board to thirty was adopted by the Twentieth World Health Assembly, in 1967.

In 1965, the World Health Assembly adopted amendments to Article 7 of the Constitution, providing for the suspension or exclusion from the Organization of a Member ignoring the humanitarian principles and the objectives laid down in the Constitution by deliberately practising a policy of racial discrimination.

Neither of these two amendments has yet been accepted by two-thirds of the Members of the Organization, which is the constitutional requirement for them to enter into force.

**International Regulations**

No international conventions or regulations were adopted by the World Health Assembly during the second ten years, other than regulations modifying or supplementing the Nomenclature Regulations and the International Sanitary Regulations. Where it has been necessary to elaborate and promulgate international norms or standards, the tendency has been to rely on the procedure provided under Article 23 of the Constitution relating to recommendations. This procedure appears to be adequate where questions of reciprocity are not predominant, and it has the advantage of flexibility, since a recommendation may be modified or adopted without any formalities having to be observed. (See also pages 76 and 98.)

**Structure of the Organization**

The structure of the Organization as a whole and the details of the headquarters secretariat in December 1967 are shown in the charts on pages 296 and 300. For purposes of comparison the headquarters structure at the end of 1957 is also shown (in Chart 5, page 301). As will be seen, there are now five Assistant Directors-General as compared with three at the end of 1957. The number of divisions has increased from 11 to 15 and the number of units from 40 to 76. New units and divisions are established as required to allow the Organization to cope with new fields of activity or with increasing work resulting from a greater emphasis on specific aspects of ongoing activities.

In the allocation of units to divisions and in the assignment of divisions to Assistant Directors-General full flexibility is maintained. A redistribution of functions is undertaken whenever it is considered necessary in order to avoid duplication and to streamline internal procedures.
CHART 5. STRUCTURE OF WHO HEADQUARTERS AT 31 DECEMBER 1957

This division, which was not subdivided into sections, dealt with municipal and regional sanitation, rural and community sanitation, housing and own planning, vector control and insecticides, milk and food sanitation, environmental aspects of occupational health, and transport sanitation.

** As from 1 January 1958.
Regionalization remained one of the distinctive features of the Organization. The role of the regional offices was reinforced by the appointment of WHO representatives with established offices in a number of countries. The specific functions of the WHO representative include assistance to the governments in reviewing health needs and resources, and in planning, co-ordinating, implementing and evaluating their national health programmes and policies. He is also required to co-operate with the Resident Representatives of the United Nations Development Programme and the representatives of other agencies and sources of assistance regarding the health aspects of assistance programmes. He represents, and sometimes acts on behalf of, the regional director at the country level; gives a certain amount of common servicing and liaison facilities to project staff; and keeps the regional director informed of all relevant actions and developments.

A WHO representative may be assigned to two or more adjoining countries. At the end of 1967 forty-eight WHO representatives' offices serving 109 countries and territories had been established.

Staff

Staff development required the tapping of new recruitment sources, the streamlining of existing recruitment procedures and the balancing of geographical distribution. Changes in the recruitment policy and procedures introduced in 1963 resulted in speeding up appointments of staff, particularly in field projects. Difficulties are, however, still encountered in finding suitable candidates for certain disciplines.

The increasing number of new Members, as well as the return to the Organization of the majority of inactive Members, could have created an unbalanced geographical distribution of staff had a special effort not been made to prevent it. On 30 November 1967, the number of Members which had one or more nationals employed by the Organization was ninety-five, compared with fifty-three at the end of 1957. Thus, nationals of 75 per cent. of Members were serving in the secretariat in 1967 as compared with 62 per cent. in 1957.

Details of the number and distribution of staff in 1957 and 1967 are given in Annex 16.

The concept of staff training has come to be accepted as a regular feature of the Organization's activities, having as objectives to enable staff members to achieve their full potential in the service of the Organization, to prepare them for international health work generally and to develop the special skills necessary to carry out the programme of the Organization (see Chapter 3, page 91). The briefing of staff was expanded and improved, including the introduction of a sys-

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1 See Map 1, facing p. 1.
Office Accommodation

Progress was made in providing adequate and permanent office accommodation at headquarters and at several of the regional offices, and in extending and adapting existing office buildings in other regions.

Headquarters. In 1966, for the first time in many years, the whole headquarters staff was brought together in one location, affording improved working facilities, and giving added vigour to the team spirit of the staff.

The development of plans for the construction of a permanent headquarters building in Geneva had been authorized by the Twelfth World Health Assembly in May 1959. An international competition was held in which fifteen well known architects from thirteen countries participated. The winning design was that of the late Jean Tschumi of Switzerland. The foundation stone was laid in May 1962 by the President of the Fifteenth World Health Assembly, the late Dr S. V. Kurasov, Minister of Health of the USSR, on a site made available by the Republic and Canton of Geneva. A major portion of the costs of construction was met by loans from the Swiss Confederation and the Republic and Canton of Geneva, the remaining costs being met from the regular budget of the Organization. Numerous gifts from Members were received in cash or in kind. The construction of the building was completed in the spring of 1966 and the inauguration ceremony took place on 7 May of that year, during the Nineteenth World Health Assembly.

The building is a pre-stressed concrete structure, encased in aluminium and glass façades, constructed on a modular basis with movable partitions, thus providing maximum flexibility. It provides some 550 offices, four medium-sized conference rooms, work areas, and a conference hall for the meetings of the Executive Board. The construction of an adjacent temporary building providing eighty-three offices was authorized by the Twentieth World Health Assembly in May 1967 and was completed by the end of the year.

Regional Office for Africa. The complex at the Cité de Djoué outside Brazzaville, which had been provided by the French Government as offices and living quarters since 1956, was ceded to the Organization in April 1962, including the land, all buildings and twenty-five houses for the staff.

An extension of the existing office building and the construction of a conference hall, financed from the budget of the Organization and by contributions from a number of Members of the African Region, were completed in September.
1967. Houses were also constructed, providing forty-eight apartments of various sizes to accommodate the increased staff.

_Regional Office for the Americas._ In 1965 the Pan American Sanitary Bureau/WHO Regional Office for the Americas completed the construction of a new office building in Washington. The site was provided by the Government of the United States of America. The construction was very largely financed by a loan from the Kellogg Foundation to the Pan American Sanitary Bureau, with repayments provided for in the regular budget of the Pan American Health Organization, credited to a special fund to be used for increased programme assistance to Members of the Region.

_Regional Office for South-East Asia._ The Government of India undertook to construct a new office building in New Delhi to replace the provisional accommodation which the Organization had occupied. The new six-storey building, with a separate conference hall, was completed and occupied in 1962. In 1967 the Government of India offered to sell the building to the Organization and the Twentieth World Health Assembly, in May 1967, authorized the Director-General to accept the offer.

_Regional Office for Europe._ When the Regional Office moved to Copenhagen in June 1957 it occupied buildings specially constructed or bought by the Danish Government for that purpose. As from January 1962, the Government placed an adjacent house at the disposal of the Regional Office. To meet the long-term needs, the Government has acquired additional land and intends to construct a new building to be completed and occupied by 1970. In the meantime, the Government has had a temporary building constructed in the grounds of the Regional Office to meet the most pressing needs. All the buildings provided by the Government are at the disposal of the Organization rent-free.

_Regional Office for the Eastern Mediterranean._ The Regional Office has been housed since 1949 in a building previously occupied by the Egyptian Sanitary, Maritime and Quarantine Board in Alexandria and placed at the disposal of the Organization by the Government of the United Arab Republic at a nominal rent of 10 piastres per annum. The lease was renewed in 1958 for a period of twenty years. To accommodate the increasing staff of the Regional Office WHO has constructed an additional floor and made certain other structural alterations.

_Regional Office for the Western Pacific._ On land made available in Manila by the Government of the Philippines, the Organization constructed a three-storey office building with adjoining conference facilities which was occupied in 1959. The building was financed largely by contributions from the host Government and other Members of the Region, with about 28 per cent. paid from the budget of the Organization.
Electronic Computer Services and Data-Processing

Towards the end of 1963 an assessment of the potential use of modern computer facilities by the Organization was undertaken. This was followed in 1964 by a detailed feasibility study, the results of which indicated the benefits and great potentialities for the use of a computer in WHO. A delivery contract was signed in December 1964 and the computer was installed in June 1966. It was expanded to include more powerful equipment by the end of 1967. The technological conception of the computer allows further expansion to handle either higher volume or completely new applications.

The use so far made of the computer for biomedical research information services, for the processing and analytical studies of health statistics, and in other technical fields, has been mentioned in preceding chapters. Starting from June 1966, electronic data-processing was applied in the Organization’s administrative services for payroll, pension fund, personnel records, budget, etc.

The computer is essential to the development of research which the Organization is undertaking in epidemiology and communications science. Plans for electronic data-processing in these fields are being developed.

There is ample evidence that the computer will make possible new approaches to many technical and managerial problems. Advanced equipment of this type makes it possible both to break new ground in data-processing, and to carry out activities which were hitherto excluded on grounds of cost.

Preparation and Form of Presentation of the Annual Programme and Budget Estimates

Under the Constitution, the Director-General is responsible for the preparation of the annual programme and budget estimates of the Organization. The budget cycle extends over a three-year period.

In the first year the Director-General, taking account of the general programme of work covering a specific period, approved by the Health Assembly, gives policy guidance and instructions on budget preparation to senior headquarters staff and to Regional Directors and indicates tentative allocations of funds to each region. These instructions include directives on programme trends and refer to decisions of the Executive Board and the World Health Assembly. Plans for projects of assistance are then developed in consultation with the requesting governments and in collaboration, to the extent possible, with interested agencies providing assistance under bilateral or multilateral arrangements. Following a review and consolidation by the Regional Director, each proposed regional programme is examined by the appropriate Regional Committee and subsequently transmitted to the Director-General with the comments and recommendations of these commit-
All programme and budget proposals are then reviewed by the DirectorGeneral and consolidated into the annual programme and budget estimates of the Organization.

In the second year the proposed programme and budget estimates are examined by the Executive Board and its Standing Committee on Administration and Finance, submitted to the World Health Assembly, together with a report by the Board containing its comments and recommendations, and approved by the Assembly.

In the third year the programme as approved, but adjusted to take account of any subsequent changes in governments’ priorities, is implemented by the Organization and the governments.

In order to present in one volume an integrated international health programme, the Director-General’s proposed programme and budget estimates continue to include information on all activities financed from funds administered directly or indirectly by the Organization. In addition to the regular budget estimates, financed by assessments on Members of WHO, the volume shows the estimated costs of health programmes requested, or expected to be requested, by governments, under the Technical Assistance and Special Fund components of the United Nations Development Programme; of activities expected to be assisted jointly with UNICEF; and of activities to be financed by the Pan American Health Organization. The volume also includes, in separate annexes, cost estimates and relevant information on activities proposed under the various special accounts in the Voluntary Fund for Health Promotion; activities of the International Agency for Research on Cancer; and projects requested by governments, but which the Director-General could not include within the budget level proposed.

The form of presentation of the programme and budget has been under constant review. The annual programme and budget is now presented functionally,

<table>
<thead>
<tr>
<th>Year</th>
<th>Total budget US $</th>
<th>Undistributed reserve US $</th>
<th>Effective working budget US $</th>
<th>Actual obligations US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1958</td>
<td>14,769,160</td>
<td>1,203,030</td>
<td>13,566,130</td>
<td>13,226,820</td>
</tr>
<tr>
<td>1959</td>
<td>16,026,028</td>
<td>1,072,060</td>
<td>14,954,966</td>
<td>14,654,981</td>
</tr>
<tr>
<td>1960</td>
<td>18,113,760</td>
<td>1,195,060</td>
<td>16,918,700</td>
<td>16,633,517</td>
</tr>
<tr>
<td>1961</td>
<td>21,114,348</td>
<td>1,333,900</td>
<td>19,780,448</td>
<td>19,201,985</td>
</tr>
<tr>
<td>1962</td>
<td>20,566,040</td>
<td>1,683,140</td>
<td>24,863,800</td>
<td>24,164,650</td>
</tr>
<tr>
<td>1963</td>
<td>32,543,870</td>
<td>2,149,570</td>
<td>30,394,300</td>
<td>29,783,550</td>
</tr>
<tr>
<td>1964</td>
<td>36,705,880</td>
<td>2,223,130</td>
<td>34,482,750</td>
<td>33,669,165</td>
</tr>
<tr>
<td>1965</td>
<td>42,026,370</td>
<td>2,521,370</td>
<td>39,507,000</td>
<td>38,346,067</td>
</tr>
<tr>
<td>1966</td>
<td>47,097,390</td>
<td>2,618,590</td>
<td>44,478,800</td>
<td>43,458,970</td>
</tr>
<tr>
<td>1967</td>
<td>55,523,640</td>
<td>3,448,040</td>
<td>52,075,600</td>
<td>51,333,664</td>
</tr>
</tbody>
</table>
i.e. by subject, both in summary and in detail; by project, country and region; and is also summarized by major programme groups. In addition, it provides detailed and summarized information by purpose of expenditure. Table 1 shows the regular budgets for the ten years 1958-1967.

The Undistributed Reserve, which is part of the total budget appropriation, represents at present the assessments on two Members that are not actively participating in the work of the Organization, on China — for which special assessment arrangements have been approved by the Health Assembly — and on another Member which has not been paying its contributions since 1966. No obligations may be incurred against this part of the budget, as no income is expected to be derived from it. The Undistributed Reserve is therefore deducted from the total budget to arrive at the amount of the effective working budget, which is the amount within which the planned annual programme is implemented.

Procedure for Considering the Annual Programme and Budget Estimates

During the first years of the second decade the procedures for considering the annual programme and budget estimates remained essentially the same as they had been towards the end of the first decade. These procedures require the Executive Board and its Standing Committee on Administration and Finance to examine the Director-General's proposed annual programme and budget estimates in detail and to report thereon to the World Health Assembly.

The criteria governing the Executive Board's review of the annual programme and budget estimates were established by the Second and Fifth World Health Assemblies (1949 and 1952) and are still in force.

The Assembly's procedures for examining the annual programme and budget estimates were modified by the Fifteenth World Health Assembly. The Committee on Programme and Budget of the Health Assembly, before examining the main features of the proposed programme and recommending the budgetary ceiling, has to consider also whether the annual programme follows the general programme of work covering a specific period; the Committee on Administration, Finance and Legal Matters has also to consider the text of the draft appropriation resolution and recommend the amounts to be appropriated for activities other than the operating programme.

The Twentieth World Health Assembly decided to include in the terms of reference of the Committee on Programme and Budget the task of recommending the general order of magnitude for the budget for the second ensuing year, for the orientation of the Director-General in the preparation of his proposed programme and budget estimates for that year. It was clearly recognized that such recom-
mendations could be binding neither on the Director-General in the light of his constitutional responsibility, nor on future sessions of the World Health Assembly.

Assessed Contributions

The Organization's primary source of income consists of the contributions received from Members in accordance with a scale of assessment determined annually by the World Health Assembly. Table 2 shows the growth of the resources available to WHO from the assessed contributions of active Members for the years 1958 to 1967. It also shows for each year the amount collected, absolutely and as a percentage of the total, and the amount of contributions outstanding at the end of the year.

TABLE 2. ASSESSMENTS AND COLLECTIONS OF CONTRIBUTIONS, 1958-1967

<table>
<thead>
<tr>
<th>Year</th>
<th>Assessments US $</th>
<th>Collections Amount US $</th>
<th>Percentage</th>
<th>Outstanding at end of year US $</th>
<th>Outstanding at 31 December 1967 US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>1958</td>
<td>13,415,440</td>
<td>12,910,942</td>
<td>96.24</td>
<td>504,498</td>
<td>-</td>
</tr>
<tr>
<td>1959</td>
<td>13,943,710</td>
<td>12,910,942</td>
<td>95.59</td>
<td>615,489</td>
<td>-</td>
</tr>
<tr>
<td>1960</td>
<td>15,746,420</td>
<td>15,129,902</td>
<td>96.08</td>
<td>610,518</td>
<td>-</td>
</tr>
<tr>
<td>1961</td>
<td>17,763,430</td>
<td>16,632,041</td>
<td>93.80</td>
<td>1,081,389</td>
<td>-</td>
</tr>
<tr>
<td>1962</td>
<td>22,527,970</td>
<td>21,217,841</td>
<td>94.18</td>
<td>1,310,129</td>
<td>-</td>
</tr>
<tr>
<td>1963</td>
<td>28,985,140</td>
<td>25,310,040</td>
<td>87.32</td>
<td>3,675,100</td>
<td>-</td>
</tr>
<tr>
<td>1964</td>
<td>32,399,200</td>
<td>31,311,745</td>
<td>96.64</td>
<td>1,067,454</td>
<td>22,673</td>
</tr>
<tr>
<td>1965</td>
<td>36,882,880</td>
<td>35,310,592</td>
<td>95.74</td>
<td>1,572,288</td>
<td>81,978</td>
</tr>
<tr>
<td>1966</td>
<td>40,939,820</td>
<td>39,294,155</td>
<td>95.98</td>
<td>1,645,665</td>
<td>494,162</td>
</tr>
<tr>
<td>1967</td>
<td>49,878,590</td>
<td>47,767,363</td>
<td>95.77</td>
<td>2,111,225</td>
<td>2,111,225</td>
</tr>
</tbody>
</table>

Working Capital Fund

The main purpose of the Working Capital Fund is to finance the annual appropriations of the Organization pending receipt of contributions from Members. It may also be used by the Director-General to meet unforeseen and extraordinary expenses up to US $250,000, or up to $1 million with the concurrence of the Executive Board; and to provide emergency supplies to Members on a reimbursable basis, subject to a limit of $25,000 for any one Member and a total of $100,000 at any one time.

The Eighteenth World Health Assembly in 1965 changed the composition of the Working Capital Fund and the way in which it is financed in order to enable it to be increased from sources other than Members' advances. The Fund has two parts, Part I consisting of advances by Members and Part II of amounts transferred from casual income in order to supplement the amount provided in Part I, so that the total amount of the Fund will be equal to, but not exceed, 20 per cent. of the effective working budget for each financial year. This ratio had not been reached by the end of the second decade.
Pan American Health Organization (PAHO) Regular Budget and other Funds

International health activities in the western hemisphere are financed not only from the WHO regular budget and other funds administered by WHO, but also from the regular budget and other special funds of PAHO. The Pan American Sanitary Bureau (PASB) serves as the Regional Office of the World Health Organization for the Western Hemisphere and administers the regular budget and other funds of PAHO. The PAHO regular budget funds derive from assessments on Member governments and participating governments of PAHO.

Voluntary Contributions

Voluntary Fund for Health Promotion

As early as 1949 the World Health Assembly and the Executive Board recognized that, even to begin meeting the vast health needs of the world, considerable supplementary resources over and above the WHO regular budget would be required. In 1960 the Thirteenth World Health Assembly decided to establish a Voluntary Fund for Health Promotion to receive contributions from public and private sources, in any usable currency or in kind, to be used for such purposes as are necessary for the implementation of the programmes approved by the World Health Assembly to be financed from the Fund. At the same time the Assembly decided that the operations planned to be financed from this Fund should be presented separately both in the Director-General's annual proposed programme and budget estimates and in the Financial Report.

The Voluntary Fund for Health Promotion includes as sub-accounts all special accounts which were already in existence. By subsequent resolutions of the World Health Assembly and the Executive Board other sub-accounts were established, so that the Voluntary Fund for Health Promotion, at the end of 1967, consisted of the following sub-accounts:

- General Account for Undesignated Contributions,
- Special Account for Smallpox Eradication,
- Special Account for Medical Research,
- Special Account for Community Water Supply,
- Malaria Eradication Special Account,
- Special Account for Assistance to the Democratic Republic of the Congo,
- Special Account for Accelerated Assistance to Newly Independent and Emerging States,
- Special Account for the Leprosy Programme,
- Special Account for the Yaws Programme,
Special Account for the Cholera Programme,
Special Account for Miscellaneous Designated Contributions.

As at 31 December 1967 contributions had been pledged, mostly by governments, to the Voluntary Fund for Health Promotion to the value of US $32,928,119, of which US $30,876,461 had been received.

Studies were undertaken on the possibilities of obtaining more substantial contributions from private sources such as industry, commercial and financial circles, benevolent organizations and the general public. These studies showed that world health foundations established in individual countries as independent benevolent organizations could be appropriate instruments for raising private contributions for international health work. The Executive Board and the World Health Assembly manifested their interest in the plan and requested the Director-General to take such action as would encourage the establishment of such foundations.

So far, world health foundations have been set up in Canada, Ceylon, Switzerland, the United Kingdom of Great Britain and Northern Ireland, and the United States of America. In several other countries action has been initiated. The concept of world health foundations has been gaining support and it is expected that the movement will be further strengthened by the creation of the Federation of World Health Foundations (in January 1967).

United Nations Development Programme (UNDP)

As a participating and executing agency of the United Nations Development Programme, which is financed by voluntary contributions, the Organization obtains additional funds for health activities which form part of the total WHO programme. The United Nations Development Programme has a Technical Assistance component (previously known as the "Expanded Programme of Technical Assistance") and a Special Fund component. WHO has obligated or committed the following amounts under each of these components:

<table>
<thead>
<tr>
<th>Year</th>
<th>Technical Assistance Obligations</th>
<th>Special Fund Commitments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US $</td>
<td>US $</td>
</tr>
<tr>
<td>1958</td>
<td>5,326,970</td>
<td>—</td>
</tr>
<tr>
<td>1959</td>
<td>4,880,785</td>
<td>—</td>
</tr>
<tr>
<td>1960</td>
<td>4,819,213</td>
<td>65,569</td>
</tr>
<tr>
<td>1961</td>
<td>5,596,331</td>
<td>—</td>
</tr>
<tr>
<td>1962</td>
<td>7,334,842</td>
<td>432,223</td>
</tr>
<tr>
<td>1963</td>
<td>7,062,948</td>
<td>701,434</td>
</tr>
<tr>
<td>1964</td>
<td>8,430,281</td>
<td>422,474</td>
</tr>
<tr>
<td>1965</td>
<td>6,817,651</td>
<td>1,173,830</td>
</tr>
<tr>
<td>1966</td>
<td>9,071,814</td>
<td>2,076,083</td>
</tr>
<tr>
<td>1967</td>
<td>6,977,770</td>
<td>3,874,123</td>
</tr>
</tbody>
</table>
United Nations Children’s Fund (UNICEF)

In accordance with the principles governing co-operation between the World Health Organization and the United Nations Children’s Fund, WHO studies and approves plans of operation for health programmes which conform with the policies laid down by the UNICEF/WHO Joint Committee on Health Policy and for which countries may request supplies and equipment from UNICEF. A considerable amount of the annual resources of UNICEF obtained through voluntary contributions has been devoted to jointly assisted health projects. The amounts spent annually by UNICEF on health activities during these last ten years have varied, but have been of the order of US $15 million to $20 million.

Revolving Sales Fund

The original Publications Revolving Fund was credited with the receipts from sales of WHO publications and was used to finance the cost of printing additional copies of publications for sale.

The Executive Board in 1959 decided to extend the use of the Fund to include such items as films, film-strips and any other items which the Organization produced for sale, renaming it the Revolving Sales Fund. At the end of each financial year any credit balance in the Fund which exceeds US $40,000 is transferred to miscellaneous income, which is used at the discretion of the Health Assembly.

Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training

Many Members have reported on the difficulties they have in purchasing teaching and laboratory equipment needed for medical education and training purposes, because of the delay encountered in obtaining the convertible currencies required.

In order to assist governments in this respect, the Nineteenth World Health Assembly, in 1966, established a Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training. Through this fund it became possible for Members to deposit with the Organization, in advance, the estimated costs of the needed equipment in their own national currencies, the Organization then making the purchases on their behalf.

Since the Organization has been able to use the currencies in its various programmes, the procedure has worked well and has been of considerable assistance to the Members concerned.

The Fund was originally established in the amount of US $100,000 and will increase yearly by the same amount, in the annual budgets, until it reaches
$500 000 in 1971, when the position will be reviewed by the Executive Board and the World Health Assembly.

Income and Obligations: All Sources of Funds

A detailed table showing income and obligations over the second ten years from all sources of funds is given in Annex 17.

Supply Services

Apart from the procurement of non-expendable administrative equipment, furniture and consumable administrative items, the Organization purchases technical supplies for the programme. It also makes available its supply services to Members, to the United Nations and the specialized agencies, and to non-governmental organizations in official relations with it.

The Organization normally provides a project only with such necessary supplies and equipment as are not locally available or are not contributed from other international or bilateral sources. Over the period 1958-1967 such purchases almost tripled, reaching 28 000 items in 1967. They include X-ray equipment, manufactured with WHO guidance and meeting the recommended standards for protection against radiation hazards, which was purchased on behalf of UNICEF for projects jointly assisted by UNICEF and WHO.

During the past ten years over forty Members have used WHO supply services for purchases totalling over US $2.5 million. For all purchases on behalf of Members, except in cases of emergency, prior payment of the total estimated cost is required. A service charge of 3 per cent. is payable unless the purchases are made in furtherance of an activity planned or carried out with the assistance of WHO. In addition, by 31 December 1967, applications totalling $300 000 had been approved for purchases out of the Revolving Fund for Teaching and Laboratory Equipment for Medical Education and Training.

The provisions governing the purchase of supplies and equipment for Members in emergency situations were modified after 1958 when the World Health Assembly authorized the Director-General to utilize the Working Capital Fund for this purpose (see page 308). No service charge is made on such purchases. Emergency purchases have been made on several occasions and consisted mainly of vaccines and medicaments. In meeting emergencies close co-operation has been maintained with the League of Red Cross Societies, while WHO supply services have been made available to the League.

Co-ordination in Administrative Matters with the United Nations and the Specialized Agencies

Co-ordination in administrative, budgetary and financial matters within the United Nations system is ancillary to the co-ordination of policies and programmes
already described in Chapter 9. As new responsibilities fell to the United Nations and specialized agencies in the economic and social fields, and as assistance activities expanded, the task of co-ordination in administrative matters increased also. It was accompanied by a strong tendency towards greater uniformity of procedures in the preparation and execution of programmes.

The Administrative Committee on Co-ordination has continued to be the central inter-secretariat body for administrative co-ordination, through the Consultative Committee on Administrative Questions and through special and ad hoc bodies. In a number of areas co-operation has been carried out through direct, daily secretariat contacts. For instance, in Geneva a single staff medical service is administered by WHO on behalf of the organizations in Geneva; the purchasing of paper and office supplies for the organizations located in Geneva is also carried out jointly; conference facilities and committee rooms are reciprocally shared.

Co-ordination on administrative matters has been facilitated by the strengthening of the International Civil Service Advisory Board to enable it to serve as an independent inter-organizational body and make technical judgements, free of external pressures, when problems arise in the administration of the common system of employment conditions for staff.

In 1966 the United Nations General Assembly established an ad hoc Committee of Experts to Examine the Finances of the United Nations and the Specialized Agencies. Following its recommendations, inter-agency studies and consultations on budget presentation and financial practices and procedures were undertaken with the object of achieving a greater measure of comparability and uniformity in these matters among the international organizations.

The growing importance of co-ordination within the United Nations system naturally increases the workload of the Organization and accentuates the need for safeguarding the Organization's own constitutional and technical responsibilities. As mentioned earlier, the Executive Board undertook an organizational study on co-ordination with the United Nations and the specialized agencies which was submitted to the World Health Assembly in 1962. The subject is again being studied by the Executive Board.

The International Agency for Research on Cancer

The Eighteenth World Health Assembly decided on 20 May 1965 to establish the International Agency for Research on Cancer in accordance with the provisions of a statute sponsored by five founding States. The Agency is financed by equal annual contributions from each participating State, of which there are now nine: Australia, the Federal Republic of Germany, France, Israel, Italy, the Netherlands,
the Union of Soviet Socialist Republics, the United Kingdom of Great Britain and Northern Ireland, and the United States of America.

The Agency is controlled by a Governing Council composed of one representative of each participating State and the Director-General of the World Health Organization.

There is a Scientific Council, composed of twelve scientists selected on the basis of their technical competence in cancer research and allied fields, and appointed on a rotating basis by the Governing Council. The Scientific Council recommends programmes and special projects to the Governing Council and reports on the scientific and technical aspects of the Agency's programme and budget; it also evaluates the activities and special projects sponsored by the Agency. Subject to the general authority of the Director-General of WHO the secretariat is headed by a Director selected by the Governing Council.

The Agency is at present housed in a building in Lyons, France, placed at its disposal free of charge by the city of Lyons. The French authorities have offered to construct a new building in Lyons at their expense as permanent accommodation for the Agency.
Annex I

MEMBERS AND ASSOCIATE MEMBERS
OF THE WORLD HEALTH ORGANIZATION
at 31 December 1967

At 31 December 1967 the World Health Organization had 126 Member States and three Associate Members, as compared with eighty-five Member States and three Associate Members at 31 December 1957. The list below gives the date on which each became a party to the Constitution or the date of admission to associate membership.

<table>
<thead>
<tr>
<th>Member States</th>
<th>Date</th>
<th>Member States</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>19 April 1948</td>
<td>Denmark</td>
<td>19 April 1948</td>
</tr>
<tr>
<td>Albania</td>
<td>26 May 1947</td>
<td>Dominican Republic</td>
<td>21 June 1948</td>
</tr>
<tr>
<td>Algeria</td>
<td>8 November 1962</td>
<td>Ecuador</td>
<td>1 March 1949</td>
</tr>
<tr>
<td>Argentina</td>
<td>22 October 1948</td>
<td>El Salvador</td>
<td>22 June 1948</td>
</tr>
<tr>
<td>Australia</td>
<td>2 February 1948</td>
<td>Ethiopia</td>
<td>11 April 1947</td>
</tr>
<tr>
<td>Austria</td>
<td>30 June 1947</td>
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Annex 2

WORLD HEALTH ASSEMBLIES, 1958-1967

PRESIDENTS, VICE-PRESIDENTS AND CHAIRMEN OF MAIN COMMITTEES

Tenth Anniversary Commemorative Session, Minneapolis, USA, 26-28 May 1958

President:
Dr S. AL-WAHBI, Director, Karkh Hospital

Vice-President:
Dr O. VARGAS-MÉNDEZ, Director-General of Health

Eleventh World Health Assembly, Minneapolis, 28 May - 13 June 1958

President:
Dr LEROY E. BURNET, Surgeon General, Public Health Service, Department of Health, Education and Welfare

Vice-Presidents:
Dr J. ANOUTI, Director-General, Ministry of Health
Dr A. SAUTER, Director, Federal Public Health Service
Dr TRAN-VY, Secretary of State for Health

Chairman, Committee on Programme and Budget:
Professor N. N. PESONEN, Director-General, State Medical Board

Chairman, Committee on Administration, Finance and Legal Matters:
Mr S. KHANACHET, Press Attaché, Saudi Arabian Legation, Bonn

Twelfth World Health Assembly, Geneva, 12-29 May 1959

President:
Sir John CHARLES, Chief Medical Officer, Ministry of Health

Vice-Presidents:
Dr D. EL-AZMEH, Minister of Health
Dr V. MARINESCO, Minister of Health and Welfare
Dr Oudom SOUVANNAVONG, Inspector-General of Administrative Affairs, Ministry of Health

Chairman, Committee on Programme and Budget:
Dr H. B. TURBOTT, Deputy Director-General, Department of Health

Chairman, Committee on Administration, Finance and Legal Matters:
Dr O. VARGAS-MÉNDEZ, Director-General of Health
Thirteenth World Health Assembly, Geneva, 3-20 May 1960

President:
Dr. H. B. TURBOTT, Director-General of Health, Department of Health

Vice-Presidents:
Dr. Y. BEN ABDESS, Minister of Health
Professor R. BARANSKI, Minister of Health and Welfare
Dr. J. M. BAENA, Secretary-General, Ministry of Public Health

Chairman, Committee on Programme and Budget:
Dr. Monawar K. AFRIDI, Vice-Chancellor, University of Peshawar

Chairman, Committee on Administration, Finance and Legal Matters:
Dr. M. E. BUSTAMANTE, Under-Secretary of Health, Ministry of Health and Welfare

Fourteenth World Health Assembly, New Delhi, 7-24 February 1961

President:
Dr. A. L. MUdalair, Vice-Chancellor, University of Madras

Vice-Presidents:
Dr. A. Martinez Marchetti, Under-Secretary of Social Welfare and Public Health
Dr. J. PLOHAR, Minister of Health
Dr. D. Samonte, Under-Secretary for Special Health Services

Chairman, Committee on Programme and Budget:
Dr. W. A. Karunaratne, Director of Health Services

Chairman, Committee on Administration, Finance and Legal Matters:
Dr. H. van Zile Hyde, Assistant to the Surgeon General for International Health, Public Health Service, Department of Health, Education and Welfare

Fifteenth World Health Assembly, Geneva, 8-25 May 1962

President:
Dr. S. V. Kurašov, Minister of Health of the USSR

Vice-Presidents:
Dr. Monawar K. AFRIDI, Honorary Consultant, Health Division, Ministry of Health, Labour and Social Welfare
Dr. D. CASTILLO, Assistant to the Director of Public Health, Ministry of Health and Social Welfare
Dr. P. LAMBIN, Minister of Public Health and Population

Chairman, Committee on Programme and Budget:
Dr. W. D. REFSHAUGE, Director-General of Health
Chairman, Committee on Administration, Finance and Legal Matters:
Dr M. López Herrarte, Minister of Health, Guatemala

and later:
Dr B. D. B. Layton, Principal Medical Officer, International Health Section, Department of National Health and Welfare, Canada

Sixteenth World Health Assembly, Geneva, 7-23 May 1963

President:
Dr M. A. Majekodunmi, Federal Minister of Health, Nigeria

Vice-Presidents:
Professor R. Geric, Deputy Secretary for Public Health and Social Welfare, Yugoslavia
Dr Sushila Nayar, Union Minister of Health, India
Mr Abdul Rahman bin Haji Talib, Minister of Health, Federation of Malaya

Chairman, Committee on Programme and Budget:
Dr V. V. Oluin, Director, International Health and Welfare Relations, Ministry of Social Welfare and Public Health, Argentina

Chairman, Committee on Administration, Finance and Legal Matters:
Mr I. T. Kittani, Minister Plenipotentiary; Permanent Representative of Iraq to the European Office of the United Nations, Iraq

Seventeenth World Health Assembly, Geneva, 3-20 March 1964

President:
Dr Monawar K. Afridi, Honorary Consultant, Health Division, Ministry of Health, Labour and Social Welfare, Pakistan

Vice-Presidents:
Dr J. Alvarez Amézquita, Secretary of State for Health and Welfare, Mexico
Dr E. B. S. Lumu, Minister of Health, Uganda
Dr Hurustiati Subandrio, Deputy Minister of Health, Indonesia

Chairman, Committee on Programme and Budget:
Dr S. Renhifo, Minister of Public Health, Colombia

Chairman, Committee on Administration, Finance and Legal Matters:
Mr J. H. Zeuthen, Permanent Under-Secretary of State, Ministry of the Interior, Denmark

Eighteenth World Health Assembly, Geneva, 4-21 May 1965

President:
Dr V. V. Oluin, Director, International Health and Welfare Relations, Ministry of Social Welfare and Public Health, Argentina
Vice-Presidents:
Dr S. Al-Sammarrai, Minister of Health  
Dr A. Engel, Director-General of the National Board of Health  
Mr O. Owusu-Afriyie, Minister of Health

Chairman, Committee on Programme and Budget:
Dr A. L. Mudallar, Vice-Chancellor, University of Madras

Chairman, Committee on Administration, Finance and Legal Matters:
Professor R. Vannugli, Chief, International Organizations Division, Ministry of Health

Nineteenth World Health Assembly, Geneva, 3-20 May 1966

President:
Dr A. Sauter, Director, Federal Public Health Service

Vice-Presidents:
Dr K. B. N'Dia, Minister of Public Health and Population  
Dr A. Roldós Gárcés, Minister of Welfare, Labour and Health  
Dr Sushila Nayyar, Union Minister of Health and Family Planning

Chairman, Committee on Programme and Budget:
Dr A. Nabulsi, Under-Secretary of State, Ministry of Health

Chairman, Committee on Administration, Finance and Legal Matters:
Sir William Refshauge, Director-General of Health

Twentieth World Health Assembly, Geneva, 8-26 May 1967

President:
Dr V. T. Herat Gunaratne, Director of Health Services

Vice-Presidents:
Dr T. Soda, Director, Institute of Public Health, Ministry of Health and Welfare  
Dr J.-C. Happi, Commissioner-General for Public Health and Population  
Dr E. A. D. Holmberg, Secretary of State for Public Health  
Dr Z. Szabó, Minister of Health  
Dr M. Sharboli, Minister of Health

Chairman, Committee on Programme and Budget:
Dr A. H. Thomas, Deputy Chief Medical Officer, Department of Health

Chairman, Committee on Administration, Finance and Legal Matters:
Dr A. R. Al-Adwani, Head, Internal Diseases Unit, Sabah Hospital
Annex 3

EXECUTIVE BOARD, 1958-1967

I. CHAIRMEN AND VICE-CHAIRMEN OF THE EXECUTIVE BOARD AND CHAIRMEN OF ITS STANDING COMMITTEES

<table>
<thead>
<tr>
<th>Session</th>
<th>Designating State</th>
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<tbody>
<tr>
<td>Twenty-first (14-28 Jan 1958)</td>
<td>United Kingdom of Great Britain and Northern Ireland</td>
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<tr>
<td>Chairman of the Executive Board:</td>
<td>Sir John Charles</td>
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<tr>
<td>Vice-Chairmen of the Board:</td>
<td>Dr Dia E. El-Chatti</td>
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<td>Dr P. E. Moore</td>
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<td>Chairmen of Standing Committees</td>
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<tr>
<td>Administration and Finance:</td>
<td>Professor G. A. Canaperia</td>
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<tr>
<td>Non-governmental Organizations :</td>
<td>Dr C. Díaz-Coller</td>
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<td>Twenty-second (16-17 June 1958)</td>
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<td>Twenty-third (20 Jan. - 3 Feb. 1959)</td>
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<td>Chairman of the Executive Board:</td>
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<td>Dr A. Habernull</td>
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<td>Chairmen of Standing Committees</td>
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<td>Administration and Finance:</td>
<td>Dr H. van Zile Hyde</td>
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<td>Professor E. Aujaleu</td>
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<td>Twenty-fourth (1-2 June 1959)</td>
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<td>Chairman of the Executive Board:</td>
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<td>Vice-Chairmen of the Board:</td>
<td>Professor M. N. Etemadian</td>
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<td>Dr H. M. Penido</td>
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| All sessions were held in Geneva except the twenty-second, which was held in Minneapolis (USA), and the twenty-seventh, which was held in New Delhi.


Session | Designating State
--- | ---
Chairmen of Standing Committees
Administration and Finance: | Dr. A. J. Metcalfe | Australia
Non-governmental Organizations: | Professor M. N. Etemadian | Iran

Chairman of the Executive Board: | Dr. H. M. Penido | Brazil
Vice-Chairmen of the Board: | Dr. A. O. Abu Shamma | Sudan
Dr. V. N. Butrov | Union of Soviet Socialist Republics

Chairmen of Standing Committees
Administration and Finance: | Mr. T. J. Brady | Ireland
Non-governmental Organizations: | Dr. A. Lynch | Peru

Twenty-seventh (30 Jan. - 1 Feb. 1961)
Chairman of the Executive Board: | Dr. A. O. Abu Shamma | Sudan
Vice-Chairmen of the Board: | Dr. A. Martínez Marchetti | Argentina
Dr. K. Suvarnakich | Thailand
Dr. D. Castillo | Venezuela

Chairmen of Standing Committees
Administration and Finance: | Dr. H. van Zile Hyde | United States of America
Non-governmental Organizations: | Dr. L. Molitor | Luxembourg

Twenty-eighth (29 May - 1 June 1961)
Chairman of the Executive Board: | Dr. A. O. Abu Shamma | Sudan
Vice-Chairmen of the Board: | Dr. R. Vannuñgli | Italy
Dr. J. Adjei Schandorf | Ghana

Chairmen of Standing Committees
Administration and Finance: | Dr. A. Nabulsi | Jordan

Thirtieth (29-30 May 1962)
Chairman of the Executive Board: | Dr. Monawar K. Afridi | Pakistan
Vice-Chairmen of the Board: | Dr. R. Vannuñgli | Italy
Dr. J. Adjei Schandorf | Ghana

Chairmen of Standing Committees
Administration and Finance: | Dr. A. Nabulsi | Jordan

1 Elected at the twenty-ninth session, in place of Dr. A. Martínez Marchetti.
<table>
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<td>France</td>
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**Thirty-second (27-28 May 1963)**

Chairman of the Executive Board: Dr. B. D. B. LAYTON (Canada)

Vice-Chairmen of the Board:
- Professor M. KACPRZAK (Poland)
- Dr. A. C. ANDRIAMASY (Madagascar)
- Professor F. WIDY-WIRSKI (Poland)

Chairmen of Standing Committees:
- Administration and Finance: Dr. H. B. TURBOTT (New Zealand)
- Non-governmental Organizations: Dr. S. AL-WAHBI (Iraq)
- Headquarters Accommodation: Professor E. AUJALEU (France)

**Thirty-third (14-24 January 1964)**

Chairman of the Executive Board: Dr. B. D. B. LAYTON (Canada)

Vice-Chairmen of the Board:
- Professor M. KACPRZAK (Poland)
- Dr. A. C. ANDRIAMASY (Madagascar)
- Professor F. WIDY-WIRSKI (Poland)

Chairmen of Standing Committees:
- Administration and Finance: Dr. H. B. TURBOTT (New Zealand)
- Non-governmental Organizations: Dr. S. AL-WAHBI (Iraq)
- Headquarters Accommodation: Professor E. AUJALEU (France)

**Thirty-fourth (26-29 May 1964)**

Chairman of the Executive Board: Dr. H. B. TURBOTT (New Zealand)

Vice-Chairmen of the Board:
- Dr. J. KAREFA-SMART (Sierra Leone)
- Dr. T. ALAN (Turkey)

Chairmen of Standing Committees:
- Administration and Finance: Dr. J. AMOUZEGAR (Iran)
- Non-governmental Organizations: Dr. S. DOLO (Mali)
- Headquarters Accommodation: Professor E. AUJALEU (France)

**Thirty-fifth (19-28 January 1965)**

Chairman of the Executive Board: Dr. H. B. TURBOTT (New Zealand)

Vice-Chairmen of the Board:
- Dr. J. KAREFA-SMART (Sierra Leone)
- Dr. T. ALAN (Turkey)

Chairmen of Standing Committees:
- Administration and Finance: Dr. J. AMOUZEGAR (Iran)
- Non-governmental Organizations: Dr. S. DOLO (Mali)
- Headquarters Accommodation: Professor E. AUJALEU (France)

**Thirty-sixth (24-25 May 1965)**

Chairman of the Executive Board: Dr. K. Evano (Norway)

Vice-Chairmen of the Board:
- Dr. Hurustiati SUBANDRIO (Indonesia)
- Dr. O. Keita (Guinea)

Chairmen of Standing Committees:
- Administration and Finance: Dr. J. WATT (United States of America)
- Non-governmental Organizations: Dr. T. ALAN (Turkey)
- Headquarters Accommodation: Professor E. AUJALEU (France)

1 Elected at the thirty-third session, in place of Professor M. Kacprzak.
Session

Thirty-eighth (23-24 May 1966)

Thirty-ninth (17-27 January 1967)

Chairman of the Executive Board: Dr J. Watt
Vice-Chairmen of the Board: Dr J.-C. Happi

Chairmen of Standing Committees

Administration and Finance: Dr K. N. Rao
Non-governmental Organizations: Professor P. Macúch
Headquarters Accommodation: Professor E. Aujaleu

Designating State

United States of America
Cameroon
Yugoslavia

Fortieth (29-30 May 1967)

Chairman of the Executive Board: Dr K. N. Rao
Vice-Chairmen of the Board: Professor P. Macúch

Designating State

India
Czechoslovakia
Mexico
**2. Member States Designating a Person to Serve on the Executive Board 1958-1967**

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3 Syria having become the Syrian Province of the United Arab Republic, Tunisia was elected in June 1958 to replace it for the last year of its term.

4 Egypt having become the Egyptian Province of the United Arab Republic, the latter was accorded in June 1958 the assumption of Egypt’s remaining term of two years.

5 First election after entry-into-force of amendments to Articles 24 and 25 of the Constitution increasing membership of Board from eighteen to twenty-four.

6 Elected for one year only (1961-1962); see footnote 3 above.

7 Elected for two years only (1961-1963); see footnote 3 above.
Annex 4

REGIONAL COMMITTEES, 1958-1967
CHAIRMEN AND VICE-CHAIRMEN

REGIONAL COMMITTEE FOR AFRICA

Eighth session, Monrovia, 22-27 September 1958
Chairman: Dr J. B. Titus, Assistant Director-General of the National Public Health Service
Liberia
Vice-Chairman: Dr L.-P. Aujoulat, Ministry of Public Health and Population
France

Ninth session, Nairobi, 21-26 September 1959
Chairman: Dr A. J. Walker, Chief Medical Officer and Permanent Secretary for Health, Kenya
United Kingdom of Great Britain and Northern Ireland
Vice-Chairman: Dr C. M. Norman-Williams, Chief Medical Adviser to the Federal Government
Nigeria

Tenth session, Accra, 8-13 August 1960
Chairman: Dr P. M. J. Phillips, Acting Deputy Chief Medical Officer, Ministry of Health
Ghana
Vice-Chairman: Dr G. Kportsa, Minister of Public Health
Togo

Eleventh session, Brazzaville, 25 September - 4 October 1961
Chairman: Dr R. Mahouata, Minister of Public Health
Congo (Brazzaville)
Vice-Chairman: Dr S. Dolo, Minister of Public Health
Mali

Twelfth session, Geneva, 24 September - 2 October 1962
Chairman: Dr Bogar A. Bâ, Minister of Public Health, Labour, and Social Affairs
Mauritania
Vice-Chairmen: Dr L. Diallo, Ministry of Health
Senegal
Dr H. M. S. Boardman, Chief Medical Officer, Ministry of Health
Sierra Leone
Thirteenth session, Geneva, 23-27 September 1963

Chairman: Dr I. S. Kadama, Permanent Secretary/Chief Medical Officer, Ministry of Health

Vice-Chairmen: Dr D. E. Boye-Johnson, Deputy Chief Medical Officer, Ministry of Health
Dr S. P. Tchounou, Federal Minister of Public Health and Population

Fourteenth session, Geneva, 14-21 September 1964

Chairman: Mr D. Coly, Minister of Health and Social Affairs

Vice-Chairmen: Dr P. Labbin, Minister of Public Health and Population
Dr J. C. Likimani, Director of Medical Services

Fifteenth session, Lusaka, 6-16 September 1965

Chairman: Mr P. W. Matoka, Minister of Health

Vice-Chairmen: Mr M. A. Hel Bongo, Minister of Public Health and Social Affairs
Dr A. H. Thomas, Acting Deputy Chief Medical Officer, Ministry of Health

Sixteenth session, Kinshasa, 12-22 September 1966

Chairman: Dr M. Tshishimbi, Minister of Health

Vice-Chairmen: Mr A. Kuevidjen, Minister of Public Health
Mr S. K. Nkutu, Minister of Health

Seventeenth session, Brazzaville, 25 September - 4 October 1967

Chairman: Mr S. P. P. Gokana, Minister of Public Health, Population and Social Affairs

Vice-Chairmen: Dr C. V. Mtawali, Principal Secretary, Ministry of Health
Mr A. D. Magalé, Minister of Public Health and Social Affairs
THE SECOND TEN YEARS

REGIONAL COMMITTEE FOR THE AMERICAS

Tenth session, San Juan, Puerto Rico, 21 September - 3 October 1958
(XV Pan American Sanitary Conference)

Chairman: Dr G. ARBONA, Secretary of Health, Commonwealth of Puerto Rico

Vice-Chairmen: Dr A. Jiménez ARANGO, Minister of Public Health
             Dr H. V. NOSTLIA, Minister of Welfare and Public Health

United States of America

Eleventh session, Washington, D.C., 21-30 September 1959
XI meeting, Directing Council, Pan American Health Organization)

Chairman: Mr H. OLIVERO, Consultant ad honorem, Ministry of Public Health and Welfare

Vice-Chairmen: Dr J. A. JACOME VALDERRAMA, Minister of Public Health
               Dr J. ALVAREZ AMÉZQUITA, Minister of Health and Welfare

Guatemala

Twelfth session, Havana, 14-26 August 1960
(XII meeting, Directing Council, Pan American Health Organization)

Chairman: Dr J. R. MACHADO VENTURA, Minister of Public Health

Vice-Chairmen: Dr H. van Zile HYDE, Special Assistant to the Surgeon General for International Health, Public Health Service, Department of Health, Education and Welfare
               Dr L. LATTUF, Director of Public Health, Ministry of Health and Welfare

Cuba

Thirteenth session, Washington, D.C., 3-13 October 1961
(XIII meeting, Directing Council, Pan American Health Organization)

Chairman: Dr Luther L. TERRY, Surgeon General, Public Health Service, Department of Health, Education and Welfare

Vice-Chairmen: Dr J. ALVAREZ AMÉZQUITA, Minister of Health and Welfare
               Dr D. CASTILLO RODRÍGUEZ, Minister of Public Health

United States of America

1 The Directing Council of the Pan American Health Organization and, every fourth year, the Pan American Sanitary Conference serve as the WHO Regional Committee for the Americas.
Fourteenth session, Minneapolis, USA, 21 August - 3 September 1962
(XVI Pan American Sanitary Conference)

Chairman: Dr J. ÁLVAREZ AMÉZQUITA, Minister of Health and Welfare
Vice-Chairmen: Dr T. PADILLA, Minister of Welfare and Public Health
Dr M. TERÁN-VALLS, Minister of Public Health

Fifteenth session, Washington, D.C., 16-25 September 1963
(XIV meeting, Directing Council, Pan American Health Organization)

Chairman: Dr J. ARIAS STELLA, Minister of Public Health and Social Welfare
Vice-Chairmen: Dr S. RENIFO SALCEDO, Minister of Public Health
Dr A. BONICHE VÁSQUEZ, Minister of Public Health

Sixteenth session, Mexico City, 31 August - 11 September 1964
(XV meeting, Directing Council, Pan American Health Organization)

Chairman: Dr J. ÁLVAREZ AMÉZQUITA, Minister of Health and Welfare
Vice-Chairmen: Dr D. GONZÁLEZ TORRES, Minister of Public Health and Social Welfare
Dr B. A. DELGADO BILLINI, Secretary of State for Health and Social Welfare

Seventeenth session, Washington, D.C., 27 September - 8 October 1965
(XVI meeting, Directing Council, Pan American Health Organization)

Chairman: Dr R. DE BRITTO, Minister of Health
Vice-Chairmen: Dr J. J. MUÑOZ, Minister of Public Health
Dr J. A. PERAZA, Minister of Public Health and Social Welfare

Eighteenth session, Washington, D.C., 26 September - 7 October 1966
(XVII Pan American Sanitary Conference)

Chairman: Dr A. ORDÓÑEZ PLAJA, Minister of Public Health
Vice-Chairmen: Dr W. H. STEWART, Surgeon General, Public Health Service, Department of Health, Education and Welfare
Dr B. INTERIANO, Minister of Public Health and Welfare

Nineteenth session, Port-of-Spain, 2-12 October 1967
(XVII meeting, Directing Council, Pan American Health Organization)

Chairman: Dr M. P. AWON, Minister of Health
Vice-Chairmen: Dr P. D. MARTÍNEZ, Under-Secretary for Health
Dr E. POITEVIN, Minister of Public Health and Welfare
REGIONAL COMMITTEE FOR SOUTH-EAST ASIA

Eleventh session, New Delhi, 24-30 September 1958
Chairman: Dr Jaswant Singh, Director-General of Health Services
Vice-Chairman: Dr R. Baidya, Director of Health Services

Twelfth session, Kandy, Ceylon, 23-29 September 1959
Chairman: Dr W. A. Karunaratne, Director of Health Services
Vice-Chairman: Dr U Maung U, Director of Health Services

Thirteenth session, Bandung, 22-29 August 1960
Chairman: Dr S. Anwar, Director of Health Services, East Java
Vice-Chairman: Dr K. Suvarnakich, Director-General, Department of Health

Fourteenth session, Ootacamund, India, 19-25 September 1961
Chairman: Dr V. Srinivasan, Director-General of Health Services
Vice-Chairman: Dr A. R. Hakimi, Director-General of Public Health Services

Fifteenth session, New Delhi, 18-24 September 1962
Chairman: Maha Thiri Thudame Daw Khin Kyi, Ambassador Extraordinary and Plenipotentiary of the Union of Burma to the Government of India
Vice-Chairman: Dr K. Suvarnakich, Director-General, Department of Health

Sixteenth session, Bangkok, 10-16 September 1963
Chairman: Dr K. Suvarnakich, Director-General, Department of Health
Vice-Chairman: Dr P. Dolgor, Chief Surgeon, Ministry of Public Health

Seventeenth session, New Delhi, 22-28 September 1964
Chairman: Dr V. T. H. Gunaratne, Director of Health Services
Vice-Chairman: Dr D. Baidya, Director of Health Services

Eighteenth session, Kabul, 30 October - 6 November 1965
Chairman: Dr M. O. Anwary, Minister of Public Health
Vice-Chairman: Dr M. S. Sastrodihardjo, Deputy Executive Director, National Malaria Eradication Service
ANNEX 4

Nineteenth session, New Delhi, 27 September - 3 October 1966

Chairman: Dr M. S. SASTRODIHARDJO, Director-General, Eradication of Epidemic and Communicable Diseases, Operational Command

Vice-Chairman: Dr U LUN WAI, Divisional Assistant Director of Health, Ministry of Health

Indonesia

Twentieth session, Ulan Bator, 11-8 August 1967

Chairman: Dr D. TUMENDELGER, First Deputy Minister of Public Health

Vice-Chairman: Dr Y. R. Joshi, Director of Health Services

Mongolia

Nepal

REGIONAL COMMITTEE FOR EUROPE

Eighth session, Monaco, 3-6 September 1958

Chairman: Dr E. BOERI, General Commissioner for Public Health

Vice-Chairmen: Mr W. H. BOUCHER, Assistant Secretary, Ministry of Health

Dr B. DOUBEK, Chief, Secretariat of the Ministry of Health

Monaco

United Kingdom of Great Britain and Northern Ireland

Czechoslovakia

Ninth session, Bucharest, 8-11 September 1959

Chairman: Dr V. MARINESCO, Minister of Health and Social Welfare

Vice-Chairmen: Dr J. F. GossENS, Secretary-General, Ministry of Public Health and Family Welfare

Dr A. ENGEL, Director-General of Health, Royal Medical Board

Romania

Belgium

Sweden

Tenth session, Copenhagen, 16-20 August 1960

Chairman: Dr J. FRANDSEN, Director-General of Health

Vice-Chairmen: Dr A. SAUTER, Director, Federal Public Health Service

Dr L. MOLITOR, Director of Public Health

Denmark

Switzerland

Luxembourg
Eleventh session, Luxembourg, 12-15 September 1961

Chairman: Dr L. Molitor, Director of Public Health
Vice-Chairmen: Mr J. Le Poole, Director for International Health Affairs, Ministry of Social Affairs and Public Health
Professor F. Widy-Wirsiki, Deputy Minister of Health and Welfare

Twelfth session, Warsaw, 11-14 September 1962

Chairman: Dr J. Sztachelski, Minister of Health and Welfare
Vice-Chairmen: Dr A. Engel, Director-General, National Board of Health
Dr T. Alan, Director of External Relations, Ministry of Health and Welfare

Thirteenth session, Stockholm, 17-20 September 1963

Chairman: Dr A. Engel, Director-General, National Board of Health
Vice-Chairmen: Dr J. Plojar, Minister of Health
Dr A. Khatib, Minister of Public Health

Fourteenth session, Prague, 22-26 September 1964

Chairman: Dr J. Plojar, Minister of Health
Vice-Chairmen: Dr N. H. Fisik, Under-Secretary of State, Ministry of Health and Social Welfare
Dr K. Schnidl, Director-General of Public Health, Federal Ministry of Social Affairs

Fifteenth session, Istanbul, 7-11 September 1965

Chairman: Dr N. H. Fisik, Under-Secretary of State, Ministry of Health and Social Welfare
Vice-Chairmen: Dr Sybilla Radeva, Deputy Minister of Public Health and Welfare
Dr A. Benyakhleff, Secretary-General, Ministry of Public Health

Sixteenth session, Rabat, 6-10 September 1966

Chairman: Dr L. Cherifi, Minister of Public Health
Vice-Chairmen: Dr J. C. Joyce, Chief Medical Officer, Department of Health
Dr J. H. W. Hoogwater, Director-General for International Affairs, Ministry of Social Affairs and Public Health

Luxembourg
Netherlands
Poland
Sweden
Turkey
Czechoslovakia
Morocco

Irish
Morocco
Netherlands
Seventeenth session, Dublin, 12-16 September 1967

Chairman: Dr J. C. JOYCE, Chief Medical Officer, Department of Health and Welfare, Ireland
Vice-Chairmen: Dr V. H. KALAJDŽIEV, Vice-Minister of Public Health, Bulgaria
Professor R. VANNOGLI, Director, International Organizations Office, Ministry of Health, Italy

REGIONAL COMMITTEE
FOR THE EASTERN MEDITERRANEAN

Eighth session

Sub-Committee A, Baghdad, 12-18 October 1958
Chairman: Dr S. AL-WAHBI, Director, Karkh Hospital, Iraq
Vice-Chairmen: Dr S. DAIANY, Deputy Director-General of Health, Libya
Mr Y. TSEGHE, Adviser to the Ministry of Public Health, Ethiopia

Sub-Committee B, Geneva, 22-25 September 1958
Chairman: Dr M. FARIS, Director-General of Public Health, Department of Public Health, Iran
Vice-Chairman: Mr Y. TSEGHE, Adviser to the Ministry of Public Health, Ethiopia

Ninth session

Sub-Committee A, Alexandria, 14-19 September 1959
Chairman: Dr M. O. SHOB, Director, Division of International Health, Ministry of Public Health, United Arab Republic
Vice-Chairmen: Dr M. SHARIF, Director-General of Health, Pakistan
Dr H. NASSIF, Director-General, Ministry of Health, Saudi Arabia

Sub-Committee B, Geneva, 28-30 September 1959
Chairman: Dr M. N. ETEMADIAN, Under-Secretary of State, Ministry of Health, Iran
Vice-Chairman: Dr P. FAURE, Director of Public Health, French Somaliland, France

Tenth session

Sub-Committee A, Tunis, 15-19 August 1960
Chairman: Dr A. R. FARAH, Chef du Service de la Prévention et de l'Hygiène publique, Tunisia
Vice-Chairmen: Dr A. A. ZAKI, Director of Medical Services, Ministry of Health, Sudan
Dr A. NABULSI, Director of the Government Laboratory; Director, International Medicine Section, Ministry of Health, Jordan
Sub-Committee B, Geneva, 24-26 August 1960
Chairman: Dr S. Syman, Director-General, Ministry of Health, Israel
Vice-Chairman: Mr H. Sebsebe, Director-General, Department of Education and Training, Ministry of Health, Ethiopia

Eleventh session
Sub-Committee A, Chitaura, Lebanon, 28 August - 1 September 1961
Chairman: Dr J. Anouti, Director-General, Ministry of Health, Lebanon
Vice-Chairmen: Dr A. T. Diba, Under-Secretary of State, Ministry of Health, Iran
Dr J. Shaheen, Acting Director-General, Preventive Medicine, Ministry of Health, Iraq

Sub-Committee B, Geneva, 21-22 August 1961
Chairman: Dr Z. G. Panos, Chief Medical Officer, Ministry of Health, Cyprus
Vice-Chairman: Mr E. Borrou, Assistant Minister of Health, Ministry of Public Health, Ethiopia

Twelfth session
Sub-Committee A, Riyadh, 6-10 October 1962
Chairman: Dr A. A. El Mudarris, Under-Secretary of State, Ministry of Public Health, Saudi Arabia
Vice-Chairmen: Dr M. S. Haque, Joint Secretary and Director-General of Health, Ministry of Health, Labour and Social Welfare, Pakistan
Dr G. Jallad, Director-General of Health, Ministry of Health and Public Assistance, Syria

Sub-Committee B, Geneva, 19-21 September 1962
Chairman: Dr A. T. Diba, Under-Secretary of State, Ministry of Health, Iran
Vice-Chairman: Dr P. Dill-Russell, Deputy Chief Medical Officer, Department of Technical Co-operation, United Kingdom of Great Britain and Northern Ireland

Thirteenth session
Sub-Committee A, Alexandria, 20-23 August 1963
Chairman: Dr A. F. El Bakari, Assistant Under-Secretary of State, Ministry of Public Health, United Arab Republic
Vice-Chairmen: Dr J. A. Hamdi, Director of Endemic Diseases in the Directorate-General of Preventive Medicine, Ministry of Health, Iraq
Dr V. Vassilopoulos, Director-General, Ministry of Health, Cyprus
ANNEX 4

SUB-COMMITTEE B, Geneva, 28-29 August 1963

Chairman: Mr Y. Tsoghé, Vice-Minister of Health, Ministry of Public Health

Vice-Chairman: Dr V. Vassilopoulos, Director-General, Ministry of Health

Fourteenth session

SUB-COMMITTEE A, Kuwait, 3-7 October 1964

Chairman: Dr Y. J. Hiji, Under-Secretary of State, Ministry of Public Health

Vice-Chairmen: Dr J. Anouti, Director-General, Ministry of Health

Dr A. M. Isaa, Minister of Health, Labour and Veterinary Services

SUB-COMMITTEE B, Geneva, 22-23 September 1964

Chairman: Dr P. Dill-Russell, Deputy Medical Adviser, Department of Technical Co-operation

Vice-Chairman: Dr H. Morin, Director of Public Health, French Somaliland

Fifteenth session

SUB-COMMITTEE A, Addis Ababa, 20-23 September 1965

Chairman: Mr A. Retta, Minister of Public Health

Vice-Chairmen: Dr A. H. Samii, Under-Secretary of State, Ministry of Public Health

Dr M. A. W. Shoukry, Under-Secretary of State for Health, Ministry of Public Health

SUB-COMMITTEE B, Geneva, 2-3 September 1965

Chairman: Mr M. Agaiyelaw, Minister Plenipotentiary to the Holy See

Vice-Chairman: Dr H. Morin, Director of Public Health, French Somaliland

Sixteenth session

SUB-COMMITTEE A, Karachi, 19-23 September 1966

Chairman: Dr M. S. Haque, Joint Secretary and Director-General of Health

Vice-Chairmen: Mr H. B. Ismail, Minister of Health and Labour

Dr A. Abdulhadi, Under-Secretary of State, Ministry of Health

Ethiopia

Cyprus

Kuwait

Lebanon

Somalia

United Kingdom of Great Britain and Northern Ireland

Iran

United Arab Republic

Ethiopia

France

Pakistan

Somalia

Libya
SUB-COMMITTEE B, Geneva, 30-31 August 1966

Chairman: Mr M. LENNUYEUX-CONNÉNE, First Secretary, Permanent Mission of France to the United Nations Office and to the Specialized Agencies at Geneva

Vice-Chairman: Dr P. DILL-RUSSELL, Deputy Medical Adviser, Ministry of Overseas Development

France

United Kingdom of Great Britain and Northern Ireland

Seventeenth session

SUB-COMMITTEE A, Téhéran, 25-30 September 1967

Chairman: Dr M. SHAHGHOLI, Minister of Health

Vice-Chairmen: Dr N. BERNER, Minister of Public Health

Mr M. EL HEDI KHEFACHA, Minister of Public Health

Iran

Lebanon

Tunisia

SUB-COMMITTEE B, Geneva, 9-10 October 1967

Chairman: Dr P. DILL-RUSSELL, Deputy Medical Adviser, Ministry of Overseas Development

Vice-Chairman: Mr A. ZELLEKE, Counsellor, Deputy Permanent Representative, Permanent Mission of Ethiopia to the United Nations Office at Geneva

United Kingdom of Great Britain and Northern Ireland

Ethiopia

REGIONAL COMMITTEE FOR THE WESTERN PACIFIC

Ninth session, Manila, 26 September - 2 October 1958

Chairman: Dr H. E. DOWNES, Assistant Director-General of Health

Vice-Chairman: Dr R. OZAWA, Medical Affairs Bureau, Ministry of Health and Welfare

Australia

Japan

Tenth session, Taipei, 16-22 September 1959

Chairman: Dr C. K. CHANG, Director, Department of Health Administration, Ministry of the Interior

Vice-Chairman: Dr E. VALENCIA, Secretary of Health

China

Philippines

Eleventh session, Manila, 12-17 August 1960

Chairman: Dr R. K. C. LEE, Director of Health, Hawaii

Vice-Chairman: Dr TEN YOON FONG, Deputy Director of Medical Services (Medical)

United States of America

Federation of Malaya

Twelfth session, Wellington, 31 August - 5 September 1961

Chairman: Dr H. B. TURBOTT, Director-General of Health

Vice-Chairman: Dr E. VALENCIA, Secretary of Health

New Zealand

Philippines
Thirteenth session, Manila, 20-25 September 1962
Chairman: Dr F. Q. DIQUE, Secretary of Health
Vice-Chairman: Dr D. J. M. MACKENZIE, Director of Medical and Health Services, Hong Kong

Fourteenth session, Port Moresby, Papua, 5-10 September 1963
Chairman: Dr R. F. R. SCRAGG, Director of Public Health, Territory of Papua and New Guinea
Vice-Chairman: Dr J. C. THIEME, Director of Health

Fifteenth session, Manila, 17-22 September 1964
Chairman: Dr L. W. JAYESURIA, Deputy Director of Medical and Health Services, Malaya
Vice-Chairman: Dr D. P. KENNEDY, Director, Division of Public Health, Department of Health

Sixteenth session, Seoul, 16-21 September 1965
Chairman: Dr YOUN KEOH CHA, Director, Bureau of Public Health, Ministry of Health and Social Affairs
Vice-Chairman: Dr H. E. DOWNES, Deputy Director-General of Health

Seventeenth session, Manila, 21-27 September 1966
Chairman: Dr THOR PENG THONG, Director-General of Public Health
Vice-Chairman: Dr S. R. SAYAMAPANATHAN, Senior Health Officer, Ministry of Health

Eighteenth session, Taipei, 13-19 September 1967
Chairman: Dr C. K. CHANG, Director, Department of Health Administration, Ministry of the Interior
Vice-Chairman: Dr R. K. C. LEE, Dean, School of Public Health, University of Hawaii
Annex 5

ADVISORY COMMITTEE ON MEDICAL RESEARCH, 1959-1967

The Advisory Committee on Medical Research was established by the Twelfth World Health Assembly in May 1959 (resolution WHA12.17) "in order to provide the Director-General with the necessary scientific advice in relation to the research programme".

During the period 1959-1967, the following sessions were held, all in Geneva:

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<td>Eighth session</td>
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<td>19-23 June 1967</td>
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</table>

The members of the Committee who attended the sessions were as follows: 1

Chairmen

Dr A. J. Wallgren, Emeritus Professor of Paediatrics, Karolinska Institute, Stockholm, Sweden

Dr R. Courrier, Professor at the Collège de France; Member of the Institut de France; Permanent Secretary of the Academy of Sciences; Member of the Academy of Medicine, Paris, France

Members

Professor S. Adler,* Professor of Parasitology, Hebrew University, Hadassah Medical School, Jerusalem, Israel

Professor C. H. Best, Charles H. Best Institute, University of Toronto, Ont., Canada

Dr O. Bier, Professor of Microbiology, Department of Microbiology and Immunology, School of Medicine, São Paulo, Brazil (Vice-Chairman, eighth session)

Professor A. Biernacki,* Member of the Polish Academy of Sciences; Director, First Medical Clinic, Medical Academy, Warsaw, Poland

Professor N. N. Blohin, President, Academy of Medical Sciences of the USSR; Director, Institute of Experimental and Clinical Oncology, Moscow, Union of Soviet Socialist Republics (Vice-Chairman, sixth session)

Professor D. Bovet, Director, Department of Therapeutic Chemistry, Istituto Superiore di Sanità, Rome, Italy (first term)

1 The titles shown are as at date of appointment.

* Deceased during term of office.

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Professor D. Bovet, Director, Institute of Pharmacology, University of Sassari, Sardinia, Italy (second term)

Sir Austin Bradford Hill, Director, Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine, London, England

Professor L. Bugnard, Member of the Academy of Medicine; Director, National Institute of Health, Paris, France

Sir Macfarlane Burnet, Director, The Walter and Eliza Hall Institute for Medical Research, Melbourne, Australia (Vice-Chairman, fifth session)

Professor C. Chagas, Director, Institute of Biophysics, University of Brazil, Rio de Janeiro, Brazil

Professor J. Charvat, Director, Third Department of Medicine, Charles University, Prague, Czechoslovakia (Vice-Chairman, first session)

Professor H. Chiari, Director, Institute of Pathological Anatomy, University of Vienna, Austria

Professor I. T. Costero, Director, Department of Pathological Anatomy, National Institute of Cardiology, Mexico City, Mexico

Dr. W. R. S. Doll, Director, Statistical Research Unit, Medical Research Council, London, England

Sir John Eccles, Director, Institute for Biomedical Research, Chicago, Ill., United States of America

Dr. J. C. Edoozie, Professor of Chemical Pathology, University of Ibadan, Nigeria

Professor Zinaida Ermol'eva, Professor of Medical Microbiology, Central Institute for the Further Training of Physicians, Moscow, Union of Soviet Socialist Republics

Dr. M. Floquin, Professor of Biochemistry, University of Liège, Belgium

Dr. B. N. Halpern, Professor at the Collège de France; Member of the Institut de France, Paris, France

Professor H. Hampel, Director, Institute of Pathology, University of Bonn, Federal Republic of Germany

Professor C. Heymans, Director, Institute of Pharmacology and Therapeutics, National University, Ghent, Belgium

Sir Harold Himsworth, Secretary, Medical Research Council, London, England (Vice-Chairman, third session)

Professor B. A. Housay, Director, Institute of Biology and Experimental Medicine, Buenos Aires, Argentina (Vice-Chairman, seventh session)

Professor N. K. Jerne, Director, Paul-Ehrlich Institute, Frankfurt-am-Main, Federal Republic of Germany

Professor V. R. Khanolkar, Director, Indian Cancer Research Centre, Bombay, India (Vice-Chairman, second session)

Professor W. Kuryłowicz, Director, State Institute of Hygiene, Warsaw, Poland
Professor A. Lacassagne, Member of the Institut de France; Emeritus Professor, Collège de France; Director of Research Laboratory, University of Paris, France

Sir Aubrey Lewis, Professor of Psychiatry, University of London, England

Dr Robert F. Loeb, Emeritus Bard Professor of Medicine, Columbia University, New York, United States of America (Vice-Chairman, fourth session)

Dr W. Löfler, Emeritus Professor of Medicine, University of Zurich, Switzerland

Sir Samuel Manuwa, Federal Public Service Commission, Lagos, Nigeria

Professor S. R. Mardashe, Vice-President, Academy of Medical Sciences of the USSR; Chair of Biochemistry, First Medical Institute, Moscow, Union of Soviet Socialist Republics (Vice-Chairman, ninth session)

Dr W. McDermott, Livingstone Farrand Professor of Public Health and Preventive Medicine, Cornell University Medical College, New York, United States of America

Professor Ch. M. H. Moffidi, Dean, School of Public Health; Director, Institute of Public Health Research, Teheran, Iran

Dr C. Puranamanda, Director, Queen Saovabha Memorial Institute, Bangkok, Thailand

Professor B. Rexed, Science Advisory Council, Stockholm, Sweden

Professor M. Roche, Director, Venezuelan Institute of Scientific Research, Caracas, Venezuela

Sir Max Rosenheim, President, Royal College of Physicians, London, England

Professor I. Rusznyak, President of the Hungarian Academy of Sciences; Director of the Academy's Central Institute of Medical Research, Budapest, Hungary

Professor P. G. Sergiev, Vice-President, Academy of Medical Sciences of the USSR; Director, Institute of Medical Parasitology and Tropical Medicine, Moscow, Union of Soviet Socialist Republics

Dr J. A. Shannon, Director, National Institutes of Health, Bethesda, Md., United States of America

Professor A. Vartianen, Department of Pharmacology, University of Helsinki, Finland

Professor T. H. Wellner, Richard Pearson Strong Professor of Tropical Public Health, and Chairman, Department of Tropical Public Health, Harvard University, Boston, Mass., United States of America

Dr A. Wolman, Emeritus Professor of Sanitary Engineering and Water Resources, Johns Hopkins University, Baltimore, Md., United States of America

Dr W. Barry Wood, Jr, Director, Department of Microbiology, Johns Hopkins University School of Medicine, 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

Sessions attended

1, 2, 3

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Annex 6

EXPERT ADVISORY PANELS

During the ten years 1958-1967 additional expert advisory panels were established on air pollution, bacterial diseases, the biology of human reproduction, cardiovascular diseases, food additives, food hygiene, the health of seafarers, human genetics and immunology. Conversely, some of the earlier panels were merged in larger ones. From the panels, which consist of leading specialists in many countries, are drawn the members of expert committees. The Director-General can also obtain technical advice from them by correspondence.

At the end of 1967 there were forty-two panels comprising some 2500 members from ninety countries. The panels are as follows:

- Air pollution
- Antibiotics
- Bacterial diseases
- Biological standardization
- Biology of human reproduction
- Brucellosis
- Cancer
- Cardiovascular diseases
- Chronic degenerative diseases
- Dental health
- Drug dependence
- Environmental health
- Food additives
- Food hygiene
- Health education
- Health laboratory services
- Health of seafarers
- Health statistics
- Human genetics
- Immunology
- Insecticides
- International pharmacopoeia and pharmaceutical preparations
- International quarantine
- Leprosy
- Malaria
- Maternal and child health
- Mental health
- Nursing
- Nutrition
- Occupational health
- Organization of medical care
- Paralytic diseases
- Professional and technical education of medical and auxiliary personnel
- Public health administration
- Rabies
- Radiation
- Rehabilitation
- Trachoma
- Tuberculosis
- Venereal infections and treponematoses
- Virus diseases
- Zoonoses

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1 Incorporating the former panels for cholera, enteric diseases and plague.
2 Incorporating the former yellow fever panel.
Annex 7

EXPERT COMMITTEES, SCIENTIFIC GROUPS
AND SIMILAR MEETINGS, 1958-1967

Air Pollution
1963 Atmospheric Pollutants — Expert Committee, Geneva, 15-21 October
1965 Identification and Measurement of Air Pollutants — Scientific Group, Geneva, 16-22 November

Antibiotics
1959 Antibiotics Research — Scientific Group, Geneva, 26-30 May
Establishment of a Centre for Antibiotics and for Micro-organisms producing them — Scientific Group, Geneva, 18-22 July

Bacterial Diseases
Diarrhoeal Diseases — Study Group, Geneva, 18-24 November
1962 Cholera Research — Scientific Group, Geneva, 2-6 April
1963 Enteric Infections — Expert Committee, Geneva, 12-16 November
1964 Cholera Research — Scientific Group, Manila, 2-6 November
1966 Cholera — Expert Committee, Manila, 13-19 September
1967 Coccal Infections — Expert Committee, Geneva, 21-27 November

Biological Standardization
1958 Requirements for Biological Substances: General Requirements for Manufacturing Establishments and Control Laboratories; Requirements for Poliomyelitis Vaccine (Inactivated) — Study Group, Geneva, 2-7 June
Requirements for Biological Substances: Requirements for Yellow Fever Vaccine; Requirements for Cholera Vaccine — Study Group, Geneva, 7-6 September
Expert Committee, Geneva, 22-27 September
Requirements for Biological Substances: Requirements for Smallpox Vaccine — Study Group, Geneva, 3-8 November

1 For convenience of presentation, these meetings have been grouped under the titles of the expert advisory panels (see Annex 6), even though the participants in some of the meetings were not drawn from those panels.

2 Leprosy and tuberculosis are shown under separate headings. For gonococcal infections, see under Venereal Infections and Treponematoses.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1959</td>
<td>Requirements for Biological Substances: General Requirements for the Sterility of Biological Substances — Study Group, Geneva, 20-25 April</td>
</tr>
<tr>
<td>1960</td>
<td>Expert Committee, Geneva, 26 September - 1 October</td>
</tr>
<tr>
<td>1962</td>
<td>Expert Committee, Geneva, 10-15 December</td>
</tr>
<tr>
<td>1965</td>
<td>Requirements for Biological Substances: Manufacturing Establishments and Control Laboratories; Poliomyelitis Vaccine (Inactivated); Poliomyelitis Vaccine (Oral), Smallpox Vaccine (Revised 1965) — Expert Group, Geneva, 16-22 March</td>
</tr>
<tr>
<td>1967</td>
<td>Expert Committee, Geneva, 25-30 September</td>
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</table>

### Biology of Human Reproduction

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>1964</td>
<td>The Physiology of Lactation — Scientific Group, Geneva, 2-7 December</td>
</tr>
<tr>
<td>1965</td>
<td>The Effects of Labour on the Foetus and the Newborn — Scientific Group, Geneva, 12-18 May</td>
</tr>
<tr>
<td>1966</td>
<td>Neuroendocrinology and Reproduction in the Human — Scientific Group, Geneva, 8-14 September</td>
</tr>
<tr>
<td>1965</td>
<td>Mechanism of Action of Sex Hormones and Analogous Substances — Scientific Group, Geneva, 8-14 December</td>
</tr>
<tr>
<td>1966</td>
<td>The Biochemistry and Microbiology of the Female and Male Genital Tracts — Scientific Group, Geneva, 20-26 April</td>
</tr>
<tr>
<td>1965</td>
<td>Immunological Aspects of Human Reproduction — Scientific Group, Geneva, 4-9 October</td>
</tr>
<tr>
<td>1966</td>
<td>The Chemistry and Physiology of the Gametes — Scientific Group, Geneva, 2-8 November</td>
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<tr>
<td>1967</td>
<td>Clinical Aspects of Oral Gestogens — Scientific Group, Geneva, 30 November - 6 December</td>
</tr>
<tr>
<td>1966</td>
<td>The Basic and Clinical Aspects of Intra-uterine Devices — Scientific Group, Geneva, 7-12 February</td>
</tr>
<tr>
<td>1967</td>
<td>Biology of Fertility Control by Periodic Abstinence — Scientific Group, Geneva, 31 May - 6 June</td>
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### Brucellosis

<table>
<thead>
<tr>
<th>Year</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>1959</td>
<td>Brucella Vaccine Trials in Man — Scientific Group, Geneva, 8-10 December</td>
</tr>
<tr>
<td>1963</td>
<td>Expert Committee (FAO/WHO), Geneva, 3-9 December</td>
</tr>
</tbody>
</table>
Cancer

1958  Histopathology of Lung Tumours — Expert Committee, Oslo, 17-22 November

      Histopathology of Soft Tissue Tumours — Expert Committee, Geneva, 22-27 June
      Epidemiology of Cancer of the Lung — Study Group, Geneva, 16-20 November


      Research in Leukaemias and Other Neoplastic Conditions of the Haematopoietic Cells — Scientific Group, Geneva, 12-18 December

1962  Cancer Control — Expert Committee, Geneva, 12-17 November

1963  Histopathological Nomenclature and Classification of Ovarian Tumours — Scientific Group, Geneva, 4-8 February
      Histopathological Nomenclature and Classification of Bone Tumours — Scientific Group, Geneva, 20-26 August

1964  Viruses and Cancer — Scientific Group, Geneva, 12-16 October

1965  Cancer Treatment — Expert Committee, Geneva, 9-15 March
      Histopathological Nomenclature and Classification of Skin Tumours — Scientific Group, Geneva, 18-23 October
      Histopathological Nomenclature and Classification of Urinary Bladder Tumours — Scientific Group, Geneva, 6-11 December

1966  Immunotherapy of Cancer — Scientific Group, Geneva, 30 May - 4 June

Cardiovascular Diseases

1958  Hypertension and Coronary Heart Disease: Classification and Criteria for Epidemiological Studies — Expert Committee, Geneva, 13-18 October

1959  Cardiovascular Diseases — Scientific Group, Geneva, 16-18 March

1960  Cardiovascular Diseases of Animals — Scientific Group on Research in Comparative Medicine, Geneva, 3-8 October
      Chronic Cor Pulmonale — Expert Committee, Geneva, 10-15 October

1961  Arterial Hypertension and Ischaemic Heart Disease: Preventive Aspects — Expert Committee, Geneva, 16-23 October
      Comparable Methodology for the Epidemiological Study of Hypertension and Ischaemic Heart Disease — Scientific Group, Geneva, 5-11 December

1963  Rehabilitation of Patients with Cardiovascular Diseases — Expert Committee, Geneva, 23-29 July

1965  Cardiovascular Research Programme — Scientific Group, Geneva, 1-6 November


Chronic Degenerative Diseases

1964  Diabetes Mellitus — Expert Committee, Geneva, 24-30 November

1966  The Diffuse Connective Tissue Diseases — Scientific Group, Geneva, 27 June - 2 July
### Dental Health

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1958</td>
<td>Auxiliary Dental Personnel — Expert Committee, Geneva, 30 June - 6 July</td>
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<tr>
<td>1961</td>
<td>Standardization of Reporting of Dental Diseases and Conditions — Expert Committee, Geneva, 14-20 November</td>
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<td>1962</td>
<td>Dental Education — Expert Committee, Geneva, 31 July - 6 August</td>
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<tr>
<td>1964</td>
<td>Organization of Dental Public Health Services — Expert Committee, Geneva, 13-19 October</td>
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<tr>
<td>1965</td>
<td>Research in Dental Health — Scientific Group, Geneva, 29 March - 2 April</td>
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### Drug Dependence

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<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1958</td>
<td>Addiction-Producing Drugs — Expert Committee, Geneva, 6-11 October</td>
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<tr>
<td>1959</td>
<td>Addiction-Producing Drugs — Expert Committee, Geneva, 19-24 October</td>
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<tr>
<td>1960</td>
<td>Addiction-Producing Drugs — Expert Committee, Geneva, 10-15 October</td>
</tr>
<tr>
<td>1961</td>
<td>Addiction-Producing Drugs — Expert Committee, Geneva, 21-27 November</td>
</tr>
<tr>
<td>1965</td>
<td>Evaluation of Dependence-Producing Drugs — Scientific Group, Geneva, 9-14 December</td>
</tr>
<tr>
<td>1966</td>
<td>Dependence-Producing Drugs — Expert Committee, Geneva, 19-24 July</td>
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<tr>
<td>1966</td>
<td>Dependence-Producing Drugs — Expert Committee, Geneva, 4-9 July</td>
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<tr>
<td></td>
<td>Services for the Prevention and Treatment of Dependence on Alcohol and Other Drugs — Expert Committee, Geneva, 4-10 October</td>
</tr>
</tbody>
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### Environmental Health

1. See also Air Pollution.

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1958</td>
<td>Hygiene and Sanitation in Aviation — Expert Committee, Geneva, 10-15 March</td>
</tr>
<tr>
<td>1961</td>
<td>Public Health Aspects of Housing — Expert Committee, Geneva, 19-26 June</td>
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<td></td>
<td>Medicine and Public Health in the Arctic and Antarctic — Conference, Geneva, 28 August - 1 September</td>
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<tr>
<td>1964</td>
<td>Biological Estimation of Water Pollution Levels — Scientific Group, Geneva, 1-5 June</td>
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<td>Biological Aspects of Microchemical Pollution of Water Systems — Scientific Group, Geneva, 8-12 June</td>
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<tr>
<td></td>
<td>Environmental Health Aspects of Metropolitan Planning and Development — Expert Committee, Geneva, 23-29 June</td>
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<td></td>
<td>Research into Environmental Pollution — Scientific Group, Geneva, 20-25 July</td>
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<tr>
<td></td>
<td>Environmental Change and Resulting Impacts on Health — Expert Committee, Geneva, 11-17 August</td>
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<td></td>
<td>Long-term Effects on Health of New Pollutants — Scientific Group, Geneva, 10-16 November</td>
</tr>
<tr>
<td>1965</td>
<td>Water Pollution Control — Expert Committee, Geneva, 6-12 April</td>
</tr>
</tbody>
</table>
Treatment and Disposal of Wastes — Scientific Group, Geneva, 6-12 December

1967 The Education of Engineers in Environmental Health — Expert Committee, Geneva, 4-10 July
Water Pollution Control — Expert Committee, Geneva, 12-18 December

Food Additives

1958 Expert Committee (FAO/WHO), Rome, 1-8 December

1959 Specifications for Identity and Purity of a Selected Group of Food Colours — Expert Committee (FAO/WHO), Rome, 30 November - 7 December

1960 Methods of Evaluation of the Carcinogenicity of Food — Scientific Group, Geneva, 15-19 February
Evaluation of the Carcinogenic Hazards of Food Additives — Expert Committee (FAO/WHO), Geneva, 12-19 December

1961 Evaluation of the Toxicity of a Number of Antimicrobials and Antioxidants — Expert Committee (FAO/WHO), Geneva, 5-12 June
Principles governing Consumer Safety in relation to Pesticide Residues — Expert Committee (FAO/WHO), Rome, 9-16 October

1962 The Public Health Aspects of the Use of Antibiotics in Food and Feedstuffs — Expert Committee, Geneva, 11-17 December

Food Additives — Second Conference (FAO/WHO), Rome, 24-25 June
Evaluation of the Toxicity of Pesticide Residues in Food — Expert Committee (FAO/WHO), Geneva, 30 September - 7 October

1964 Specifications for the Identity and Purity of Food Additives and their Toxicological Evaluation: Food Colours and some Antimicrobials and Antioxidants — Expert Committee (FAO/WHO), Geneva, 8-17 December

1965 Evaluation of the Toxicity of Pesticide Residues in Food — Expert Committee (FAO/WHO), Rome, 15-22 March

Specifications for the Identity and Purity of Food Additives and their Toxicological Evaluation: Some Emulsifiers and Stabilizers and certain other Substances — Expert Committee (FAO/WHO), Geneva, 11-18 October
Pesticide Residues in Food — Expert Committee (FAO/WHO), Geneva, 14-24 November
Pesticide Residues — Expert Committee (FAO/WHO), Rome, 4-11 December

Food Hygiene

1959 Food-borne Infections and Intoxications — Technical Conference, Geneva, 16-21 February
Milk Hygiene — Expert Committee (FAO/WHO), Rome, 1-8 December
1961 Meat Hygiene — Expert Committee (FAO/WHO), Rome, 18-25 September
1964 The Technical Basis for Legislation on Irradiated Food — Expert Committee (FAO/IAEA/WHO), Rome, 21-28 April
1967 Microbiological Aspects of Food Hygiene — Expert Committee, with the participation of FAO, Geneva, 10-16 October

Health Education

1959 Teacher Preparation for Health Education — Expert Committee (UNESCO/WHO), Geneva, 2-7 November
1962 Post-graduate Preparation of Health Workers for Health Education — Conference, Philadelphia, 8-17 July
1967 Planning and Evaluation of Health Education Services — Expert Committee, Geneva, 28 November - 4 December

Health Laboratory Services

1958 Hospital Laboratory Services — Expert Committee, Geneva, 27 October - 1 November
1961 Planning, Organization and Administration of a National Health Laboratory Service — Expert Committee, Geneva, 6-13 November
1965 Training of Laboratory Personnel (Technical Staff) — Expert Committee, Geneva, 7-13 December

Health of Seafarers

1961 Hygiene of Seafarers — Joint Committee (ILO/WHO), Geneva, 1-4 May
1965 Joint Committee (ILO/WHO), Geneva, 1-5 March

Health Statistics

1958 Expert Committee, Geneva, 29 September - 4 October
1960 Expert Committee, Geneva, 5-10 December
1962 Expert Committee, Geneva, 27 November - 3 December

Human Genetics

1959 New Methods for Research in Human Genetics — Scientific Group, Geneva, 19-20 May
1961 The Teaching of Genetics in the Undergraduate Medical Curriculum and in Post-graduate Training — Expert Committee, Geneva, 28 November - 4 December
1962 The Human Diploid Cell — Scientific Group, Geneva, 16-18 July
Research in Population Genetics of Primitive Groups — Scientific Group, Geneva, 27 November - 3 December
1963 Human Genetics and Public Health — Expert Committee, Geneva, 10-16 December
1965 Haemoglobinopathies and Allied Disorders — Scientific Group, Geneva, 14-20 December
Standardization of Procedures for the Study of Glucose-6-Phosphate Dehydrogenase — Scientific Group, Geneva, 5-10 December
1967 Genetics of the Immune Response — Scientific Group, Geneva, 2-7 October
Inborn Errors of Metabolism — Scientific Group, Geneva, 20-26 November

Immunology

1958 Immunological and Haematological Surveys — Study Group, Geneva, 15-19 December
1959 Control of Infectious Diseases through Vaccination Programmes — Technical Conference, Rabat, 23-31 October
1962 Immunoprophylaxis and Immunotherapy — Scientific Group, Geneva, 22-27 January
Immunopathology — Scientific Group, Geneva, 12-17 March
Tissue Antigens and Transplantation — Scientific Group, Geneva, 9-14 April
Immunochrometry — Scientific Group, Geneva, 7-12 May
Research Programme in Immunology — Scientific Group, Geneva, 4-9 June
1963 Research Programme in Immunology — Scientific Group, Geneva, 26-30 November
1964 Nomenclature of Human Immunoglobulins — Study Group, Prague, 29-30 May
Immunology and Parasitic Diseases — Expert Committee, Ibadan, 8-15 December
1965 Genes, Genotypes and Allotypes of Immunoglobulins — Scientific Group, Geneva, 31 May - 5 June
The Use of Human Immunoglobulins — Expert Committee, Geneva, 7-13 September
1966 Teaching of Immunology in the Medical Curriculum — Expert Committee, Geneva, 3-8 October
Insecticides (Vector Biology and Control)\(^1\)

1959 Research on Insecticide Resistance and Vector Control — Scientific Group, Geneva, 5-9 January
Insecticide Resistance and Vector Control — Expert Committee, Geneva, 14-19 September
Research on the Evaluation and Testing of Insecticides — Scientific Group, Geneva, 30 November - 4 December
1961 Insect Biochemical and Physiological Research — Scientific Group, Geneva, 25-29 September
Toxic Hazards of Pesticides to Man — Expert Committee, Geneva, 23-30 October
1963 The Genetics of Vectors and Insecticide Resistance — Scientific Group, Geneva, 5-9 August
Application and Dispersal of Pesticides — Expert Committee, Geneva, 19-25 November
1964 Insecticide Resistance and Vector Control — Scientific Group, Geneva, 30 June - 4 July
Mosquito Ecology — Scientific Group, Geneva, 31 October - 5 November
1967 Cytogenetics of Vectors of Diseases of Man — Scientific Group, Geneva, 31 October - 6 November

International Pharmacopoeia and Pharmaceutical Preparations

1958 Non-proprietary Names — Sub-Committee of the Expert Committee on the International Pharmacopoeia, Geneva, 29 September - 1 October
International Pharmacopoeia — Expert Committee, Geneva, 10-15 November
1959 Non-proprietary Names — Sub-Committee, Geneva, 5-7 October
Specifications for Pharmaceutical Preparations — Expert Committee, Geneva, 9-14 November
1960 Non-proprietary Names — Sub-Committee, Geneva, 13-16 September
Specifications for Pharmaceutical Preparations — Expert Committee, Geneva, 5-9 December
1961 The Quality Control of Pharmaceutical Preparations — Technical Meeting, Warsaw, 29 May - 2 June
Non-proprietary Names — Sub-Committee, Geneva, 8-11 November
Specifications for Pharmaceutical Preparations — Expert Committee, Geneva, 27 November - 1 December

\(^1\) See also Parasitic Diseases.
1962  Non-proprietary Names — Sub-Committee, Geneva, 31 October-3 November
Specifications for Pharmaceutical Preparations — Expert Committee, Geneva, 19-23 November

1963  Evaluation of the Safety and Efficacy of Drugs — Scientific Group, Geneva, 4-8 March
Non-proprietary Names — Sub-Committee, Geneva, 5-8 November

1964  Specifications for Pharmaceutical Preparations — Expert Committee, Geneva, 3-9 November
Monitoring of Adverse Drug Reactions — Scientific Group, Geneva, 23-28 November
Non-proprietary Names — Sub-Committee, Geneva, 1-4 December

Non-proprietary Names — Sub-Committee, Geneva, 2-5 November
International Drug Monitoring — Scientific Group, Geneva, 15-20 November

1966  Principles for Pre-clinical Testing of Drug Safety — Scientific Group, Geneva, 21-26 March
Non-proprietary Names — Sub-Committee, Geneva, 6-9 September
Principles for the Testing of Drugs for Teratogenicity — Scientific Group, Geneva, 14-19 November

1967  Non-proprietary Names for Pharmaceutical Preparations — Expert Committee, Geneva, 26-28 April
Principles for the Clinical Evaluation of Drugs — Scientific Group, Geneva, 13-18 November

Leprosy

1959  Leprosy Research — Scientific Group, Geneva, 16-20 February
Expert Committee, Geneva, 3-8 August

1961  Rehabilitation in Leprosy — Scientific Meeting, Vellore, Madras, 21-29 November

1965  Expert Committee, Geneva, 27 July - 2 August

Malaria

1958  Expert Committee, Lisbon, 15-23 September

1959  Malaria Research — Scientific Group, Geneva, 23-27 November

Chemotherapy of Malaria — Technical Meeting, Geneva, 14-19 November

1962  Expert Committee, Geneva, 2-10 April

1963  Expert Committee, Rio de Janeiro, 12-19 September

1964  Expert Committee, Geneva, 16-22 June
Resistance of Malaria to Drugs — Scientific Group, Geneva, 13-20 October

1965  Expert Committee, Geneva, 21-27 September

1966  Expert Committee, Geneva, 13-19 September
ANNEX 7

1967
Chemotherapy of Malaria — Scientific Group, Geneva, 25 April - 1 May
Expert Committee, Geneva, 12-18 September
Immunology of Malaria — Scientific Group, Geneva, 20-26 September

Maternal and Child Health

1960
Public Health Aspects of Low Birth Weight — Expert Committee, Geneva, 21-26 November

1962
The Care of Well Children in Day-Care Centres and Institutions — Expert Committee
(UN/WHO, with the participation of FAO, ILO and UNICEF), Geneva, 23 October - 1 November

1963
Social Aspects in the Teaching of Obstetrics and Gynaecology — Expert Committee,
Geneva, 11-17 June

1964
The Health Problems of Adolescence — Expert Committee, Geneva, 3-9 November

1965
The Midwife in Maternity Care — Expert Committee, Geneva, 19-25 October

1967
Paediatric Research — Scientific Group, Geneva, 28 November - 4 December

Mental Health

1958
Mental Health Problems of Aging and the Aged — Expert Committee, Geneva, 1-6 September

1959
Epidemiology of Mental Disorders — Expert Committee, Geneva, 8-13 June

1960
The Undergraduate Teaching of Psychiatry and Mental Health Promotion — Expert Committee, Geneva, 13-17 June
Programme Development in the Mental Health Field — Expert Committee, Geneva, 3-8 October

1961
The Role of Public Health Officers and General Practitioners in Mental Health Care
— Expert Committee, Geneva, 31 October - 7 November

1962
Training of Psychiatrists — Expert Committee, Geneva, 25 September - 1 October

1963
Psychosomatic Disorders — Expert Committee, Geneva, 22-28 October

1964
Mental Health Research — Scientific Group, Geneva, 6-10 April

1965
Research on Genetics in Psychiatry — Scientific Group, Geneva, 8-13 November

1966
Research in Psychopharmacology — Scientific Group, Geneva, 5-10 December

1967
Neuropsychological and Behavioural Research in Psychiatry — Scientific Group, Geneva, 4-9 September
Organization of Services for the Mentally Retarded — Expert Committee, Geneva, 26 September - 2 October
Nursing

1958 Public Health Nursing — Expert Committee, Geneva, 6-11 October
1959 Post-basic Nursing Education Programmes for Foreign Students — Conference, Geneva, 5-14 October
1963 Nursing Research — Scientific Group, Geneva, 4-8 November
1966 Expert Committee, Geneva, 26 April - 2 May

Nutrition

1958 Iron Deficiency Anaemia — Study Group, Geneva, 29 September - 4 October
Iron Deficiency Anaemia — Scientific Group, Geneva, 6-7 October
1960 Nutrition Research — Scientific Group, New York, 5-6 March
1961 Expert Committee (FAO/WHO), Geneva, 18-25 April
Calcium Requirements — Expert Group (FAO/WHO), Rome, 23-30 May
Medical Assessment of Nutritional Status — Expert Committee, Geneva, 21-27 August
1963 Research in Nutritional Anaemias — Scientific Group, Geneva, 2-7 September
Protein Requirements — Expert Group (FAO/WHO), Geneva, 8-17 October
1964 Nutrition in Pregnancy and Lactation — Expert Committee, Geneva, 6-12 October
Requirements of Vitamin A, Thiamine, Riboflavine and Niacin — Expert Group (FAO/WHO), Rome, 6-17 September
1966 Expert Committee (FAO/WHO), Rome, 12-20 December

Occupational Health 1

1962 Occupational Health Problems in Agriculture — Joint Committee (ILO/WHO), Geneva, 9-16 April
1966 Joint Committee (ILO/WHO), Geneva, 29 August - 6 September
1967 Health Factors involved in Working under Conditions of Physical Stress — Scientific Group, Geneva, 29 August - 4 September

Organization of Medical Care 2

1959 Role of Hospitals in Ambulatory and Domiciliary Medical Care — Expert Committee, Geneva, 16-21 March

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1 See also Health of Seafarers.
2 See also Public Health Administration.
1963  General Practice — Expert Committee, Geneva, 2-8 July
1967  Hospital Administration — Expert Committee, Geneva, 3-9 October

Parasitic Diseases

1959  Research in Bilharziasis (Molluscicides) — Scientific Group, Geneva, 9-13 February
      Ophthalmological Aspects of Onchocerciasis — Scientific Group, Geneva, 24-29 August
      Research in Bilharziasis (Chemotherapy) — Scientific Group, Geneva, 19-24 October
      Filariasis and Non-opthalmological Aspects of Onchocerciasis — Scientific Group, Geneva, 16-21 November

1960  Chagas' Disease — Study Group, Washington, D.C., 7-11 March
      Bilharziasis — Conference (CCTA/WHO), Lourenço Marques, 30 March - 8 April
      Research in Bilharziasis (Assessment of Medical and Public Health Importance) — Scientific Group, Geneva, 18-22 July
      Bilharziasis (Molluscicides) — Expert Committee, Geneva, 26 September - 1 October

1961  Filariasis (Wuchereria and Brugia Infections) — Expert Committee, Geneva, 25 July - 1 August
      Research in Bilharziasis (Immunological Diagnosis) — Scientific Group, Geneva, 7-12 August
      Ancylostomiasis — Conference (CCTA/WHO), Brazzaville, 22-29 August

1962  Trypanosomiasis — Expert Committee, Geneva, 18-23 June
      Research in Bilharziasis (Pathobiology and Immunity) — Scientific Group, Geneva, 11-17 December

1963  Soil-Transmitted Helminths — Expert Committee, Rio de Janeiro, 26-31 August

1964  Chemotherapy of Bilharziasis — Scientific Group, Geneva, 14-18 September
      Bilharziasis — Expert Committee, Geneva, 28 September - 3 October

1965  Onchocerciasis — Expert Committee, Geneva, 29 June - 5 July
      Measurement of the Public Health Importance of Bilharziasis — Scientific Group, Geneva, 9-14 August

      Epidemiology and Control of Schistosomiasis — Expert Committee, Geneva, 12-17 December

      Control of Ascariasis — Expert Committee, Geneva, 26 June - 1 July

1  Malaria is shown under a separate heading.
Professional and Technical Education of Medical and Auxiliary Personnel

1958 The Foreign Student and Post-graduate Public Health Courses — Expert Committee, Geneva, 7-12 July
Preventive Aspects in the Teaching of Pathology — Expert Committee, Geneva, 27 October - 1 November
1959 Appraisal of Fellowships — Study Group, Geneva, 6-10 July
The Use and Training of Auxiliary Personnel in Medicine, Nursing, Midwifery and Sanitation — Expert Committee, Geneva, 19-23 September
Recommended Requirements for Schools of Public Health — Expert Committee, Geneva, 12-16 December
1961 Internationally Acceptable Minimum Standards of Medical Education — Study Group, Geneva, 4-8 December
1962 Training of the Physician for Family Practice — Expert Committee, Geneva, 4-10 December
1964 Teaching of Sciences in Pre-medical Courses of Study — Expert Committee, Geneva, 10-16 November
Special Courses for National Staff with Higher Administrative Responsibilities — Study Group, Geneva, 1-7 December
1965 University Health Services — Expert Committee, Geneva, 27 April - 1 May
Training and Preparation of Teachers for Medical Schools with special regard to the Needs of Developing Countries — Expert Committee, Geneva, 30 November - 6 December
1966 The Use of Health Service Facilities in Medical Education — Expert Committee, Geneva, 26 July - 1 August
Conference of Directors of Schools of Public Health, Geneva, 29 August - 2 September
1967 Training of Medical Assistants and Similar Personnel — Expert Committee, Geneva, 4-8 September

Public Health Administration

1959 Local Health Service — Expert Committee, Geneva, 12-17 October
1960 Planning of Public Health Services — Expert Committee, Geneva, 1-6 August
Research in Public Health Practice — Scientific Group, Geneva, 29 August - 3 September

1 See also Dental Health, Environmental Health, Health Education, Health Laboratory Services, Human Genetics, Immunology, Maternal and Child Health, Mental Health, and Nursing.
2 See also Organization of Medical Care, and Health Laboratory Services.
1961  Research in Public Health Practice — Scientific Group, Geneva, 1-8 May
1962  Urban Health Services — Expert Committee, Geneva, 15-22 October
1964  Integration of Mass Campaigns against Specific Diseases into General Health Services — Study Group, Geneva, 27 April - 2 May
1966  National Health Planning in Developing Countries — Expert Committee, Geneva, 27 September - 3 October

Rabies

1959  Expert Committee, Geneva, 14-19 December
1965  Expert Committee, Geneva, 1-7 June

Radiation

1959  Use of Radiisotope Teletheraphy Units and Supercurrent Radiation in Radiotherapy — Study Group (IAEA/WHO), Vienna, 3-5 August
Research Aspects of the Treatment of Radiation Injury — Scientific Group, Geneva, 27-29 April
Medical Supervision in Radiation Work — Expert Committee, Geneva, 28 September-3 October
1960  Radiobiology — Scientific Group, Geneva, 25-27 April
1961  Radiation Hazards in Perspective — Expert Committee, Geneva, 24-30 October
1962  Public Health Responsibilities in Radiation Protection — Expert Committee, Geneva, 11-17 September
1964  Public Health and the Medical Use of Ionizing Radiation — Expert Committee, Geneva, 8-14 December
Planning of Radiotherapy Facilities — Joint Meeting (IAEA/WHO), Geneva, 15-19 December
1967  Medical Radiation Physics — Expert Committee (IAEA/WHO), Geneva, 12-18 December

Rehabilitation

1958  Medical Rehabilitation — Expert Committee, Geneva, 24-28 February

Trachoma


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1 See also Cardiovascular Diseases.
1961 Trachoma Research — Scientific Group, Geneva, 22-28 August
Expert Committee, Geneva, 29 August - 4 September
1963 Trachoma Research — Scientific Group, Geneva, 17-21 December
1965 Trachoma Research — Scientific Group, Geneva, 9-14 August

**Tuberculosis**

1959 Tuberculosis Research — Scientific Group, Geneva, 26 January - 2 February
Expert Committee, Geneva, 28 September - 3 October
1960 Research in Tuberculosis — Scientific Group, Geneva, 23-28 May
1964 Expert Committee, Geneva, 18-24 August

**Venereal Infections and Treponematoses**

1959 Expert Committee, Geneva, 21-26 September
Treponematoses Research — Scientific Group, Geneva, 30 November - 5 December
1962 Gonococcal Infections — Expert Committee, Geneva, 19-26 November

**Virus Diseases**

1958 Virus Research — Scientific Group, Geneva, 17-21 November
Respiratory Virus Diseases — Expert Committee, Stockholm, 11-15 August
1959 Research on Birds as Disseminators of Arthropod-Borne Viruses — Scientific Group, Geneva, 9-14 March
Arthropod-Borne Viruses — Study Group, Geneva, 5-10 September
1961 Scientific Group, Geneva, 15-21 August
1962 Yellow Fever Research in East Africa — Scientific Group, Geneva, 30 May - 1 June
1963 Rickettsial Diseases in Man — Scientific Group, Geneva, 8-13 July
Measles Vaccines — Scientific Group, Geneva, 15-20 July
Yellow Fever in East Africa — Scientific Group, Geneva, 29-31 October
Hepatitis — Expert Committee, Geneva, 10-16 December
1964 Smallpox — Expert Committee, Geneva, 14-20 January
1965 Human Viral and Rickettsial Vaccines — Scientific Group, Geneva, 4-9 October
1966 Arboviruses and Human Disease — Scientific Group, Geneva, 26 September - 1 October
Scientific Group, Geneva, 5-12 October
1967 Respiratory Viruses — Scientific Group, Geneva, 9-14 October
Smallpox Eradication — Scientific Group, Geneva, 17-24 October

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1 Rabies and trachoma are shown under separate headings.
Zoonoses 1

1958 Expert Committee (FAO/WHO), Stockholm, 11-16 August
1966 Current Problems in Leptospirosis Research — Expert Group, Moscow, 18-21 July
Expert Committee (FAO/WHO), Geneva, 6-12 December

COMMITTEE ON INTERNATIONAL QUARANTINE 2

1958 Sixth session, Geneva, 20-24 October
1959 Seventh session, Geneva, 26-30 October
1960 Eighth session, Geneva, 17-22 October
1961 Ninth session, Geneva, 6-10 November
1962 Tenth session, Geneva, 3 May
1962 Eleventh session, Geneva, 15-19 October
1964 Twelfth session, Geneva, 10-14 February
1965 Thirteenth session, Geneva, 22-26 February
1967 Fourteenth session, Geneva, 28 November - 7 December

1 Brucellosis and rabies are shown under separate headings.
2 The Committee on International Quarantine, which has special functions defined by the World Health Assembly, is included in this annex for convenience of presentation.
### Annex 8

**WHO-ASSISTED PROJECTS, 1958-1967**

1. **NUMBER OF PROJECTS IN OPERATION EACH YEAR**

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<td>11 (4)</td>
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<td>122 (21)</td>
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<td>3 (1)</td>
<td>17 (1)</td>
<td>7 (3)</td>
<td>18 (3)</td>
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<tr>
<td>Smallpox</td>
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<td>5 (3)</td>
<td>5 (3)</td>
<td>8 (4)</td>
<td>8</td>
<td>9 (2)</td>
<td>11 (1)</td>
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<td>28 (6)</td>
<td>27 (11)</td>
<td>39 (6)</td>
<td>39 (10)</td>
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1 Excluding fellowships, which are shown separately in Annex 9.
2 In order to present a balanced picture of the health programme, this annex also shows, in brackets, the figures for PAHO-assisted projects in the Americas for which no WHO funds were allocated.
3 Until 30 November 1967.
4 Including vector control.
5 Including health laboratory services, hospital and medical care, and rehabilitation.
### WHO-ASSISTED PROJECTS, 1958-1967

#### 2. Number of Projects in Operation in Each Region during the Decade

<table>
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<th>Subject</th>
<th>African Region</th>
<th>Region of the Americas</th>
<th>South-East Asia Region</th>
<th>European Region</th>
<th>Eastern Mediterranean Region</th>
<th>Western Pacific Region</th>
<th>Inter-regional</th>
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<td>27</td>
<td>13</td>
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1 Excluding fellowships, which are shown separately in Annex 9.

2 In order to present a balanced picture of the health programme, this annex also shows, in brackets, the figures for PAHO-assisted projects in the Americas for which no WHO funds were allocated.

3 Including vector control.

4 Including health laboratory services, hospital and medical care, and rehabilitation.
### Annex 9

**FELLOWSHIPS AWARDED BY WHO, 1957-1966**

#### 1. Number by Subject and Year

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1 Awarded by WHO and financed from regular, UNDP and UNICEF funds; excluding fellowships financed by PAHO. Fellowships awarded in 1967 (not included in this table) were 2,674 (provisional figure).

2 The classification follows that used in *The First Ten Years of WHO* and in the Annual Reports of the Director-General.
**ANNEX 9**

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**TOTAL 2 856**

| 3 628 | 1 566 | 5 011 | 3 124 | 1 863 | 17 386 |

1 Awarded by WHO and financed from regular, UNDP and UNICEF funds; excluding fellowships financed by PAHO.
**Annex 10**

**COLLABORATIVE RESEARCH, 1958-1967: CONTRACTS CONCLUDED WITH INSTITUTIONS AND WITH INDIVIDUAL INVESTIGATORS FOR NEW PROJECTS**

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| Sub-total — Contracts with institutions                              | 5    | 12   | 100  | 69   | 117  | 94   | 127  | 150  | 150  | 152  | 1017  | 83                            |                                         |

| Sub-total — Contracts with Individual investigators                  | 1    | 3    | 3    | 10   | 8    | 13   | 32   | 32   | 32   | 32   | 1017  | 83                            |                                         |

1 A new contract is required for each year that a project is continued; only the initial contracts are included in the above table.
2 Including haematology and microbiology.
COLLABORATIVE RESEARCH, 1958-1967: CONTRACTS CONCLUDED WITH INSTITUTIONS AND WITH INDIVIDUAL INVESTIGATORS FOR NEW PROJECTS

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* A new contract is required for each year that a project is continued; only the initial contracts are included in the above table.

* Including haematology and microbiology.

*Sub-total — Contracts with institutions: 145

*Sub-total — Contracts with individual investigators: 1
Annex 11

GRANTS AWARDED BY WHO FOR TRAINING AND EXCHANGE OF RESEARCH WORKERS, 1961-1967

NUMBER BY SUBJECT

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<tr>
<td>Human reproduction</td>
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<tr>
<td>Immunology</td>
<td>15</td>
<td>13</td>
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<tr>
<td>Pharmacology and toxicology</td>
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<tr>
<td><strong>Chronic and degenerative diseases:</strong></td>
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<td>Cancer</td>
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<td>Other</td>
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<td>Dental health</td>
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<td>Environmental health (other than vector control)</td>
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<td>Leprosy</td>
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<td>Malaria</td>
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<td>Maternal and child health</td>
<td>8</td>
<td>1</td>
<td>9</td>
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<td>Mental health</td>
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<tr>
<td>Nutrition</td>
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<td>3</td>
<td>8</td>
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<tr>
<td>Parasitic diseases (other than malaria)</td>
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<td>Public health administration</td>
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<td>Radiation</td>
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<td>Social and occupational health</td>
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<td>Tuberculosis</td>
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<td>8</td>
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<tr>
<td>Vector biology and control</td>
<td>6</td>
<td>15</td>
<td>21</td>
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<tr>
<td>Venereal diseases and treponematoses</td>
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<td>Veterinary public health/zoonoses</td>
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<td>Virus diseases</td>
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<td>Vital and health statistics</td>
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<td>Other fields</td>
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<td><strong>204</strong></td>
<td><strong>232</strong></td>
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</table>

1 Revised figures.
2 Including clinical endocrinology, haematology, medical cartography, microbiology, and molecular biology.
Annex 12

WHO REFERENCE CENTRES, 1958-1967

Below are listed the institutions that have served or been designated during the decade as international or regional reference centres.

**BACTERIAL DISEASES**

**Enteric Infections**

*International Reference Centre for Enteric Phage-Typing*
Central Public Health Laboratory, London, England

*International Escherichia Centre*
Statens Seruminstitut, Copenhagen, Denmark

*International Salmonella Centre*
Institut Pasteur, Paris, France

*International Shigella Centres*
Central Public Health Laboratory, London, England
National Communicable Disease Center, Atlanta, Ga., United States of America

*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

**Streptococcal Infections**

*International Reference Centre for Streptococcus Typhing*
Streptococcus Reference Laboratory, Institute of Epidemiology and Microbiology, Prague, Czechoslovakia

**BIOLOGY, PHARMACOLOGY AND TOXICOLOGY**

**Antibiotics**

*International Centre for Information on Antibiotics*
Laboratoire de Microbiologie générale et médicale, University of Liège, Belgium

**Biological Standardization**

*International Laboratories for Biological Standards*
Statens Seruminstitut, Copenhagen, Denmark
National Institute for Medical Research, London, England

Central Veterinary Laboratory, Ministry of Agriculture, Fisheries and Food, Weybridge, England

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*The reference centres for tuberculosis are shown under that heading, and the centre for gonococci under Venereal Diseases and Treponematosis.*
International Centre for Information on Type Cultures
Institut d'Hygiène et de Bactériologie, University of Lausanne, Switzerland

Human Genetics
International Reference Centre for Abnormal Haemoglobins
Medical Research Council Abnormal Haemoglobin Research Unit, Department of Biochemistry, University of Cambridge, England
International Reference Centre for Glucose-6-Phosphate Dehydrogenase
Department of Medicine — Medical Genetics, University of Washington, Seattle, Wash., United States of America
International Reference Centre for Serum Protein Groups
Zoology Department, University of Texas, Austin, Tex., United States of America
Regional Reference Centres for Glucose-6-Phosphate Dehydrogenase
Department of Haematology, Tel-Hashomer Government Hospital, Jerusalem, Israel
Sub-Department of Haematology, University College Hospital, Ibadan, Nigeria

Immunology
International Reference Centre for Genetic Factors of Human Immunoglobulins
Centre départemental de Transfusion sanguine et de Génétique humaine, Bois-Guillaume, Seine-Maritime, France
International Reference Centre for Immunoglobulins
Institut de Biochimie, University of Lausanne, Switzerland
International Reference Centre for the use of Immunoglobulin Anti-D in the Prevention of Rh Sensitization
Medical Research Council Experimental Haematology Research Unit, St Mary's Hospital Medical School, London, England
International Reference Laboratory for the Serology of Autoimmune Disorders
Rheumatoid Research Department, Middlesex Hospital Medical School, London, England
International Reference Centre for Testing of Natural Resistance Factors
Department of Immunology, Institute of Epidemiology and Microbiology, Prague, Czechoslovakia
International Reference Centre for Tumour-Specific Antigens
Division of Immunology and Oncology, Gamaleia Institute of Epidemiology and Microbiology, Moscow, Union of Soviet Socialist Republics
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
Regional Reference Centres for Immunology (Research and Training)
Department of Microbiology and Immunology, School of Medicine, University of São Paulo, Brazil
Department of Chemical Pathology, University College Hospital, Ibadan, Nigeria
Institut de Biochimie, University of Lausanne, Switzerland

Pharmaceuticals
International Reference Centre for Chemical Reference Substances
Centre for Authentic Chemical Substances, Apotekons Centrallaboratorium, Solna, Stockholm, Sweden

CHRONIC AND DEGENERATIVE 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
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 Leukaemias and other Neoplastic Conditions of the Haematopoietic Cells
Institut de Cancérologie et d'Immunogénétique, Hôpital Paul-Brousse, Paris, France

International Reference Centre for the Histopathology of Lung Tumours
Institute for General and Experimental Pathology, University of Oslo, Norway

International Reference Centre for the Histopathology of Mammary Tumours
Bland Sutton Institute of Pathology, Middlesex Hospital, London, England

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 Oral Precancerous Conditions
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

International Reference Centre for the Histopathology of Ovarian Tumours
Institute of Oncology, Leningrad, Union of Soviet Socialist Republics

International Reference Centre for the Histopathology of Salivary Gland Tumours
Bland Sutton Institute of Pathology, Middlesex Hospital, London, England

International Reference Centre for the Histopathology of Skin Tumours
Pathology Department, University of Western Australia, Perth, Australia

International Reference Centre for the Histopathology of Soft Tissue Tumours
Armed Forces Institute of Pathology, Washington, D.C., United States of America

International Reference Centre for the Histopathology of Thyroid Gland Tumours
University Institute of Pathology, Cantonal Hospital, Zurich, Switzerland

International Reference Centre for the Histopathology of Uterine Tumours and Related Conditions
Institute of Radiopathology, Karolinska Institute, Stockholm, Sweden

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

Cardiovascular Diseases

Centre for Cardiovascular Diseases (Research and Training)
Makerere College, University of East Africa, Kampala, Uganda

Centre for Comparative Cardiovascular Studies
Comparative Cardiovascular Studies Unit, University of Pennsylvania, Philadelphia, Pa., United States of America

Rheumatic Diseases

International Reference Centre for the Study of the Diffuse Connective Tissue Diseases
Hôpital Cochin, Paris, France

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
MENTAL HEALTH

International Reference Centre for Information on Psychotropic Drugs
National Institute of Mental Health, Chevy Chase, Md., United States of America

International Reference Centre for the Study of Adverse and Side Effects of Psychotropic Drugs
Centre psychiatrique Sainte-Anne, Paris, France

Regional Reference Centres for the Study of Psychotropic Drugs
Faculty of Medicine, Hokkaido University, Sapporo, Japan
Clinique neuropsychiatrique, Faculté mixte de Médecine et de Pharmacie, University of Dakar, Senegal

NUTRITION

Anaemias

International Reference Centre for Anaemias
School of Medicine, University of Washington, Seattle, Wash., United States of America

Regional Reference Centres for Anaemias
Department of Pathology, St Bartholomew’s Medical College, London, England
University of Witwatersrand, Johannesburg, South Africa

PARASITIC DISEASES 1

Leishmaniasis

International Reference Centre for Leishmaniasis
Department of Parasitology, Hadassah Medical School, Jerusalem, Israel

Schistosomiasis

Snail Identification Centre
Danish Bilharziasis Laboratory, Copenhagen, Denmark

Trypanosomiasis

International Reference Centre for Trypanosomiasis
East African Trypanosomiasis Research Organization, Tororo, Uganda

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 Serum Institut, Copenhagen, Denmark

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 Centres for the Evaluation and Testing of New Insecticides
Toxicology Research Unit, Medical Research Council Laboratories, Carshalton, Surrey, England
Tropical Pesticides Research Unit, Porton Down, Wiltshire, England
Department of Entomology, University of California, Riverside, Calif., United States of America
Entomological Research Division, Agricultural Research Service, US Department of Agriculture, Gainesville, Fla., United States of America
Technical Development Laboratories, National Communicable Disease Center, Savannah, Ga., United States of America
Laboratoire d’Entomologie, Centre Muraz, Bobo-Dioulasso, Upper Volta

International Reference Centre for Maintenance and Distribution of Standardized Strains of Anopheles
Ross Institute, London School of Hygiene and Tropical Medicine, London, England

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

1 The reference centres for malaria are shown under a separate heading.
ANNEX 12

International Reference Centre for Maintenance and Distribution of Standardized Strains of Musca domestica
Institute of Zoology, University of Pavia, Italy

VENEREAL DISEASES AND TREPONEMATOSES

International Reference Centre for Endemic Treponematoses
Institut Alfred Fournier, Paris, France

International Reference Centre for Gonococci
Neisseria Department, Statens Seruminstitut, Copenhagen, Denmark

International Treponematoses Laboratory Centre
Johns Hopkins University, Baltimore, Md., United States of America

Serological Reference Centres for Treponematoses
Treponematoses Research Laboratory, Statens Seruminstitut, Copenhagen, Denmark
Veneréal Disease Research Laboratory, National Communicable Disease Center, Atlanta, Ga., United States of America

VIRUS DISEASES

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, Bratislava, Czechoslovakia
Service de la Fièvre jaune et des Arbovirus, Institut Pasteur, Paris, France
Department of Virology and Rickettsiology, National Institute of Health, Tokyo, Japan
Institut Pasteur, Dakar, Senegal
East African Virus Research Institute, Entebbe, Uganda

Viral Encephalitides Section, Institute of Poliomyelitis and Viral Encephalitides, Moscow, Union of Soviet Socialist Republics
Virolégy Section, National Communicable Disease Center, Atlanta, Ga., United States of America

Cell Cultures

International Reference Centre for Cell Cultures
American Type Culture Collection, Rockville, Md., 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 of Health, Tokyo, Japan
Department of Bacteriology, University of Singapore
South African Institute for Medical Research, Johannesburg, South Africa
Institute of Poliomyelitis and Viral Encephalitides, Moscow, Union of Soviet Socialist Republics

Influenza

World Influenza Centre
National Institute for Medical Research, London, England

International Influenza Centre for the Americas
Virology Section, National Communicable Disease Center, Atlanta, Ga., United States of America

Mycoplasmas

International Reference Centre for Human Mycoplasmas
Laboratory of Viral Diseases, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Bethesda, Md., United States of America

1 Not including rabies, shown under Zoonoses.
FAO/WHO International Reference Centre for Animal Mycoplasmas
Institute of General Pathology and Bacteriology, University of Aarhus, Denmark

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
Laboratory of Viral 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, National Communicable Disease Center, Atlanta, Ga., United States of America

Rickettsioses
Regional Reference Centre for Human Rickettsioses
Rocky Mountain Laboratory, National Institute of Allergy and Infectious Diseases, Hamilton, Mont., United States of America

Smallpox
Regional Reference Centres for Smallpox
National Communicable Disease Center, Atlanta, Ga., United States of America
Research Institute of Virus Preparations, Moscow, Union of Soviet Socialist Republics

Trachoma
International Reference Centre for Trachoma
Francis I. Proctor Foundation for Research in Ophthalmology, University of California Medical Center, San Francisco, Calif., United States of America

VITAL AND HEALTH STATISTICS
Centres for the Classification of Diseases
Department of Public Health Statistics, Semaško Institute of Social Hygiene and Public Health Administration, Moscow, Union of Soviet Socialist Republics

ZOONOSES
Brucellosis
FAO/WHO Brucellosis Centres
Department of Zoonoses, Ministry 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
Veterinary Microbiological Institute, Athens, Greece
Indian Veterinary Research Institute, Mukteswar-Kumaon, Uttar Pradesh, India
Centre for the Study of Brucellosis, Institute of Hygiene and Microbiology, University of Florence, Italy
National Institute of Animal Health, Tokyo, Japan
Medical Research Institute, General Hospital, Mexico City, Mexico
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
Brucellosis Centre, State Laboratory of Hygiene, Rijeka, Yugoslavia
WHO Brucellosis Centre
Gamaleja Institute of Epidemiology and Microbiology, Moscow, Union of Soviet Socialist Republics
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

Rabies

International Reference Centres for Rabies
Institut Pasteur, Paris, France
Pasteur Institute of Southern India, Coonoor, India
Wistar Institute, Philadelphia, Pa., United States of America

Regional Reference Centre for Rabies in the Americas
Rabies Laboratory, National Communicable Disease Center, Atlanta, Ga., United States of America

OTHER FIELDS

Blood Groups

International Blood Group Reference Laboratory
Medical Research Council Blood Group Reference Laboratory, Lister Institute of Preventive Medicine, London, England

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
Annex 13

WHO PUBLICATIONS, 1958-1967

1. MONOGRAPHS, PUBLIC HEALTH PAPERS AND NON-SERIES PUBLICATIONS

Titles in the Monograph Series and in Public Health Papers that were published in the languages indicated during the period 1958 to 1967, together with non-series publications, are listed below. The languages of publication are shown in parenthesis (E = English; F = French; R = Russian; S = Spanish; E/F = bilingual edition).

<table>
<thead>
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<th>No.</th>
<th>Title</th>
<th>Authors/Editors</th>
<th>Language(s)</th>
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<tr>
<td>23</td>
<td>Laboratory Techniques in Rabies, second edition</td>
<td>by various authors</td>
<td>E, F, R</td>
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<td>31</td>
<td>Composting: Sanitary Disposal and Reclamation of Organic Wastes</td>
<td>by Harold B. Gotaas</td>
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<tr>
<td>32</td>
<td>The Training of Sanitary Engineers: Schools and Programmes in Europe and in the United States</td>
<td>by Milivoj Petrik</td>
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<td>33</td>
<td>Meat Hygiene</td>
<td>by various authors</td>
<td>F, S</td>
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<tr>
<td>34</td>
<td>The Teaching of Hygiene and Public Health in Europe: A Review of Trends in Undergraduate and Post-graduate Education in Nineteen Countries</td>
<td>by F. Grundy and I. M. Mackintosh</td>
<td>E, F, S</td>
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<td>36</td>
<td>An International Nomenclature of Yaws Lesions</td>
<td>by C. J. Hackett</td>
<td>F, S</td>
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<td>37</td>
<td>Intermediate Hosts of Schistosoma: African Biomphalaria and Bulinus</td>
<td>by G. Mandahl-Barth</td>
<td>E, F, S</td>
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<td>38</td>
<td>Insecticide Resistance in Arthropods</td>
<td>by A. W. A. Brown</td>
<td>E, F, S</td>
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<td>39</td>
<td>Excreta Disposal for Rural Areas and Small Communities</td>
<td>by Edmund G. Wagner and J. N. Lanoix</td>
<td>E, F, R, S</td>
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<td>40</td>
<td>Child Guidance Centres</td>
<td>by D. Buckle and S. Lebovici</td>
<td>E, F, S</td>
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<tr>
<td>41</td>
<td>Principles of Administration Applied to Nursing Service</td>
<td>by H. A. Goddard</td>
<td>E, F, S</td>
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<tr>
<td>42</td>
<td>Water Supply for Rural Areas and Small Communities</td>
<td>by Edmund G. Wagner and J. N. Lanoix</td>
<td>E, F, R, S</td>
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<tr>
<td>43</td>
<td>Cholera</td>
<td>by R. Pollitzer</td>
<td>E, F</td>
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<td>44</td>
<td>Endemic Goitre</td>
<td>by various authors</td>
<td>E, F, R, S</td>
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<td>45</td>
<td>Differential Diagnosis of Yaws</td>
<td>by C. J. Hackett and L. J. A. Loewenthal</td>
<td>E, F, S</td>
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<tr>
<td>46</td>
<td>Air Pollution</td>
<td>by various authors</td>
<td>E, F, R, S</td>
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<td>47</td>
<td>Age-grouping Methods in Diptera of Medical Importance</td>
<td>(with special reference to some vectors of malaria)</td>
<td>E, F, R</td>
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<tr>
<td>48</td>
<td>Milk Hygiene</td>
<td>by various authors</td>
<td>E, F, R, S</td>
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<tr>
<td>49</td>
<td>Operation and Control of Water Treatment Processes</td>
<td>by C. R. Cox</td>
<td>E, F, R, S</td>
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<td>50</td>
<td>Snail Control in the Prevention of Bilharziasis</td>
<td>by various authors</td>
<td>E, F, R</td>
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<tr>
<td>51</td>
<td>Statistical Methods in Malaria Eradication</td>
<td>by Satya Swaroop</td>
<td>E, R</td>
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<td>52</td>
<td>Trials of Prophylactic Agents for the Control of Communicable Diseases: A Guide to their Organization and Evaluation</td>
<td>by T. M. Pollock</td>
<td>E, R</td>
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### PUBLIC HEALTH PAPERS

2. *Epidemiological Methods in the Study of Mental Disorders*, by D. D. Reid (E, F, S)
3. *Health Services in the USSR*, report prepared by the participants in a study tour organized by the World Health Organization (E, F, S)
4. *Aspects of Public Health Nursing*, by various authors (E, F, R, S)
8. *The Role of Immunization in Communicable Disease Control*, by various authors (E, F, R, S)
9. *Teaching of Psychiatry and Mental Health*, by various authors (E, F, R, S)
10. *Control of Soil-transmitted Helminths*, by P. C. Beaver (E, F, R, S)
11. *Maternal and Child Health in the USSR*, report prepared by the participants in a study tour organized by the World Health Organization (E, F, S)
13. *Aspects of Water Pollution Control*, by various authors (E, F, R, S)
14. *Deprivation of Maternal Care: A Reassessment of its Effects*, by various authors (E, F, S)
17. *Paying for Health Services: A Study of the Costs and Sources of Finance in Six Countries*, by B. Abel-Smith (E, F, R, S)
18. *Medicine and Public Health in the Arctic and Antarctic*, selected papers from a conference, by various authors (E, F, R, S)
19. *Health Education in the USSR*, report prepared by the participants in a study tour organized by the World Health Organization (E, F, R, S)
20. *Preparation of the Physician for General Practice*, by various authors (E, F, R, S)
24. *Care of Children in Day Centres*, by various authors (E, F, R, S)
25. *Housing Programmes: The Role of Public Health Agencies*, by various authors (E, F, R, S)
27. *Trends in the Study of Morbidity and Mortality*, by various authors (E, F, R, S)
28. *Aspects of Family Mental Health in Europe*, by various authors (E, F, R, S)
30. *Noise: An Occupational Hazard and Public Nuisance*, by A. Bell (E, F, R)
31. *A Guide for Staffing a Hospital Nursing Service*, by Marguerite Paetzuck (E, R)
32. *An International Study of Health Expenditure and its Relevance for Health Planning*, by Brian Abel-Smith (E)
NON-SERIES PUBLICATIONS

Pharmacopoea Internationalis, first edition, Supplementum (E, F, S)
Specifications for the Quality Control of Pharmaceutical Preparations, second edition of the International Pharmacopoeia (E, F)
Specifications for Reagents mentioned in the International Pharmacopoeia (E, F)
International Non-proprietary Names for Pharmaceutical Preparations : Cumulative List, 1962 (E, F, R)
International Non-proprietary Names for Pharmaceutical Preparations : Cumulative List No. 2, 1967 (E, F)
International Standards for Drinking-Water, first edition (E, F)
International Standards for Drinking-Water, second edition (E, F, R, S)
European Standards for Drinking-Water (E, F, R)
Specifications for Pesticides Used in Public Health : Insecticides - Rodenticides - Molluscicides - Repellents - Methods, third edition (E)
Equipment for Vector Control : Guide to Major Items, Specifications, Use Descriptions, and Field Tests (E, F, R, S)
Methods of Radiochemical Analysis (E, R)
International Histological Classification of Tumours No. 1 : Histological Typing of Lung Tumours (E, F, R, S)
World Directory of Dental Schools (E, F)
World Directory of Dental Schools, second edition (E)
World Directory of Medical Schools, second edition (F)
World Directory of Medical Schools, third edition (E, F, R)
World Directory of Post-basic and Post-graduate Schools of Nursing (E, F, R)
World Directory of Schools of Pharmacy, 1963 (E, R)
World Directory of Venereal Disease Treatment Centres at Ports, first and second editions (E/F)
World Directory of Veterinary Schools (E, F)
Bibliography on Bilharziasis, 1949-1958 (E/F)
Bibliography on the Epidemiology of Cancer, 1946-1960 (E/F, R)
Bibliography of Hookworm Disease (Ancylostomiasis), 1920-1962 (E/F)
Medical Education : Annotated Bibliography, 1946-1955 (E, F)
Bibliography on Yaws, 1905-1962 (E/F, R)
International Sanitary Regulations, second and third annotated editions (E, F, R)
International Medical Guide for Ships (including the Ship's Medicine Chest and the Medical Section of the International Code of Signals) (E)
Guide to Ship Sanitation, by V. B. Lamoureux (E)
Guide to Hygiene and Sanitation in Aviation (E, F, S)
Terminology of Malaria and of Malaria Eradication, report of a drafting committee (E, F, R, S)
Diagnosis and Treatment of Acute Radiation Injury, proceedings of a scientific meeting jointly sponsored by the International Atomic Energy Agency and the World Health Organization, October 1960 (E, F, R)
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 (E, F, R)
Malnutrition and Disease : Freedom from Hunger Campaign : Basic Study No. 12 (E, F, S)
Trends in Cancer Research (E, F, R)
The First Ten Years of the World Health Organization (E, F, R, S)
The Medical Research Programme of the World Health Organization, 1958-1963, report by the Director-General (E, F, R, S)
## Annex 13

### 2. Annual Output of Publications

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**New format as from Volume 21, 1959.**
## Annual Output of Publications (concluded)

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* Incomplete figures.
### Annex 14

**NON-GOVERNMENTAL ORGANIZATIONS IN OFFICIAL RELATIONS WITH WHO**

at 31 December 1967

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CONFERENCES, SEMINARS AND SIMILAR MEETINGS (INCLUDING SHORT COURSES), 1958-1967

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*The aim of this illustrative list is to show the range of subjects of meetings and courses organized or assisted by WHO, and the countries (under present names) in which they were held. The list has been abridged — for example, recurrent meetings and courses are mentioned once only — and now has some 400 entries. Activities organized by PAHO without financial participation from WHO are not listed. Except where shown as national or inter-regional, the activities were for participants from countries of the region in which they took place. For advisory meetings see Annexes 5 and 7.*
1958 (continued)

**EUROPEAN REGION**

**Belgium**
- Meeting on dental health services for children
- Seminar on prevention of accidents in childhood

**Denmark**
- Conference on preventive mental health work in children
- Meeting on cardiovascular diseases
- Meeting on neurotropic virus diseases
- Seminar on the psychiatric treatment of criminals and delinquents

**Finland**
- Conference on public health nursing

**France**
- Course on rural public health
- Seminar for sanitary engineers

**France, Italy**
- Travelling seminar on occupational health

**France, United Kingdom**
- Courses on radiation protection
- Courses on virus and rickettsial diseases

**Norway**
- Meeting on the public health aspects of aging populations

**Portugal**
- Meeting on malaria eradication for south-western Europe

**Portugal, United Kingdom**
- Travelling seminar on public health administration

**Romania**
- Malaria conference for south-eastern European countries

**Sweden**
- Course for Scandinavian municipal engineers
- Meeting on the collaboration of public health laboratories
- Symposium on the relations between the hospital and its community

**Switzerland**
- Conference on hospital statistics and their application in health administration

**Turkey**
- Course on tuberculosis

**Union of Soviet Socialist Republics**
- Inter-regional travelling seminar on public health administration

**Yugoslavia**
- Conference on the control of communicable eye diseases

**EASTERN MEDITERRANEAN REGION**

**Iran**
- Inter-regional seminar on health education of the public

**United Arab Republic**
- Course on waterworks operation
- FAO/WHO inter-regional nutrition conference
- Inter-regional course on bilharziasis
- Meeting on drinking-water standards and standard methods of water analysis

**WESTERN PACIFIC REGION**

**Cambodia**
- National course in medicine

**Japan**
- Inter-regional conference on leprosy
- Seminar on venereal disease control
<table>
<thead>
<tr>
<th>Year/Place</th>
<th>Subject</th>
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<tbody>
<tr>
<td>1958 (continued)</td>
<td>Year/Place Subject</td>
</tr>
<tr>
<td>Papua and New Guinea</td>
<td>Seminar on environmental sanitation</td>
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<td>Philippines</td>
<td>Inter-regional seminar on mental health and family life</td>
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<td>1959</td>
<td>Year/Place Subject</td>
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<td><strong>AFRICAN REGION</strong></td>
<td>Congo (Brazzaville) Conference on smallpox eradication Inter-regional conference on leprosy in Africa Meeting on malaria eradication Seminar on food and nutrition problems</td>
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<tr>
<td>Mexico</td>
<td>Seminar on schools of public health</td>
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<tr>
<td>United States of America</td>
<td>Seminar on teaching of public health in schools of veterinary medicine</td>
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<tr>
<td><strong>REGION OF THE AMERICAS</strong></td>
<td>Year/Place Subject</td>
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<tr>
<td>Afghanistan</td>
<td>National seminar on smallpox eradication</td>
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<tr>
<td>Burma</td>
<td>National course on health education</td>
</tr>
<tr>
<td>India</td>
<td>Inter-regional conference on malaria Study tour on medical education (anatomy)</td>
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<td><strong>SOUTH-EAST ASIA REGION</strong></td>
<td>Year/Place Subject</td>
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<tr>
<td>Denmark</td>
<td>Conference on medical rehabilitation Meeting on drinking-water standards Meeting on medical and public health aspects of radiation</td>
</tr>
<tr>
<td>Federal Republic of Germany</td>
<td>Conference on nursing administration FAO/WHO symposium on education and training in nutrition in Europe</td>
</tr>
<tr>
<td>Finland</td>
<td>Conference on mental hygiene practice Course on rural public health</td>
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<tr>
<td>France</td>
<td>Conference on the health and welfare of seafarers Inter-regional seminar on the public health aspects of radioactive waste disposal</td>
</tr>
<tr>
<td>Italy</td>
<td>Inter-regional seminar on community water supply Seminar on the mental health of the subnormal child</td>
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<tr>
<td>Morocco</td>
<td>Conference on the control of infectious diseases through vaccination</td>
</tr>
<tr>
<td>Netherlands, United Kingdom</td>
<td>Course on pest and rodent control</td>
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<td>Year/Place</td>
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<td>1959 (continued)</td>
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<tr>
<td>Norway, Poland</td>
<td>Travelling seminar on maternal and child health</td>
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<tr>
<td>Switzerland</td>
<td>Conference on food-borne infections and intoxications</td>
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<tr>
<td>USSR</td>
<td>Travelling seminar on public health administration</td>
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<tr>
<td>United Kingdom</td>
<td>ILO/WHO seminar on the role of health workers and social workers in meeting family needs</td>
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<td>ILO/WHO conference on the medical officer’s contribution to the psycho-social environment in industry</td>
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<td>Inter-regional course on the determination of anopheline longevity</td>
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<tr>
<td>Ethiopia</td>
<td>Conference on malaria eradication</td>
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<tr>
<td>Tunisia</td>
<td>Inter-regional conference on trachoma</td>
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<tr>
<td>United Arab Republic</td>
<td>Course on industrial health</td>
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<tr>
<td>EASTERN MEDITERRANEAN REGION</td>
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<tr>
<td>Australia</td>
<td>Inter-regional seminar on dental health</td>
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<tr>
<td>Fiji</td>
<td>Course on tuberculosis for assistant medical officers</td>
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<tr>
<td>Japan</td>
<td>Seminar on the education and training of sanitation personnel</td>
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<td></td>
<td>Seminar on veterinary public health</td>
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<tr>
<td>Philippines</td>
<td>Conference on maternity care</td>
</tr>
<tr>
<td></td>
<td>Inter-regional meeting on BCG vaccine production</td>
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<tr>
<td>WESTERN PACIFIC REGION</td>
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<tr>
<td>1960</td>
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<tr>
<td>Kenya</td>
<td>Seminar on tuberculosis</td>
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<td>Seminar on veterinary public health</td>
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<tr>
<td>Mozambique</td>
<td>Conference on bilharziasis</td>
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<tr>
<td>Nigeria</td>
<td>Inter-regional course on freeze-dried smallpox vaccine production</td>
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<td>AFRICAN REGION</td>
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<tr>
<td>Afghanistan</td>
<td>National orientation course in public health</td>
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<tr>
<td>India</td>
<td>Conference on auxiliary personnel in sanitation</td>
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<td></td>
<td>Inter-regional conference on smallpox</td>
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<tr>
<td>South-East Asia Region</td>
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<tr>
<td>India, Thailand</td>
<td>Study tour on medical education (biochemistry)</td>
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<tr>
<td>Year/Place</td>
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<tr>
<td><strong>1960 (continued)</strong></td>
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<tr>
<td>Austria</td>
<td>Seminar on nursing education for child care</td>
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<tr>
<td>Belgium</td>
<td>Seminar on child guidance</td>
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<tr>
<td>Bulgaria, France</td>
<td>Study tour on rural health administration</td>
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<tr>
<td>Czechoslovakia</td>
<td>Course on laboratory diagnosis of virus diseases</td>
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<td></td>
<td>Czechoslovak Cardiological Society/WHO symposium on the pathogenesis of essential hypertension</td>
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<td>Study tour on occupational health</td>
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<td>Symposium on laboratory and epidemiological studies of streptococcal infections in central Europe</td>
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<tr>
<td>Denmark</td>
<td>Meeting of national fellowships officers</td>
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<td></td>
<td>Symposium on epidemiological aspects of air pollution</td>
</tr>
<tr>
<td>Federal Republic of Germany</td>
<td>Course on radiation protection</td>
</tr>
<tr>
<td>Finland</td>
<td>Course on quality control of milk and milk products</td>
</tr>
<tr>
<td>France</td>
<td>Advanced course on radiation protection</td>
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<tr>
<td>Italy</td>
<td>Conference on malaria eradication in Europe</td>
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<td>Inter-regional conference on techniques in epidemiology of mental disorders</td>
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<tr>
<td>Spain</td>
<td>Seminar for sanitary engineers</td>
</tr>
<tr>
<td>Sweden</td>
<td>Seminar on dental health services for children</td>
</tr>
<tr>
<td>USSR</td>
<td>Inter-regional course on natural foci of infection</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Course on nursing administration</td>
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<td>Course on radiation medicine for teachers in medical schools</td>
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<td>ILO/UN/WHO course on the rehabilitation of physically handicapped adults</td>
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<td>Yugoslavia</td>
<td>Seminar on the application of epidemiology in health administration</td>
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<td><strong>EASTERN MEDITERRANEAN REGION</strong></td>
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<tr>
<td>Ethiopia</td>
<td>Inter-regional seminar on community water supply</td>
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<tr>
<td>Pakistan</td>
<td>Seminar on nursing</td>
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<tr>
<td>United Arab Republic</td>
<td>Meeting on paediatrics</td>
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<td><strong>WESTERN PACIFIC REGION</strong></td>
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<td>Australia</td>
<td>Seminar on tuberculosis</td>
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<tr>
<td>Japan</td>
<td>ILO/WHO seminar on occupational health</td>
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<tr>
<td>Malaya, Singapore</td>
<td>Inter-regional conference and study tour in public health</td>
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<td>Philippines</td>
<td>Seminar on health laboratory services</td>
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<td>UN/WHO course on vital and health statistics</td>
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<td>Year/Place</td>
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<tr>
<td><strong>1961</strong></td>
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<tr>
<td><strong>AFRICAN REGION</strong></td>
<td></td>
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<tr>
<td>Congo (Brazzaville)</td>
<td>Inter-regional conference on onchocerciasis</td>
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<tr>
<td>Niger</td>
<td>Symposium on hygiene and sanitation of housing</td>
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<td><strong>REGION OF THE AMERICAS</strong></td>
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<tr>
<td>El Salvador</td>
<td>Seminar on public health nursing services</td>
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<td>Guatemala</td>
<td>Seminar on nursing education</td>
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<tr>
<td>Honduras</td>
<td>Seminar on sanitary engineering</td>
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<tr>
<td>USA</td>
<td>Inter-regional conference on comparative studies on leukaemias</td>
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<tr>
<td>Venezuela</td>
<td>Conference of deans of schools of public health</td>
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<td><strong>SOUTH-EAST ASIA REGION</strong></td>
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<tr>
<td>Burma</td>
<td>National course on nursing</td>
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<tr>
<td>Ceylon</td>
<td>Conference on nursing administration</td>
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<tr>
<td>India</td>
<td>National course on radiation protection</td>
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<tr>
<td>India, Indonesia, Singapore</td>
<td>Study tour on medical education (pharmacology)</td>
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<td>Indonesia</td>
<td>Inter-regional conference on yaws</td>
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<tr>
<td>Thailand</td>
<td>Inter-regional course on freeze-dried smallpox vaccine production</td>
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<td><strong>EUROPEAN REGION</strong></td>
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<tr>
<td>Czechoslovakia</td>
<td>Inter-regional course on poliomyelitis</td>
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<td>Denmark</td>
<td>Conference on the role of the nurse in mental health practice</td>
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<td>Inter-regional refresher course on anaesthesiology</td>
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<td>France</td>
<td>Conference on mortality statistics</td>
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<td>Course on radiation medicine for teachers in medical schools</td>
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<td>UNESCO/WHO symposium on the preparation of school-teachers for health education</td>
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<td>Ireland</td>
<td>ILO/WHO seminar on health services in small factories</td>
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<td>Symposium on planning and administration of national environmental sanitation programmes</td>
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<td>Poland</td>
<td>Meeting on quality control of pharmaceutical preparations</td>
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<td>Switzerland</td>
<td>ECE/FAO/IAEA/WHO inter-regional conference on the control of water pollution</td>
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<td>Symposium on maternal and child health problems</td>
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<td>Switzerland, Iran</td>
<td>Inter-regional course for administrative officers in malaria eradication programmes</td>
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<td>Turkey</td>
<td>Conference on the control of communicable eye diseases</td>
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<td>Inter-regional conference on leprosy</td>
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<td>Year/Place</td>
<td>Subject</td>
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<td>1961 (continued)</td>
<td>Inter-regional travelling seminar on health education</td>
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<td>Inter-regional travelling seminar on venereal diseases</td>
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<tr>
<td>USSR</td>
<td>Conference on the training of the doctor for his work in the community</td>
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<td>United Kingdom</td>
<td>E A S T E R N  M E D I T E R R A N E A N  R E G I O N</td>
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<tr>
<td>Pakistan</td>
<td>Course on waterworks design and operation</td>
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<td>Sudan</td>
<td>Inter-regional conference on the training of health auxiliary personnel</td>
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<tr>
<td>United Arab Republic</td>
<td>Inter-regional course on occupational health</td>
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<td>Japan</td>
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<tr>
<td>Cameroon</td>
<td>Inter-regional course on radiation health and safety</td>
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<tr>
<td>Mali</td>
<td>Seminar on nursing administration</td>
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<tr>
<td>Philippines</td>
<td>Inter-regional course on leprosy</td>
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<tr>
<td>Western Samoa</td>
<td>UNESCO/WHO seminar on child health and the school</td>
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<td>1962</td>
<td>A F R I C A N  R E G I O N</td>
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<tr>
<td>Cameroon</td>
<td>Conference on malaria in Africa</td>
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<tr>
<td>Mali</td>
<td>Inter-regional course on leprosy</td>
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<tr>
<td>Jamaica</td>
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<tr>
<td>USA</td>
<td>Seminar on advanced nursing education</td>
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<tr>
<td>Burma, Ceylon, India</td>
<td>Study tour on medical education (microbiology)</td>
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<td>Ceylon, India</td>
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<tr>
<td>India</td>
<td>FAO/UNICEF/WHO inter-regional seminar on nutrition</td>
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<tr>
<td>Thailand</td>
<td>Inter-regional conference on enteric diseases</td>
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<td>Burma</td>
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<tr>
<td>India</td>
<td>FAO/UNICEF/WHO inter-regional seminar on nutrition</td>
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<tr>
<td>Thailand</td>
<td>Inter-regional conference on trachoma</td>
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<tr>
<td>Belgium</td>
<td>E U R O P E A N  R E G I O N</td>
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<tr>
<td>Denmark</td>
<td>Seminar for sanitary engineers</td>
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<td>Meeting on exfoliative cytology in the public health control of cancer</td>
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<td>Symposium on tropical medicine</td>
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<td>Year/Place</td>
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<td>1962 (continued)</td>
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<td>Federal Republic of Germany</td>
<td>Inter-regional conference on public health aspects of radiation protection</td>
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<tr>
<td>Finland, USSR</td>
<td>Course on occupational health</td>
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<td>Finland, Sweden, USSR, Yugoslavia</td>
<td>Inter-regional travelling seminar on occupational health</td>
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<td>Greece</td>
<td>Seminar on mental health and the family</td>
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<td>Greece, Yugoslavia</td>
<td>Travelling seminar on public health administration</td>
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<td>Morocco</td>
<td>Conference on malaria</td>
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<td>Netherlands</td>
<td>Symposium on hospital and domiciliary care</td>
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<td>Poland</td>
<td>Conference on tuberculosis control</td>
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<tr>
<td>Spain</td>
<td>Seminar on the training and use of auxiliary nursing personnel</td>
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<tr>
<td>Switzerland</td>
<td>Symposium on the teaching of statistics to undergraduate medical students</td>
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<tr>
<td>USSR</td>
<td>Inter-regional course on natural foci of infection</td>
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<td>Inter-regional travelling seminar on public health administration</td>
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<td>Inter-regional travelling seminar on undergraduate medical education</td>
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<td>Symposium on chronic non-specific lung diseases</td>
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<td><strong>EASTERN MEDITERRANEAN REGION</strong></td>
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<tr>
<td>Iran</td>
<td>Inter-regional conference on medical education</td>
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<td>Inter-regional meeting on malaria eradication</td>
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<tr>
<td>Lebanon</td>
<td>Meeting on community water supply</td>
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<td><strong>WESTERN PACIFIC REGION</strong></td>
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<tr>
<td>China (Taiwan)</td>
<td>Seminar on rural health services</td>
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<tr>
<td>Fiji</td>
<td>Course on vital and health statistics</td>
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<tr>
<td>Japan</td>
<td>Inter-regional seminar on Japanese-B encephalitis and other arthropod-borne virus infections</td>
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<tr>
<td>Philippines</td>
<td>Inter-regional conference on malaria</td>
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<td>Inter-regional conference on techniques in epidemiology of mental disorders</td>
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<td>Inter-regional meeting on cholera El Tor</td>
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<td>Seminar on food sanitation</td>
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<td>Seminar on maternal and child health nutrition</td>
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<td>Singapore</td>
<td>Inter-regional course on viral and rickettsial laboratory techniques</td>
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<td><strong>AFRICAN REGION</strong></td>
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<tr>
<td>Nigeria</td>
<td>Seminar on rural health</td>
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</tbody>
</table>
**Year/Place**

1963 (continued)

### REGION OF THE AMERICAS

**Argentina, Colombia, El Salvador**
- National courses on classification and coding of diseases
- Seminar on nursing education
- Seminar on teaching of public health in schools of veterinary medicine

**Mexico**
- Seminar on public health nursing services

**Peru**

### SOUTH-EAST ASIA REGION

**India**
- Inter-regional course on laboratory and field techniques in human population genetics
- Seminar on protein malnutrition in children

### EUROPEAN REGION

**Austria**
- Conference on morbidity statistics

**Bulgaria**
- Inter-regional seminar on community water supply

**Czechoslovakia**
- Symposium on post-graduate medical education

**Denmark**
- Inter-regional course on home-care nursing services

**Federal Republic of Germany**
- Seminar on the in-patient psychiatric treatment of children

**Finland**
- Course on rehabilitation of children

**France**
- Seminar on public health demonstration, training and research areas
- Travelling seminar for US professors on the organization and administration of schools of public health

**France, Federal Republic of Germany, Netherlands, Sweden, United Kingdom, Yugoslavia**
- Seminar on medical radiation (radiation protection and radiation measurements in relation to national health laboratory services)

**Greece**

**Italy**
- Conference on the public health aspects of chronic rheumatoid arthritis and related diseases

**Netherlands**
- Seminar on child health and the school

**Spain**
- Inter-regional seminar on public health aspects of housing

**Sweden**
- Symposium on venereal disease control

**Switzerland**
- ILO/WHO inter-regional symposium on the medical inspection of labour
- Inter-regional symposium on criteria for air quality and methods of measurement
- Meeting on the study of the incidence of leukaemia in patients treated with radiation for cancer of the cervix uteri
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<th>Year/Place</th>
<th>Subject</th>
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<tr>
<td>1963 (continued)</td>
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<tr>
<td>USSR</td>
<td>Inter-regional seminar on respiratory virus diseases</td>
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<td>Inter-regional travelling seminar on the public health aspects of housing</td>
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<td>Inter-regional travelling seminar on the training and utilization of medical auxiliary personnel</td>
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<td>Seminar on the health protection of the elderly and the aged and on the prevention of premature aging</td>
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<tr>
<td>Yugoslavia</td>
<td>Course on veterinary public health</td>
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<tr>
<td>Ethiopia</td>
<td>Eastern Mediterranean Region</td>
</tr>
<tr>
<td>Iran</td>
<td>National courses on malaria eradication</td>
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<tr>
<td>Iran, Lebanon, Pakistan, United Arab Republic, India</td>
<td>Inter-regional course on enteric diseases</td>
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<tr>
<td>Iran</td>
<td>Inter-regional seminar on radiological health</td>
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<tr>
<td>Pakistan</td>
<td>Inter-regional seminar on the health aspects of industrialization</td>
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<tr>
<td>Syria</td>
<td>Seminar on vital and health statistics</td>
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<td>Tunisia</td>
<td>Seminar on tuberculosis in infancy and childhood</td>
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<tr>
<td>United Arab Republic</td>
<td>FAO/UNICEF/WHO seminar on nutrition</td>
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<td>Meeting on medical education</td>
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<td>Meeting of national fellowships officers</td>
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<tr>
<td>Fiji</td>
<td>Western Pacific Region</td>
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<tr>
<td>Malaysia</td>
<td>South Pacific Commission/WHO seminar on nursing</td>
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<tr>
<td>Philippines</td>
<td>Course for malaria entomologists</td>
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<td>Conference of deans of medical schools</td>
</tr>
<tr>
<td></td>
<td>Seminar on health surveys and reporting</td>
</tr>
<tr>
<td></td>
<td>Seminar on immunization in the control of communicable diseases</td>
</tr>
<tr>
<td></td>
<td>Seminar on the role of the hospital in the public health programme</td>
</tr>
<tr>
<td>1964</td>
<td></td>
</tr>
<tr>
<td>Uganda</td>
<td>Inter-regional seminar on the prevention and treatment of protein-calorie malnutrition</td>
</tr>
<tr>
<td>Upper Volta</td>
<td>Course on trypanosomiasis</td>
</tr>
<tr>
<td>Colombia</td>
<td>Region of the Americas</td>
</tr>
<tr>
<td>Tobago</td>
<td>Conference on rural water supplies</td>
</tr>
<tr>
<td></td>
<td>Seminar on nursing services</td>
</tr>
<tr>
<td>Year/Place</td>
<td>Subject</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1964 (continued)</td>
<td></td>
</tr>
<tr>
<td><strong>SOUTH-EAST ASIA REGION</strong></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>National course for nursing superintendents</td>
</tr>
<tr>
<td>India, Thailand</td>
<td>Study tour on medical education</td>
</tr>
<tr>
<td>Thailand</td>
<td>Inter-regional course on the fundamentals of nutrition and their application</td>
</tr>
<tr>
<td>Czechoslovakia</td>
<td>Symposium on viral hepatitis</td>
</tr>
<tr>
<td>Denmark</td>
<td>Conference on the application of automatic data-processing systems in health administration</td>
</tr>
<tr>
<td>France</td>
<td>Symposium on schools of public health in Europe</td>
</tr>
<tr>
<td>Italy</td>
<td>Symposium on the teaching of the preventive aspects of medicine in medical schools</td>
</tr>
<tr>
<td>Romania</td>
<td>Inter-regional course on enteric diseases</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Inter-regional conference on the establishment of basic principles for medical education in developing countries</td>
</tr>
<tr>
<td>USSR</td>
<td>Inter-regional conference on midwifery services and education</td>
</tr>
<tr>
<td></td>
<td>Inter-regional seminar and course on rabies</td>
</tr>
<tr>
<td></td>
<td>Inter-regional travelling seminar on environmental sanitation</td>
</tr>
<tr>
<td></td>
<td>Inter-regional travelling seminar on obstetrics and gynaecology</td>
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<tr>
<td></td>
<td>Inter-regional travelling seminar on the organization of epidemiological services and their role in the control of communicable diseases</td>
</tr>
<tr>
<td></td>
<td>Inter-regional travelling seminar on the public health component in the training of medical personnel</td>
</tr>
<tr>
<td></td>
<td>Inter-regional travelling seminar on the scientific work of undergraduate medical students</td>
</tr>
<tr>
<td></td>
<td>Symposium on the toxicology of drugs</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Course on geriatrics</td>
</tr>
<tr>
<td></td>
<td>Seminar on public health practice and the prevention of mental illness</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>Conference on public health administration</td>
</tr>
<tr>
<td></td>
<td>Conference on the endemic nephropathy of south-eastern Europe</td>
</tr>
<tr>
<td><strong>EUROPEAN REGION</strong></td>
<td></td>
</tr>
<tr>
<td><strong>EASTERN MEDITERRANEAN REGION</strong></td>
<td></td>
</tr>
<tr>
<td>Iran, Pakistan</td>
<td>Inter-regional seminar on food hygiene, zoonoses control and veterinary public health practice</td>
</tr>
</tbody>
</table>
Year/Place  
1964 (continued)  
Libya  
Conference on malaria in the Eastern Mediterranean and European Regions  
United Arab Republic  
Inter-regional course on enteric diseases  

WESTERN PACIFIC REGION  
Burma, Ceylon, India, Singapore, Thailand  
Malaysia  
Inter-regional seminar on tuberculosis  
New Caledonia  
South Pacific Commission/WHO course on tuberculosis  
Philippines  
Inter-regional seminar on cholera control  
Seminar on methods to improve nutritional standards in villages  
Seminar on national health planning  
Seminar on the control of communicable diseases  

1965  

AFRICAN REGION  
Kenya  
FAO/WHO seminar on planning and evaluation of applied nutrition programmes  
Nigeria  
Course on trypanosomiasis  
Uganda  
Meeting of professors of paediatrics  

REGION OF THE AMERICAS  
Brazil  
National courses on biostatistics  
USA  
Inter-regional meeting on epidemiological studies in human radiobiology  
Seminar on venereal diseases  

SOUTH-EAST ASIA REGION  
Ceylon  
Inter-regional malaria conference  
India  
Conference on nursing administration  
Course on cholera control  
India, Thailand  
Medical education study tour (paediatrics)  

EUROPEAN REGION  
Bulgaria  
Course in public health practice  
Denmark  
FAO/WHO inter-regional course on meat hygiene  
Inter-regional course on immunofluorescent techniques  
Symposium on the estimation of hospital bed requirements  
Hungary  
Conference on health statistics  
Italy  
FAO/WHO inter-regional meeting on planning and evaluation of applied nutrition programmes  
Seminar for sanitary engineers  
Netherlands  
Seminar on paediatric education
<table>
<thead>
<tr>
<th>Year/Place</th>
<th>Subject</th>
</tr>
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<tbody>
<tr>
<td>1965 (continued)</td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>Seminar on the early detection of cancer</td>
</tr>
<tr>
<td>Romania</td>
<td>Conference on the prevention and control of cardiovascular diseases</td>
</tr>
<tr>
<td>Spain</td>
<td>Conference on public health problems in Mediterranean countries</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Inter-regional conference on effective teaching methods in medical education</td>
</tr>
<tr>
<td></td>
<td>Inter-regional symposium on sanitary engineering education and training</td>
</tr>
<tr>
<td></td>
<td>Meeting on health recommendations regarding exposure to ionizing radiation</td>
</tr>
<tr>
<td>USSR</td>
<td>Course on the medical and social aspects of the care of the elderly</td>
</tr>
<tr>
<td></td>
<td>Inter-regional seminar on occupational health in agriculture</td>
</tr>
<tr>
<td></td>
<td>Inter-regional seminar on organization of mental health services</td>
</tr>
<tr>
<td></td>
<td>Inter-regional travelling seminar on entomological methods in vector control</td>
</tr>
<tr>
<td></td>
<td>Inter-regional travelling seminar on plague control</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Conference of chiefs of virological departments of public health laboratories</td>
</tr>
<tr>
<td></td>
<td>IAEA/WHO inter-regional conference on medical physics</td>
</tr>
<tr>
<td></td>
<td>Inter-regional course on the laboratory diagnosis of enterobacteriaceae</td>
</tr>
<tr>
<td></td>
<td>Inter-regional seminar on psychiatric diagnosis</td>
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<tr>
<td><strong>EASTERN MEDITERRANEAN REGION</strong></td>
<td></td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Inter-regional seminar on national health planning</td>
</tr>
<tr>
<td>Iran</td>
<td>Course on cholera bacteriology</td>
</tr>
<tr>
<td>United Arab Republic</td>
<td>FAO/WHO seminar on industrial canteens</td>
</tr>
<tr>
<td></td>
<td>Inter-regional seminar on the epidemiology, control and prevention of road traffic accidents</td>
</tr>
<tr>
<td></td>
<td>Meeting on vital and health statistics</td>
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<tr>
<td><strong>WESTERN PACIFIC REGION</strong></td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>Inter-regional seminar on filariasis</td>
</tr>
<tr>
<td></td>
<td>Seminar on helminthic infections</td>
</tr>
<tr>
<td></td>
<td>Seminar on leprosy control</td>
</tr>
<tr>
<td></td>
<td>Seminar on nursing studies</td>
</tr>
<tr>
<td>Singapore</td>
<td>Inter-regional seminar on public health programmes in radiation protection</td>
</tr>
<tr>
<td><strong>AFRICAN REGION</strong></td>
<td></td>
</tr>
<tr>
<td>Cameroon</td>
<td>Seminar on medical education</td>
</tr>
<tr>
<td>Kenya</td>
<td>FAO/WHO inter-regional seminar on African trypanosomiasis</td>
</tr>
<tr>
<td>Year/Place</td>
<td>Subject</td>
</tr>
<tr>
<td>-----------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1966 (continued)</td>
<td></td>
</tr>
<tr>
<td><strong>REGION OF THE AMERICAS</strong></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>Courses on the laboratory diagnosis of smallpox</td>
</tr>
<tr>
<td></td>
<td>Seminar on dental education</td>
</tr>
<tr>
<td>El Salvador</td>
<td>Symposium on administration of water supply services</td>
</tr>
<tr>
<td>USA</td>
<td>Inter-regional course on radiological health inspections</td>
</tr>
<tr>
<td></td>
<td>Inter-regional course on the use of computers in human genetics</td>
</tr>
<tr>
<td></td>
<td>Inter-regional seminar on prevention of the reintroduction of malaria</td>
</tr>
<tr>
<td>Venezuela</td>
<td>Seminar for directors of schools of nutrition and dietetics</td>
</tr>
<tr>
<td>Burma, Thailand</td>
<td>Working seminars on medical education</td>
</tr>
<tr>
<td>Ceylon</td>
<td>National courses on radiation protection</td>
</tr>
<tr>
<td></td>
<td>Seminar on the teaching of preventive and social medicine</td>
</tr>
<tr>
<td>India</td>
<td>Conference of State engineers on rural water supplies</td>
</tr>
<tr>
<td></td>
<td>Course on cholera control</td>
</tr>
<tr>
<td></td>
<td>FAO/WHO inter-regional seminar on planning and evaluation</td>
</tr>
<tr>
<td></td>
<td>of applied nutrition programmes in Asia and the Far East</td>
</tr>
<tr>
<td></td>
<td>Inter-regional course on cholera control</td>
</tr>
<tr>
<td></td>
<td>Seminar on hospital administration</td>
</tr>
<tr>
<td></td>
<td>Seminar on smallpox eradication</td>
</tr>
<tr>
<td><strong>SOUTH-EAST ASIA REGION</strong></td>
<td></td>
</tr>
<tr>
<td>Austria, Czechoslovakia</td>
<td>Travelling seminar on public health administration</td>
</tr>
<tr>
<td>Belgium</td>
<td>Symposium on collaboration between veterinary services and public health services</td>
</tr>
<tr>
<td>Denmark</td>
<td>Meeting on the early detection and treatment of handicapping defects in children</td>
</tr>
<tr>
<td></td>
<td>Seminar on the efficiency of medical care</td>
</tr>
<tr>
<td>France</td>
<td>Course on the medical and social aspects of the care of the elderly</td>
</tr>
<tr>
<td></td>
<td>Course on the physical therapy of children</td>
</tr>
<tr>
<td>Poland</td>
<td>Symposium on student health services</td>
</tr>
<tr>
<td>Portugal</td>
<td>Symposium on the education of the public health physician in relation to his work in the community</td>
</tr>
<tr>
<td>Sweden</td>
<td>Symposium on the use of electronic computers in health statistics and medical research</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Course for industrial medical officers</td>
</tr>
<tr>
<td></td>
<td>Course at WHO for librarians from countries of the Eastern Mediterranean Region</td>
</tr>
<tr>
<td></td>
<td>Inter-regional study of the incidence of leukaemia in patients treated with radiation for cancer of the cervix uteri</td>
</tr>
<tr>
<td>Year/Place</td>
<td>Subject</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
</tr>
<tr>
<td>1966 (continued)</td>
<td></td>
</tr>
</tbody>
</table>
| Turkey     | Course on cholera bacteriology  
Inter-regional seminar on advanced epidemiological methodology |
| USSR       | Inter-regional travelling seminar on community water supply  
Inter-regional travelling seminar on helminthic diseases  
Inter-regional travelling seminar on nursing  
Inter-regional travelling seminar on the preparation of teachers for medical schools  
Symposium on the control of virus diseases |
| United Kingdom | Conference on the organization of general hospitals  
Meeting on the study of the prevalence of ischaemic heart disease |
| Iran       | Inter-regional symposium on developmental work in community water supply  
Seminar on nursing |
| Kuwait     | Seminar on school health education |
| Lebanon    | Inter-regional course on cholera control |
| Pakistan   | Inter-regional course on cholera |
| United Arab Republic | Inter-regional seminar on cholera control  
Meeting on medical research |
| **EASTERN MEDITERRANEAN REGION** |
| Philippines | Seminar on cholera control  
Seminar on health education  
Seminar on hospital medical records and statistics  
Seminar on integration of health services  
Seminar on training of auxiliary health personnel |
| Tonga      | Course on environmental health in the South Pacific |
| **WESTERN PACIFIC REGION** |
| Uganda     | Inter-regional course in methods and techniques for parasitic disease surveys |
| Upper Volta | Seminar on cerebrospinal meningitis |
| **AFRICAN REGION** |
| Argentina  | Seminar on rabies |
| Argentina, Ecuador, Venezuela | Travelling seminar on leprosy  
Seminar on silicosis |
<p>| <strong>REGION OF THE AMERICAS</strong> |</p>
<table>
<thead>
<tr>
<th>Year/Place</th>
<th>Subject</th>
</tr>
</thead>
</table>
| 1967 (continued) | |}
| Peru | Seminar on teaching of preventive medicine and public health in schools of veterinary medicine |
| USA | WHO/PAHO/International Biological Programme — inter-regional meeting on biology of populations at altitudes |
| **SOUTH-EAST ASIA REGION** | |}
| India | Inter-regional course on cholera control |
| | Inter-regional course on ergonomics |
| | Inter-regional seminar on food-borne diseases and intoxications and food hygiene practice |
| | Inter-regional seminar on water pollution control |
| | Seminar on goitre control |
| | Seminar on health statistics |
| | Seminar on planning, implementation and evaluation of health education |
| Nepal | Course for nursing personnel |
| Thailand | Conference on nursing |
| | Course on leprosy control |
| **EUROPEAN REGION** | |}
| Belgium | Symposium on the teaching of epidemiology in medicine and public health |
| Czechoslovakia | Course on dental public health |
| | Symposium on the health effects of air pollution |
| Denmark | FAO/WHO inter-regional training centre on meat hygiene |
| | Inter-regional course on malacology |
| | Inter-regional course on planning and organization of in-service education programmes in nursing |
| | Meeting on epidemiological study of stomach cancer |
| | Meeting on the undergraduate teaching of basic medical sciences |
| Federal Republic of Germany | Symposium on methods of evaluation of public health programmes |
| France | Conference on the health aspects of regional socio-economic development |
| | Course for coding instructors |
| | Inter-regional course on immunofluorescent techniques |
| | Inter-regional seminar on psychiatric diagnosis, classification and statistics |
| Italy | Symposium on human factors in road accidents |
| Netherlands | Seminar on rehabilitation of patients with cardiovascular diseases |
1967 (continued)

**Year/Place**

**Poland**
- Symposium on pneumoconiosis
- Travelling seminar on psychiatric hospital care and rehabilitation

**Poland, United Kingdom**
- Inter-regional meeting on the genetics of primitive groups
- Inter-regional meeting on routine surveillance for radionuclides in air and water
- Inter-regional seminar on integration of community water supplies into planning for economic development

**Switzerland**
- Inter-regional conference on international co-operation in the prevention of cholera

**Turkey**
- Inter-regional seminar on air pollution control
- Inter-regional seminar on organization of mental health services
- Inter-regional travelling seminar on leishmaniasis
- Inter-regional travelling seminar on plague
- Inter-regional travelling seminar on the organization of medical care
- Inter-regional travelling seminar on the training and utilization of medical assistants (feldshers)
- Seminar on the organization of resuscitation and casualty services

**United Kingdom**
- Course for coding instructors
- Course on coronary intensive care
- Course on the medical and social aspects of the care of the elderly
- Inter-regional seminar on organization and management of laboratory services

**Yugoslavia**
- Inter-regional course on biological standardization

**Eastern Mediterranean Region**

**Ethiopia**
- Inter-regional conference on global impacts of applied microbiology

**Iraq**
- Meeting on medical education

**United Arab Republic**
- Meeting on health education

**Western Pacific Region**

**China (Taiwan), Malaysia, Philippines, Republic of Korea, Republic of Viet-Nam**
- Travelling seminar on paediatric education
- ILO/WHO seminar on occupational health
- Inter-regional conference of directors of schools of public health
- Seminar on international quarantine
- Seminar on health planning in urban development
### Annex 16

**NUMBERS AND DISTRIBUTION OF STAFF, 1957 AND 1967**

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of staff at 31 December</th>
<th>Location</th>
<th>Number of staff at 31 December</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1957</td>
<td>1967</td>
<td>South-East Asia Region</td>
</tr>
<tr>
<td>Headquarters 1</td>
<td></td>
<td></td>
<td>Regional office (including regional advisers):</td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>257</td>
<td>433</td>
<td>Internationally recruited</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>244</td>
<td>655</td>
<td>Locally recruited</td>
</tr>
<tr>
<td>African Region 2</td>
<td></td>
<td></td>
<td>WHO representatives' offices:</td>
</tr>
<tr>
<td>Regional office (including regional advisers):</td>
<td></td>
<td></td>
<td>Internationally recruited</td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>15</td>
<td>51</td>
<td>Locally recruited</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>45</td>
<td>193</td>
<td>Field staff:</td>
</tr>
<tr>
<td>Field staff:</td>
<td></td>
<td></td>
<td>Internationally recruited</td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>54</td>
<td>297</td>
<td>Locally recruited</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Region of the Americas</td>
<td></td>
<td></td>
<td>WHO representatives' offices:</td>
</tr>
<tr>
<td>Regional office (including regional advisers):</td>
<td></td>
<td></td>
<td>Internationally recruited</td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>27</td>
<td>35</td>
<td>Locally recruited</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>34</td>
<td>47</td>
<td>Field staff:</td>
</tr>
<tr>
<td>Zone offices:</td>
<td></td>
<td></td>
<td>Internationally recruited</td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>1</td>
<td>9</td>
<td>Locally recruited</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field staff:</td>
<td></td>
<td></td>
<td>Internationally recruited</td>
</tr>
<tr>
<td>Internationally recruited</td>
<td>1</td>
<td>9</td>
<td>Locally recruited</td>
</tr>
<tr>
<td>Locally recruited</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1 Including staff on loan to WHO or on leave without pay. Not including short-term consultants.
2 Including the staff of liaison offices with the United Nations and related agencies; rotational administration and finance staff; staff seconded to other organizations.
3 Including agents in the Democratic Republic of the Congo.
4 Not including staff financed exclusively from PAHO funds.

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### ANNEX 16

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of staff at 31 December</th>
<th>Location</th>
<th>Number of staff at 31 December</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Eastern Mediterranean Region</strong></td>
<td></td>
<td><strong>WHO representatives' offices:</strong></td>
<td></td>
</tr>
<tr>
<td>Regional office (including regional advisers):</td>
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<tr>
<td>Internationally recruited . . .</td>
<td>25 42</td>
<td>Locally recruited . . . . . . .</td>
<td>15 16</td>
</tr>
<tr>
<td>Locally recruited . . . . . .</td>
<td>61 101</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WHO representatives' offices:</td>
<td></td>
<td>Internationally recruited . . .</td>
<td>4</td>
</tr>
<tr>
<td>Internationally recruited . . .</td>
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<tr>
<td>Locally recruited . . . . . .</td>
<td>— 17</td>
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<td></td>
</tr>
<tr>
<td>Field staff:</td>
<td></td>
<td>Internationally recruited . . .</td>
<td>59 111</td>
</tr>
<tr>
<td>Internationally recruited . . .</td>
<td>115 190</td>
<td>Locally recruited . . . . . . .</td>
<td>—</td>
</tr>
<tr>
<td>Locally recruited . . . . . .</td>
<td>1 7</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Western Pacific Region</strong></td>
<td></td>
<td>Internationally recruited . . .</td>
<td>15 73</td>
</tr>
<tr>
<td>Regional office (including regional advisers):</td>
<td></td>
<td>Locally recruited . . . . . .</td>
<td>— 2</td>
</tr>
<tr>
<td>Internationally recruited . . .</td>
<td>21 35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Locally recruited . . . . . .</td>
<td>50 73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Sources of Funds

<table>
<thead>
<tr>
<th>Sources of Funds</th>
<th>Number of staff at 31 December</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1957</td>
</tr>
<tr>
<td>Regular budget</td>
<td>1021</td>
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<tr>
<td>United Nations Development Programme 1</td>
<td>450</td>
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<tr>
<td>Voluntary Fund for Health Promotion</td>
<td>—</td>
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<tr>
<td>Funds-in-trust and reimbursable funds</td>
<td>—</td>
</tr>
<tr>
<td>International Agency for Research on Cancer</td>
<td>—</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1471*</td>
</tr>
</tbody>
</table>

---

1 In 1957, the Expanded Programme of Technical Assistance.

* Not including staff on secondment or leave without pay (10 in 1957 and 48 in 1967).
<table>
<thead>
<tr>
<th>INCOME</th>
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* The loans granted by the Swiss Federal Government and the Republic and Canton of Geneva towards the costs of the headquarters building are not included in this statement. As at the end of 1967, they amounted to $8 912 037.
** Deficits in the regular budget were covered by advances from the Working Capital Fund.
## EXPENDITURE, 1958-1967

**US dollars**

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ABBREVIATIONS

ACC — Administrative Committee on Co-ordination
CCTA — Commission for Technical Co-operation in Africa
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
INCAP — Institute of Nutrition of Central America and Panama
ITU — International Telecommunication Union
PAHO — Pan American Health Organization
PASB — Pan American Sanitary Bureau
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
WMO — World Meteorological Organization