committee, have been presented to the Third Assembly, but at the time of writing it is not permissible to do more than refer to these in general terms. It can be said that on the one hand they point the way to removal of serious obstacles which have hitherto prevented valid international comparisons of foetal and neonatal death rates and of survival and recovery rates of cancer patients; and, on the other hand, they refer a number of problems on which statistical investigations are needed for the advance of knowledge, and which could be done in certain countries, to National Committees (or equivalent advisory committees) for Health Statistics.

It was seen clearly at the International Conference for Revision of the Classification of Diseases at Paris in 1948 that if studies of a statistical nature such as these were to be started in countries able to do them, for the benefit of all countries, some kind of national machinery for that purpose would need to be set up in most instances. A number of countries have already established National Committees for Health Statistics with this in view, and in others Advisory Committees on Medical Statistics have been appointed, consisting of specialists in medicine, surgery, obstetrics, paediatrics, pathology, psychiatry, public health, medical statistics, and other subjects. Research on such problems as birth weight in relation to the gestation period, classification of operative procedures, and the follow-up of cancer patients can be planned and supervised by such committees acting singly or in co-operation with those in other countries, the function of W.H.O. being to suggest the lines of work and prevent duplication of effort.

Most of this work concerns countries with fairly well developed health and statistical administrations, but the Expert Committee on Health Statistics has also suggested that W.H.O. should foster the building up of such medical statistical services as may be practicable in underdeveloped areas, offering expert advice if desired. It has also expressed its opinion that when large-scale projects for reducing the incidence of diseases are embarked upon by W.H.O. the advice of statisticians should be sought during the planning stage.

For all these activities a strong Secretariat for the newly constituted Division of Health Statistics is essential, and temptations to economize at the expense of those unpopular people the statisticians will have to be resisted. Diseases may not be "cured by statistics," and no doubt some have been conquered without much help from them, but it is certain that the great scourges of the present day stand little chance of being eradicated without team-work in which statisticians play their proper part.

A Convention signed last November by the Foreign Ministers of the five Brussels Treaty Powers—Belgium, France, Luxembourg, the Netherlands, and the United Kingdom—lays down that nationals of any of the five countries who are without sufficient means, and who are lawfully residing in the territories of any of them, may benefit under their medical and social legislation. Under the terms of the November Convention repatriation can take place only in certain circumstances. A Supplementary Agreement now signed states that the five will have recourse to repatriation only in exceptional cases, and then only when no humanitarian considerations would deter. Particular attention will be paid to the family ties and close associations which may bind the person concerned to the foreign country where he or she resides. The five have also agreed that repatriation should cover the husband or wife and children of the assisted person.

THE INTERNATIONAL CONTROL OF EPIDEMICS

BY

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In another article in this issue Dr. N. Howard-Jones has ably pointed out that international co-operation in the field of public health originated in successive attempts made by nations to defend themselves against invasion from epidemic diseases.

Such was indeed the only object of the first international health institutions, and the international control of epidemics has remained a fundamental and statutory obligation of all of them—of the Quarantine Board of Egypt, the Office International d'Hygiène Publique, the Health Organization of the League of Nations, and now the World Health Organization—even though the functions of each successive organization were gradually extended to meet the ever-expanding notion of what constitutes international health.

The international control of epidemic diseases demands, first, knowledge of the countries and places, ports in particular, where these diseases actually prevail and from which they are apt to be carried into other countries; secondly, knowledge of the means of propagation of these diseases, and, as a corollary, knowledge of the methods of controlling such propagation; and, finally, international rules for the sanitary control of international traffic.

The first point requires an efficient international epidemiological intelligence service, the second requires a machinery whereby the latest acquisitions of science may be brought into practice in international epidemic control, and the third requires sanitary legislation which is universally applicable to international traffic.

I shall briefly review the present situation as regards each of these items, and particularly their recent developments.

International Epidemiological Intelligence Services

Traditionally, countries have attempted to obtain information of epidemic diseases abroad by means of their consular agents in foreign ports, who sent news of the kind by mail. This system, which is still followed by some nations, is expensive, slow, and unreliable.

Exchange of information by diplomatic channels, as provided for by the early International Sanitary Conventions, was hardly more practical. Only too often the diplomatic representatives sent home the information handed to them by the local health authorities by ordinary mail only, so that infected ships could actually travel faster than the news concerning an epidemic outbreak. Obviously, this system was inadequate to check international transmission of disease. That is why in 1925 the Health Organization of the League of Nations set up an epidemiological station in Singapore, the most important shipping centre in the Orient. Some 180 ports in the countries bordering on the Indian and Western Pacific Oceans volunteered to keep the station informed telegraphically each week of their sanitary situation. The Singapore station in turn broadcast, through a series of wireless stations, the information thus received to health administrations and ships at sea.

One year after this revolutionary initiative the 1926 Sanitary Convention recognized the need for centralized collection and distribution of epidemiological information, and formally entrusted the Office International d'Hygiène

Publique with the task. Also, the use of telegrams was prescribed in the event of the occurrence of first cases of plague, cholera, or yellow fever, or epidemics of smallpox or typhus fever.

The same Convention recognized the need for the distribution of epidemiological intelligence on a regional basis and formally recognized the Pan-American Sanitary Bureau and the Singapore Bureau for the purpose.

Throughout the 'thirties, the "Office" and the League of Nations gradually improved the efficacy of their epidemiological intelligence services; the latter, in particular, developed a network of wireless stations (see map) capable of reaching health authorities of Asia, Europe, and the greater part of Africa, and also ships in the Western Pacific, Indian, and Atlantic Oceans, as well as in the Mediterranean.

Now, after a partial "blackout" during the war, when, for security reasons, some information was withheld from international circulation and Singapore and many of its transmitting stations were under Japanese occupation, progress has been resumed under the aegis of W.H.O.

The Singapore station, reopened by the British military authorities after the liberation of Malaya, was transferred to W.H.O. control in April, 1947. The Alexandria Bureau was later also transferred, when this service of the Arab League, heir to the Quarantine Board of Egypt, became part of the regional system of W.H.O. Naturally the Pan-American Sanitary Bureau has continued to act as a regional epidemiological centre for the Americas, closely linked up with the Geneva Headquarters.

Broadcasting of Information

The Singapore network of broadcasting stations was very soon operating again, governments providing the stations' services free of charge, since epidemiological, like meteorological, information was rightly considered to be a public need and function.

One of the notable improvements of the recent past is the daily broadcast from Geneva of a telegraphic bulletin dealing with the so-called "pestilential" diseases (that is, cholera, plague, yellow fever, smallpox, and typhus, which are the five diseases dealt with in the existing Conventions) and important outbreaks of other diseases in sea and air ports all over the world. Six transmitters deliver this bulletin to Europe and the major part of Africa and America.

National administrations to which the bulletins are addressed are in a position to arrange for automatic telegraphic relay to their interested services, both central and peripheral—that is, in sea and air ports. Thanks to the bulletins, quarantine officers may know when precautionary measures need to be taken against incoming ships or aircraft and also when such measures can safely be dispensed with—with resultant economy in operation of port health services.

An epidemiological code is now being developed, as a successor to the three editions of the League of Nations' AA code, to facilitate and cheapen international transmission of detailed epidemiological information. The code will provide symbols not only to cover many technical phrases but also to designate the administrative divisions and subdivisions of all countries. By means of grid maps it will indicate the location of outbreaks in places not marked on ordinary maps.

W.H.O. Expert Committee on International Epidemiology and Quarantine.—Meeting on December 5-14, 1949. Left to right: Dr. F. de Tavel (I.C.A.O.), Mr. P. de Bellaigue (U.N.), Dr. G. H. de Paula Souza (Brazil), Dr. M. Gaud (France), Dr. K. C. K. E. Raja (India), Dr. R. Dujarric de la Rivière (France), Dr. F. L. Soper (U.S.A.).

The wireless bulletins are regularly confirmed and complemented by weekly publications issued in Geneva (*Weekly Epidemiological Record*), in Singapore (*Weekly Fasciculus*), in Alexandria, and in Washington. These are sent, very largely by air mail, to health administrations in the various parts of the world. They contain, in addition to information on pestilential diseases, notes on major outbreaks of other communicable diseases, as well

as details of vaccination requirements and quarantine measures imposed and withdrawn by the different countries. The latter information can be of considerable value, both to port health officers and to maritime and air transport companies whose passengers are affected by such measures.

In addition to the information relating to pestilential diseases received and distributed in accordance with the provisions of the International Sanitary Conventions, W.H.O. receives information on the prevalence of communicable diseases in general and on vital statistics concerning countries and a considerable number of large cities throughout the world. This information is systematically abstracted and published in the monthly *Epidemiological and Vital Statistics Report*, which contains also articles describing the recent distribution and trends of the most important infectious diseases. The *Report* may be regarded as a summary of State and municipal epidemiological and statistical periodicals issued in the various countries. Its figures are eventually checked and completed for publication in a volume of *Annual Epidemiological and Vital*

Statistics, which constitutes a reference work of value to epidemiologists and students of public health.

International Sanitary Legislation

In his paper on the Origins of International Health Work, Dr. Howard-Jones has shown that the International Sanitary Conventions which regulate the sanitary measures applicable to international traffic have come into being on account of a series of circumstances affecting certain groups of countries. As instances may be cited the danger of yellow fever in the Americas, the fear of the spread of Asiatic cholera into Europe, and the risk of importing plague into Egypt from the ports of the Eastern Mediterranean. Naturally, these Conventions were neither signed nor applied by all countries. Sanitary Conventions on maritime traffic were signed in 1912, 1924, 1926, and

efficient methods of disinsection of aircraft and even ships.

The Expert Committee on International Epidemiology and Quarantine, which is the committee of the Organization primarily entrusted with this revision and modernization of the existing Conventions, reviewed in 1948 the philosophy underlying these Conventions and laid down principles, later adopted by the Second World Health Assembly, which are to govern the future international sanitary legislation. This committee has as chairman Dr. M. T. Morgan, who brings to it the benefit of his experience acquired as President of the Permanent Committee of the Office International d'Hygiène Publique.

It is perhaps interesting to note that one of the most important of the above-mentioned principles is that countries should not rely entirely on measures taken at

Epidemiological Intelligence.—Wireless stations transmitting the epidemiological bulletins of W.H.O. The station at Alexandria is not shown.

1944, and on aerial navigation in 1933 and 1944, and each Convention is adhered to by a varying number of countries. The present situation as regards international sanitary legislation is therefore exceedingly complex.

The need for unification, simplification, and modernization of such legislation has been acutely felt, and in consequence the revision and consolidation of the existing International Sanitary Conventions was a task assumed by W.H.O. at the very beginning of its existence under its Interim Commission. The work, begun in 1947, is still progressing. Groups of experts have been constituted on cholera, plague, smallpox, typhus, and yellow fever, and their advice obtained on the measures which, in the light of modern knowledge of the epidemiology and methods of control of these diseases, should be applied to international traffic. Thus the experts recommended that, as an international sanitary measure, vaccination against plague and typhus should be replaced by the simpler method of disinsection with D.D.T. of travellers coming from infected areas into a "clean" country. The W.H.O. Expert Committee on Insecticides was consulted about the most

their frontiers to prevent the entry of epidemic diseases, but that they should endeavour to make themselves "non-receptive" to such diseases by internal action, whether directed against the insect vectors of disease, towards the purification of water supplies, or towards mass immunization of the population. Much has already been done along these lines in various parts of the world. *Aedes aegypti* has been eliminated from a number of areas in South America, as a protection against yellow fever. In Western Europe and North America the provision of pure water supplies has meant the virtual extermination of the body louse, with resultant freedom from typhus during the last hundred years. It has also eliminated cholera from the same area. The fact that they possessed a pure water supply similarly protected the large cities of Egypt during the 1947 cholera epidemic. Systematic vaccination and revaccination against smallpox has proved the most effective means of eliminating the disease from many countries and of combating their reinfection. Vaccination has also proved the optimum method of protecting millions of South Americans and Africans against jungle yellow fever. In

this connexion may be cited the experience of French West Africa and French Equatorial Africa, where over twenty million people have been vaccinated, by the scarification method, simultaneously against yellow fever and smallpox.

New Regulations

In December, 1949, the Expert Committee on International Epidemiology and Quarantine prepared draft International Sanitary Regulations which, after careful revision by legal experts, are now being submitted to governments for observations, prior to discussion and eventual adoption at the Fourth World Health Assembly in 1951. These Regulations, made under the terms of Article 21 of the W.H.O. Constitution, will within a few months of their adoption by the World Health Assembly become applicable to the territories of all States members of W.H.O., unless formally rejected in whole or in part within a given time. This procedure is thus a distinct improvement over that required in the case of the diplomatic conventions of the past. Moreover, alterations to the Regulations that may be needed to adapt international quarantine practice to new scientific discoveries may be effected by mere decision of the Assembly, without the necessity for calling a special international conference to establish a new convention and for awaiting ratification by some 60 or 70 parliaments.

It is expected that within a few years the Regulations will be supplemented by a series of technical annexes outlining the methods by which certain provisions of the Regulations may be most efficiently implemented. The annexes would cover such subjects as methods for disinsection of aircraft, diagnostic methods for certain pestilential diseases (cholera, for instance), vaccine standards, and vaccination procedures.

Later on, further Regulations may be drawn up concerning communicable diseases other than the classical five pestilential diseases, if and when new discoveries make it possible to prevent, by international sanitary measures, their transmission from country to country. The time for such extension has not come, however. For instance, in the present state of our knowledge it is not possible to conceive international sanitary legislation, destined to prevent the spread of influenza or poliomyelitis across frontiers, which would not interfere with international traffic in a manner out of all proportion to the results that might reasonably be expected.

When the new Sanitary Regulations come into force they will be administered by the Sanitary Conventions and Quarantine Section of the W.H.O. Secretariat, which is now responsible for the administration of the existing Sanitary Conventions. This section is headed by Dr. George Stuart, who played an important part in the 1944 Revision of the International Sanitary Conventions under Unrra. The section not only receives and issues telegraphic "notifications" on outbreaks of pestilential diseases and prepares the daily Geneva radio-bulletin mentioned above, but also settles, wherever possible, differences arising between countries concerning the conformity or otherwise of quarantine measures and requirements with the provisions of the Conventions. The few disputes which cannot be informally settled in this way are submitted to the decision of the Expert Committee on International Epidemiology and Quarantine.

International Co-operation in Research on Communicable Diseases

As has been shown above, W.H.O. has convened a series of expert groups and committees to assist the Organization in its statutory obligations connected with the International

Sanitary Conventions and their replacement by W.H.O. Regulations. This, however, is only one aspect of the international co-operation sponsored by W.H.O. in regard to the control of communicable diseases.

Not all countries possess first-class experts in every field, and an important function of W.H.O. is to furnish expert advice to countries in need of it. Sometimes the information required may be given by a specialist on the staff of the W.H.O. Secretariat; in other cases a specialist, brought from a country where the required knowledge is available, may be sent by W.H.O. as a consultant to the country in need. There are, however, many instances in which the concerted opinion of a number of experts with varied technical and national backgrounds is essential to furnish the advice required. Often, also, such advice may be of direct use to several countries where similar conditions prevail in respect of a particular disease. In such cases the policy of W.H.O. is to convene an expert committee on the subject, and the technical information and recommendations contained in its report are made available to all countries.

If the knowledge assembled by the above means does not prove sufficient to solve the problem submitted to an expert committee, the committee may establish plans for further research, its members undertaking to carry out in their respective institutes or administrations the experiments required, following protocols agreed upon in common. When necessary, recommendations are made for complementary or parallel investigations to be carried out in other specialized institutions. After a year or so the expert committee is again convened; it reviews the results obtained from the research undertaken, and draws conclusions therefrom. Sometimes several series of experiments are required before the problem is finally solved.

Co-ordinated research of this kind was carried out for some years under the aegis of the Health Organization of the League of Nations. It proved then, as it is proving now, of inestimable value in accelerating scientific progress and in stimulating early and widespread application of the new knowledge obtained.

It is perhaps worth while to point out that the cost to W.H.O. of such co-ordinated research is comparatively small, being in most cases limited to the travelling expenses of the experts convened. The cost of the experiments undertaken is borne by the national institutions in which they are carried out, these institutions being, however, amply rewarded by the benefit they derive from the results obtained by others similarly engaged.

The secretariat of expert committees falls to the medical officers and other scientific staff of W.H.O. Their work is to collect information, prepare bibliographies and other documents for the committees, and assist the latter in preparing their reports. The Department of Advisory Services, responsible for work against malaria, tuberculosis, and venereal diseases, supplies the secretaries of the expert committees on these subjects. Secretaries for the expert committees on other communicable diseases are drawn from the Section of Epidemiological Studies of the Division of Epidemiology. Committees on cholera, plague, smallpox, yellow fever, typhus and other rickettsial diseases, bilharziasis, trachoma, and rabies have already been convened, some of them to several sessions, during the years 1947 to 1950, and a consultation of experts on brucellosis is planned for later in 1950. In 1949 a small group of specialists met to give expert guidance on immunization against the more common communicable diseases of childhood.

In 1949 the Second World Health Assembly decided that expert committees should be set up to cover additional

diseases, including influenza, leprosy, poliomyelitis, filariasis (onchocerciasis), and leishmaniasis. Only lack of funds and personnel has so far prevented active work being undertaken in respect of these latter diseases.

It must be mentioned that the convening of several of the expert groups has been made possible only through a grant specially provided by the Office International d'Hygiène Publique, whose functions have been officially transferred to W.H.O.

Whilst the research and study aspects of W.H.O.'s work against communicable diseases are, as mentioned above, the responsibility of the Division of Epidemiology, the sending of consultants to a particular country is the administrative responsibility of the Department of Advisory Services in Geneva and of the Regional Offices of the Organization. The number of instances in which such help has been extended to national administrations is already considerable; chiefly it has been in connexion with the most important social diseases—malaria, tuberculosis, and venereal diseases—but W.H.O. consultants have already lent their aid in controlling certain of the epidemic diseases (typhus in Afghanistan and in some of the South American countries, poliomyelitis in India and Chile, filariasis in Ceylon, to mention a few examples). It is unfortunately beyond the scope of this article to go into details of such action, of which some echoes are to be found in the W.H.O. *Chronicle*.

Total Eradication of Some Epidemic Diseases

An attempt has been made in the preceding paragraphs to summarize the role of W.H.O. in the international control of epidemics. In conclusion, I may perhaps mention what is one of the basic policies of W.H.O. in connexion with such control. This is the principle, advanced by several Expert Committees and endorsed by the Committee on Epidemiology and Quarantine and the World Health Assembly, that total eradication of certain epidemic diseases can be achieved and must be attempted.

This is no idle fantasy or boastful anticipation; diseases which have been real scourges in the past have now been eliminated from whole continents, and the process is still going on, so to speak, under our eyes. Most striking instances are afforded by smallpox and yellow fever, and, in connexion with the latter, the eradication of *Aedes aegypti* from South American cities is an achievement of enormous significance. Eradication of anopheline species in Brazil, Egypt, Sardinia, and Cyprus opens up hopeful vistas in regard to possible victory over malaria. Where used systematically the new insecticides with residual action are proving effective against a wide range of insect-borne diseases, and their action is sometimes accompanied by side-effects as unexpected as they are beneficial. Cholera is gradually being relegated to the areas, comparatively limited in extent, where it is truly endemic. The cholera endemic zones have recently been delineated, and studies are now being made, under the aegis of W.H.O. and the Indian Research Fund Association, to determine the most effective means of ridding them permanently of the infection. Further international help may be required, but it will be a sound investment as compared with the maintenance by every country of a permanent organization against the invasion of cholera.

From the above it will be seen that W.H.O. has an important part to play in the international control of epidemic diseases, not only in rendering international barriers against them more effective, but in helping countries to stamp them out of their endemic foci, wherever possible, or in stimulating progress in the methods for their control.

THE WORLD HEALTH ORGANIZATION LIBRARY

BY

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The recognition of library service as an essential adjunct to the technical work of the World Health Organization and its Secretariat resulted in arrangements being made as early in its history as December, 1946, to deal with urgent library needs and requirements. During the third session of the Interim Commission, held in Geneva, March 21 to April 17, 1947, a thorough discussion took place on the nature and scope of the library and its relation to the Library of the Office International d'Hygiène Publique in Paris and to the Library of the League of Nations Health Organization, which was incorporated in the United Nations Library, Geneva.

Following negotiations with the Office International d'Hygiène Publique, the major portion of the library of that organization was moved in 1948 to Geneva and merged with the W.H.O. Library, thereby enriching W.H.O. with over 15,000 valuable journals and documents. A request had been made for a transfer to W.H.O. of the Health and Medical sections (the former Health Organization Library) of the United Nations Library. Because of the opposition to the idea of dispersal of the United Nations Library this transfer was not effected, but the policy of a long-term loan of material, as wanted, was adopted. Since the United Nations Library and W.H.O. Library share the same building, access to the material is easy, and co-operation between the two libraries is most satisfactory. The proximity to the large and well-stocked U.N. Library is a particular boon, especially in the field of bibliographic and reference works. Not many medical libraries have such ready access to the complete series of the *U.S. Catalogue and Cumulative Book Index*, the *British Museum Catalogue*, the *English Catalogue of Books*, the *Deutsche National-Bibliographie*, and the French, Italian, and Spanish bibliographic sources.

The basis of the W.H.O. collection has been formed by careful selection and purchase of books and journals covering W.H.O. fields of interest. The collection is particularly good in those subjects known as the five pestilential or "treaty" diseases—namely, plague, cholera, typhus, smallpox, and yellow fever. Recommendations for purchase are received from all members of the Secretariat. Conversely, the library draws to the attention of the specialists new publications in their particular fields. In order to do this current journals are scanned for book reviews, and publishers' catalogues and various current bibliographic sources from many countries are examined. When the Organization develops new fields of activity the co-operation of the appropriate section is sought at once, with a view to obtaining the necessary documentary material. Recently, basic collections have been acquired in the fields of health education, mental health, and nursing.

The library now numbers 5,000 catalogued books and about 2,000 bound periodicals, in addition to the 15,000 volumes received from the Office International d'Hygiène Publique. These figures do not include official documents, reports, and reprints. Of the 965 current journals received regularly, 785 are acquired through exchange with W.H.O. publications and 180 by subscription. Every effort is made to keep up to date the acquisition of annual reports of