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SMALLPOX ERADICATION PROGRAMME

Report by the Director-General

1. INTRODUCTION

In 1958, noting "that smallpox still remained a very widespread and dangerous, infectious disease, and that in many regions of the world there existed endemic foci constituting a permanent threat of its propagation and menacing life and health", the Eleventh World Health Assembly requested the Director-General to carry out an investigation of the means of ensuring world-wide eradication of the disease. In 1959, the Twelfth World Health Assembly, in resolution WHA12.54, requested the Director-General "to collect from the countries concerned information on the organization and progress of their respective eradication programmes and to report further to the Thirteenth World Health Assembly". In May 1960, the Thirteenth World Health Assembly, in resolution WHA13.43, again requested the Director-General "to report to the Fourteenth World Health Assembly on the progress of eradication programmes in all countries concerned". Thus, for three consecutive years the World Health Assembly has given high priority to the global eradication of smallpox. The policy of the Organization, in accordance with the resolutions, continues to be to co-ordinate and to assist eradication programmes in all the Member States concerned. How far those countries have complied with the resolution, and how much has the Organization contributed in assisting the global eradication programmes, are the two questions which this report has endeavoured to answer.

On 4 August 1960 the Director-General sent a letter to the Member States asking for information with regard to the smallpox eradication programmes, either in operation or planned, which would fall within the purview of their governments. Thirty-five replies have been received (up to 1 December 1960) and the information

provided by the countries, as well as information received from the regional offices, is presented in this report, which reflects the smallpox situation as available for the first nine months of 1960. There are still, however, a number of countries for which no complete information is available.

2. THE PROBLEM

According to provisional notifications, about 43 000 cases of smallpox were reported officially during the first nine months of 1960 throughout the world (outside mainland China) against not less than 68 000 in 1959 and 264 000 in 1958 for the corresponding periods. This improvement in the world incidence is noted in the South-East Asian and Eastern Mediterranean Regions where the fall of the incidence in India and Pakistan has again been reported for the second successive year after the unusually high levels of 1958. However, smallpox incidence has not decreased outside India and Pakistan; the African Region has recorded 12 167 cases against 8663 for the corresponding period in 1959 and 10 788 in 1958.

An effective campaign should be based on the following requirements:

(a) an adequate organization; (b) the training of the medical and paramedical personnel for the campaign and the provision of their transportation; (c) the availability of the appropriate types of vaccine in sufficient quantities to cover the entire population of the country; (d) the promotion of a nation-wide appeal to run side by side with health education and propaganda in order to obtain the full co-operation of the people; and (e) to ensure that the administrative and technical structure of the health services adequately allows for the follow-up control and surveillance measures after the eradication campaign. These requirements are not of easy avail in a number of countries and very often one or more factors still form a serious obstacle in the path of eradication. Reports received on the activities of the health services of various Member States indicate, however, that many of them have gradually overcome those difficulties and are steadily moving ahead with their eradication programmes. In spite of the many health problems with which most of those countries have to deal, the determination of their health services and the

comprehensive support given to them by the administration and finance authorities, with the assistance given by the Organization, have made it possible for many countries to plan and implement eradication campaigns.

Emphasizing the importance of establishing a basic administrative structure for an eradication programme, the Organization stressed the necessity of making available a Smallpox Eradication Service to be integrated with the existing structure of the public health services of countries embarking on eradication programmes. The directing cadre in eradication campaigns must normally be drawn from the country's own nationals; however, due to the serious shortage of medical and paramedical personnel in their health services, a number of countries still find it difficult to plan and organize eradication programmes. The Organization is continuing to assist those health services with short-term consultants in order to help in planning and organizing their campaigns, and has also provided technical advice on the production of freeze-dried smallpox vaccine and awarded fellowships to professional and technical personnel of vaccine-producing laboratories; it has also assisted some countries in obtaining vaccine ready for use.

Eradication programmes are primarily a national responsibility; the Organization will continue to provide all assistance within its financial resources.

3. INTERNATIONAL ASPECTS

In 1951 the total registered cases of smallpox throughout the world numbered 489 000 but from 1952 to 1957 less than 150 000 cases each year were notified. In 1958 the incidence of the disease in India and East Pakistan (218 000 cases) brought the world total up to 242 000 (not including mainland China); in 1959 the number fell again to about 74 000 of which 50 000 cases occurred in the two above-mentioned countries. Smallpox, more than any other quarantinable disease, is liable to be imported and in particular by international air traffic into countries which are normally free from the disease. In 1959 and in 1960 (up to 1 December) the disease was introduced into: Aden Colony (six times), Aden Protectorate (three times), Chile, UAR (province of Egypt) (twice), Gambia, Ghana, Malaya, New Zealand (one

suspected case by ship, not confirmed), Portuguese India, Sudan, USSR (twice), Uruguay, Indonesia, Ceylon, Iran, Pakistan, United Kingdom (clinically diagnosed), East Berlin and Northern Rhodesia.

Some 132 countries and territories require all arriving travellers to possess a valid international smallpox vaccination certificate; an additional 33 have a similar requirement for those coming from smallpox-infected areas. Seven countries in which smallpox is prevalent, including India, require departing travellers to possess such a certificate.

4. EFFORTS TOWARDS ERADICATION

(1) Global effort

The world-wide effort to eradicate smallpox has taken, in 1960, another step forward. In the endemic areas eradication programmes have been implemented in a number of countries. India and Pakistan, two of the most highly endemic countries in the world, have already taken effective steps in that respect, and the eradication of the disease from the subcontinent when completed will be a turning point in the history of smallpox in Asia. Other Member States are now planning eradication schemes, whilst some are still in the stage of intensification of their control measures, pending eradication. In fact, most countries where smallpox is still present are now taking measures aiming at the eradication target. These measures vary, however, according to prevailing local conditions of both administrative and technical nature which may affect the adequate planning and the proper implementation of an eradication programme. A mass vaccination campaign when inadequately organized will eliminate some but not all endemic foci in a country. Also, inoculating the people with a vaccine of doubtful potency, a condition often met with in remote areas and under unfavourable climatic conditions, will, without doubt, hamper efforts to achieve eradication.

Aware of conditions likely to be encountered in endemic areas, the Organization and its regional offices have provided the services of consultants to advise Member

governments on the organization and operation of eradication programmes. WHO has also awarded fellowships to the technical staff of laboratories and assisted a number of countries in the production of freeze-dried vaccine.

An Inter-Regional Smallpox Conference for the countries in Asia and a training course in freeze-dried vaccine production for the countries in Africa were sponsored and organized by the Organization in 1960.

The efforts which were made in the last two years to plan and co-ordinate effective eradication schemes are now showing signs of fruitfulness. The recruitment and training of personnel, the acquirement of essential equipment and transportation, and in general the whole technical and administrative organization needed to carry out an effective eradication campaign are difficulties which are gradually being overcome largely through national efforts. The generous gifts of vaccine by a number of Member States has been of much help to the Organization in assisting some countries with their eradication programmes.

(ii) Regional efforts

(a) AFRICAN REGION

In the African Region about 12 000 cases were provisionally recorded. The figures for 1960 (nine months period) whilst showing a drop in the incidence in Dahomey in the Upper Volta, Kenya, Southern Rhodesia, Ruanda-Urundi and Sierra Leone, the following countries and territories reported a higher incidence against the 1959 figures: Ivory Coast, Niger, Sudan, Nigeria, Nyasaland, Northern Rhodesia, Tanganyika, Togolese Republic and Uganda.

Following the 1959 Regional Conference on smallpox Eradication, the Organization sponsored in November 1960 a freeze-dried lymph production training course at Lagos, Nigeria, which was attended by eight participants from various countries in the African Region, as well as the Eastern Mediterranean Region. Lectures, demonstrations and practical work formed the programme of the course and the participants were enabled to study and practise the technique in freeze-dried vaccine production. It was recognized that for most of the African countries the use of a thermostable dried vaccine was necessary in order to ensure an adequate immunization programme in many sectors of the countries involved.

(b) THE AMERICAS

Some 2000 cases were recorded during the same period in the Americas, where the main foci of smallpox are still in Ecuador and Brazil. It should be noted that Colombia, which formerly had a high incidence, reported only 130 cases - a reduction undoubtedly due to the mass vaccination campaign conducted last year.

Endemic smallpox has been eliminated from North and Central America and campaigns have achieved satisfactory results in six countries of South America; intensification of efforts in another four South American countries with residual foci could rapidly eliminate smallpox from the Western Hemisphere. However, smallpox continues to be a serious public health problem in the Continent's Southern Hemisphere, as is indicated by its presence in a number of countries, some of which show high rates of incidence. In some countries such as Mexico, Peru and Venezuela, no cases of the disease have been reported in recent years. In Chile an autochthonous case occurred in 1959, as a result of introduced infection. Other countries such as Bolivia, Colombia and Paraguay have had the number of reported cases decreasing. In 1959 the disease was not reported in Paraguay. Such progress is due to the intensive campaigns carried out by those countries.

In 1959 Ecuador and Brazil reported the highest figures for smallpox. The disease is endemic in both countries, with frequent outbreaks in different geographical areas.

The Organization (PASEB/Regional Office for the Americas) has continued to promote and to co-operate with Member governments in the planning of smallpox eradication programmes through vaccination campaigns that will eventually be incorporated in the general structure of national public health services. Technical advice has been provided in the production of smallpox vaccine, and equipment was supplied to prepare dried vaccine. In other cases assistance has been given in obtaining prepared vaccine ready for use, services were provided of consultants specialized in conducting vaccination campaigns, and fellowships were awarded for the training of national personnel.

(c) EASTERN MEDITERRANEAN REGION

Countries and territories in the Eastern Mediterranean Region which show a drop in the 1960 reported incidence are: Iraq, Pakistan (both East and West), Saudi Arabia and Sudan.

The Regional Smallpox Survey Team continued its work during the first half of 1960 and has completed the survey of Pakistan. The problem of smallpox endemicity in this Region has certain characteristic features that have to be carefully considered and provided for before any attempt is made to eradicate the disease. Weak and often absent quarantine land barriers, annual religious gatherings, nomadism, difficult communications, unfavourable climatic conditions exposing the lymph to loss of potency, uneasy response of the public to vaccination activities, and the absence of well-developed health services in nearly half of the countries where the disease is endemic, are the main technical and administrative difficulties encountered when planning eradication programmes.

The Organization continued to assist in the planning of mass vaccination campaigns in the Region. The production of freeze-dried smallpox vaccine, to replace or to supplement the wet vaccine, was given special attention and through WHO assistance a number of national laboratories are now in the experimental stage of freeze-dried vaccine production.

It is hoped that in 1961, Ethiopia, Sudan and Pakistan will be producing freeze-dried vaccine to meet their own needs for their eradication campaigns.

(d) EUROPEAN REGION

Smallpox is not a public health problem in Europe. The disease is not present in any country, although occasionally imported cases appear causing mild outbreaks which are usually brought under control by vaccination.

(e) SOUTH-EAST ASIA REGION

In the South-East Asia Region the total number of cases decreased in Afghanistan, Burma, India and Thailand, and an increase in the incidence is to be noted in Indonesia.

Countries in this Region still constitute the most important endemic focus of smallpox in the world. They have all, in fact, given smallpox eradication priority consideration, in spite of their multiple other health problems, and regardless of the efforts which eradication programmes need administratively and their cost to cover large and densely populated areas.

The Organization sponsored an Inter-Regional Smallpox Conference, which was held in New Delhi in November 1960, and was attended by participants from fourteen countries in the South-East Asian, Western Pacific and Eastern Mediterranean Regions. The objective of this Conference was to co-ordinate the efforts towards eradication in the Asian Continent. WHO has continued to assist a number of countries with consultants and has provided assistance to the vaccine centre in Kabul (Afghanistan). WHO/UNICEF-assisted projects for the production of freeze-dried vaccine have been signed with the Governments of India, Indonesia and Thailand, and it is hoped that by the end of 1961 the three countries will be producing the vaccine.

(f) WESTERN PACIFIC REGION

The smallpox problem in this Region continues to be of minor importance. Cambodia, Singapore and the Republic of Viet Nam were free from smallpox during the first nine months of 1960. The Republic of Korea reported two cases and the Federation of Malaya 15 cases during the same period. The Cambodia Government requested WHO assistance in 1959 for the organization of a smallpox eradication programme, among the features of which was to integrate anti-smallpox activities in the WHO-assisted yaws project in three of the country's provinces. The process of combining the campaigns has proved successful.

5. THE SMALLPOX SITUATION IN COUNTRIES (1960)

The distribution of provisional totals of smallpox cases for the nine months' period of 1960 by countries and territories is given in the following Table:

SMALLPOX, 1958-1960 (FOR PERIODS SPECIFIED)

(Countries and territories which have reported
smallpox in the last three years)

	1958 corresponding period to that given for 1960	1959 corresponding period to that given for 1960	1960 Period I to X or 9 months except where indicated
<u>African Region</u>			
Angola 6 months	56	-	-
Basutoland	-	1	-
Bechuanaland	96	3	21
Congo (Leopoldville) Period I to VI	546	587	331
Cameroun Jan-Aug	5	14	-
Central African Republic	-	-	1
Chad	12	15	4
Congo (Brazzaville)	2	-	-
Dahomey	789	973	787
Guinea	596	330	...
		Jan/June	
Ivory Coast Jan-Aug	2 352	591	1 230
Mauritania	16	12	44
Niger	434	908	1 845
Senegal Jan-Aug	187	487	6
Mali	689	678	1 097
Upper Volta	598	*271	125
Gambia	20	3	7
Ghana	141	78	84
Kenya	599	258	102
Liberia
Mozambique	17 B (-M)	- M	8 B
Nigeria	1 656	1 389	3 821
Portuguese Guinea Jan-Aug	29	19	1
Rhodesia-Nyasaland, Fed. of:			
Nyasaland	150	287	427
Northern Rhodesia	187	38	111
Southern Rhodesia	50	106	11
Ruanda-Urundi	25	70	13
Sierra Leone	458	91	12
Tanganyika	897	1 092	1 108
Togolese Republic	18	34	*312
Uganda	367 ₁	248	659
Zanzibar	1	-	-

SMALLPOX, 1958-1960 (FOR PERIODS SPECIFIED)

(Continued)

	1958 corresponding period to that given for 1960	1959 corresponding period to that given for 1960	1960 period I to X or 9 months except where indicated
<u>American Region</u>			
Argentina	13	28	23
Bolivia Jan-June	71	-	-
Brazil	(Jan-Oct) 818 for D.F. & State capitals	(Jan-Oct) about 1700 for D.F. & State capitals	(1/1-15/X) 316 City of Rio de Janeiro only
Chile	-	1 ⁱ	-
Colombia	1 286	685	130
Ecuador	708	1 010	1 842
Paraguay	20	-	35
Uruguay Jan-July	-	-	19
<u>Eastern Mediterranean Region</u>			
Aden, Colony and Protectorate	172 ⁽²⁵¹⁾	12 ⁽⁹¹⁾	22 ⁽¹¹⁾
Ethiopia	523	289	239
French Somaliland	-	51	-
Iran (period I to VII)	283	149	196
Iraq	6	22	-
Kuwait	-	9	-
Muscat and Oman	9	8 ⁽¹¹⁾	-
Pakistan (period I to VII) of which:	45 908	7 187	1 495
East Pakistan	45 036	5 861	937
West Pakistan	872	1 326	558
Qatar	1 ⁱ	1	-
Saudi Arabia	114	97	11
Sudan	34	408	70
United Arab Republic Province of Egypt 27 weeks	3 ⁱ	30	-
Yemen	20	-	-
<u>European Region</u>			
France (Algeria)	13	8	7
Germany, Federal Republic	-	9	-
United Kingdom: England and Wales 10 months	5	1	1 (clinically diagnosed)

SMALLPOX, 1958-1960 (FOR PERIODS SPECIFIED)

(Continued)

	1958 corresponding period to that given for 1960	1959 corresponding period to that given for 1960	1960 period I to X or 9 months except where indicated
<u>South-East Asia Region</u>			
Afghanistan	167	377	68
Burma	1 485	1 478	331
Ceylon (period I to IX)	29	-	-
India	157 255	41 212	24 982
Indonesia	2 751	632	1 483
Portuguese India	96	3	13
Thailand	15	1 461	32
<u>Western Pacific Region</u>			
Cambodia	18	3	-
Korea, Republic of (period I to IX)	6	-	2
Malaya, Federation of	2 (1 ⁱ)	4 ⁱ	15
Singapore	-	10	-
Viet Nam, Republic	11	12	-

I period = 4 weeks

* Approximate data

... Data not available

- Nil

i Imported cases (figures in parenthesis are included in the total)

B Variola major and variola minor

M Variola major

The following summaries show the recent developments in the smallpox situation in countries and territories, as reported by Member States and as supplemented by the information provided by the regional offices:

AFRICAN REGION

Angola

No eradication campaign is planned but an intensification of the vaccination programmes has been in progress up to 1960. Dried vaccine of foreign manufacture and imported into Angola is used in the vaccination campaign.

Basutoland

No campaign for the eradication of smallpox is envisaged as the disease is not a major public health problem in Basutoland. Only one case has been reported since 1951. Vaccinations are carried out at hospital clinics and at some district clinics.

Cameroun

Mass vaccination campaigns are organized by the medical officers in their own areas. In this way the more accessible population has been covered. The medical field unit, in the course of the anti-yaws campaign, has been reaching some of the more remote areas of the country. From May 1959 to May 1960, 99 416 vaccinations were carried out. The number of inspected results of vaccinations amounted to 59 188 with 43 938 positive takes. Approximately one-third of the total number of vaccinations were performed by the medical field units in remote areas in the Southern Cameroun.

Central African Republic

Smallpox has been absent from the Central African Republic since 1954, with the exception of one case reported at the beginning of 1960. The Anti-Epidemics Service of the Ministry of Health and Social Affairs has been conducting regular annual vaccination campaigns during the period 1956 to 1958, when 1 250 936 vaccinations were performed on the population of the Republic, estimated to be 1 135 000 inhabitants.

Gabon Republic

The eradication of smallpox in the Republic of Gabon may be considered as achieved. Vaccination is compulsory and the vaccination campaigns are regularly conducted. No smallpox cases have been reported for over five years.

Gambia

Only two cases of smallpox occurred in the Gambia in 1959 and seven cases were recorded in 1960 (up to 31 October). No smallpox eradication programme is in operation or planned, but routine vaccination and revaccinations are regularly undertaken.

Guinea (Portuguese)

A mass vaccination campaign was initiated in 1959 and is still in progress. In the last ten years 556 smallpox cases were reported.

Kenya

This country has no formal programme in progress but each year a substantial number of the population is vaccinated. During 1959 a total of 1 030 646 doses of vaccine were issued to the medical officers of health and in 1960, up to 30 September, 780 487 doses have been issued. Thus, for the two years 1959 and 1960 approximately two million doses of smallpox vaccine would have been issued in Kenya, whose estimated population is 6 401 445. During the two years, the number of smallpox cases were as follows: 1959 - 315 cases; 1960, up to 30 September - 94 cases. This vaccination programme has been in operation for the last ten years at least and is considered by the authorities to be the most suitable programme for use in a country such as this, where the incidence of the disease is relatively low.

Republic of the Niger

Smallpox is still endemic in the Republic of the Niger and the number of reported annual cases varied from 592 in 1953 to 908 in 1959, and in 1960 1786 cases were reported, with 113 deaths, up to the month of July.

Vaccination against smallpox is systematically carried out in dispensaries, in maternal and child health centres and in schools. To control larger epidemics a four-year eradication plan has been developed, in conjunction with vaccination against yellow fever.

Attending to a population of 2 900 000 inhabitants, the health authorities have intensified the vaccination performances in order to protect the population against the outbreaks generally caused by imported cases crossing lengthy boundaries with adjacent countries where smallpox is still present.

Nigeria

Northern Region: Figures for the reported cases and deaths due to smallpox are shown below:

	<u>1957</u>	<u>1958</u>	<u>1959</u>
Cases	4 733	1 182	1 370
Deaths	552	119	150

In 1959, according to available figures, over 2-1/2 million persons in the Northern Region were vaccinated and in the case of those re-examined, over 75 per cent. of the results were successful.

Eastern Region: There is no smallpox eradication programme as such in this region. Mass vaccination campaigns have been intensified. There is a smallpox control programme which consists mainly of mass vaccination and revaccination of the population at frequent intervals. The intensification of the control scheme has clearly brought about a substantial improvement. Thus, in 1958, out of a population of approximately nine million, there were only 28 cases of smallpox with nil mortality. Any remaining endemic foci are expected to be obliterated by continuous intensive vaccination and revaccination.

Western Region: Widespread vaccination has been undertaken for several years; recent figures of vaccinations performed amongst the population of nearly eight million persons show that in the four years 1956-1959 a total of 6 643 576 were vaccinated in that period. Sporadic cases of smallpox continue to occur, particularly in the region of the international boundary with Dahomey. Here, a special vaccination campaign was begun in November 1959, designed to systematically vaccinate or revaccinate the whole population in the area. The total number of people vaccinated under the special project, since its inception in November 1959 to 5 October 1960 is 470 954. The Government proposes to expand the above project to cover the whole of the Western Region systematically division by division.

Lagos Federal Territory: For all practical purposes smallpox has been eradicated from Lagos. Eighty-five per cent. of the population was vaccinated in 1957 and the routine vaccination of infants, together with annual mass vaccination campaigns, have protected the inhabitants. Only a few isolated cases occurred, which were imported in 1958 and 1959 by the large influx of people. No autochthonous cases were reported in Lagos.

Rhodesia and Nyasaland

An eradication campaign was launched in April 1960 in both Southern and Northern Rhodesia and the total vaccinations performed during the three months of April, May and June were 277 628 and 129 393 respectively for the two territories. The population for Southern Rhodesia (May 1959) was 2 860 000 and for Northern Rhodesia 2 360 000. During the vaccination campaigns the primary vaccinations were controlled showing the following percentage of successful results: 87.7 in Southern Rhodesia and 58.5 in Northern Rhodesia. In Nyasaland a great deal of vaccination is in progress; results are not yet available.

Republic of Senegal

No eradication campaign is envisaged in the Republic of Senegal. In 1952 smallpox reappeared in the Senegal with 449 cases and 17 deaths; the city of Dakar accounted for 115 cases and the two months of April and May showed the period of highest incidence. The number of smallpox cases was maintained up to 1959, varying from 20 cases in 1956 to a maximum of 487 in 1959. During the first half of 1960 only five cases were reported, with no deaths. The regions of Kaolack, Matam, Bakel and Ziguinchor are the areas which have been, for the last five years, the most affected, showing the highest incidence of cases. The Government hopes that during 1960 the residual foci will be reduced. The nomadic elements of the population (Peulhs) are also not easily reached for vaccination. The Senegal, with its scheme of regular vaccinations and mass campaigns claims having protected its inhabitants to a degree by which no major outbreaks or epidemics could occur.

Sierra Leone

Since 1957, when there was a major epidemic of smallpox, vaccination campaigns have been planned to cover the whole country periodically. A health officer is posted in charge of each province: with each health officer is a team of health inspectors and public vaccinators who are responsible for vaccination duties in the province. The following figures indicate the number of persons vaccinated against smallpox during the three year period ended 31 December 1959:

<u>1957</u>	<u>1958</u>	<u>1959</u>
834 644	336 515	256 381

The incidence of the disease has shown a steady decline since 1957; thus, 1957 - 4846 reported cases and 228 deaths, 1958 - 513 cases and three deaths, 1959 - 96 cases, no deaths, and for the first six months of 1960 the total number of reported cases was ten, with one death. Effective measures are also taken at control points along the frontier to ensure that all persons entering into Sierra Leone are vaccinated against smallpox.

Swaziland

An estimated 74 per cent. of the total population has been vaccinated during the past seven years. No smallpox cases have been reported for the past ten years and it is the intention of the medical services to endeavour to maintain or increase the percentage of vaccinated persons.

Tanganyika

Vaccination is carried out as a routine measure in hospitals, dispensaries, health centres and schools. Of recent years it has been necessary to introduce campaigns in certain areas of the territory where epidemics have occurred. These campaigns have met with reasonable success. It is now proposed to carry out a smallpox eradication campaign in the whole territory over a period of two years with WHO and UNICEF assistance. The basis of the scheme is the vaccinating unit, consisting of a vaccinator and a recorder, whose duties are interchangeable. Each such unit is expected to vaccinate an average of 150 persons per day for 300 working days per year. The vaccinating unit will be organized in teams, each composed of

three units with one supervisor, together with a landrover; light motor cycles will also be made available, to enable the teams to reach areas inaccessible to four-wheel transport. Every ten vaccinating teams will be placed under the control of a sanitarian, who would be responsible to the medical officer in charge of the scheme.

Uganda

No eradication programme is in operation or is planned at the moment. Vaccination is carried out as a regular duty of the public health services. In addition to the rural and district medical staff, ten full-time vaccinators are employed and if necessary more could be recruited and trained. Infants, children of pre-school age and smallpox case contacts are vaccinated as a routine procedure by the health services.

Zanzibar

No cases of smallpox have been reported from Zanzibar or Pemba for some considerable time and the question of an eradication campaign does not arise. In Zanzibar town, routine vaccination is carried out at the vaccination centre where those persons who require certificates for travelling purposes or to attend schools are catered for. In 1959, 17 735 vaccinations were performed and from 1 January to 31 October 1960 the figure was 16 982. Corresponding figures for the port health office are 1203 and 1295 respectively, representing vaccinations of port employees and travellers arriving without evidence of having been vaccinated. In the rural areas of Zanzibar a vaccination campaign was carried out in 1959 and 16 640 primary vaccinations and revaccinations were performed. The Government plans to carry out a further campaign in 1961. All children admitted to schools are vaccinated on first attendance and revaccinated after three years. During the current year (1960) 1020 boys and girls attending rural schools have been vaccinated.

In Pemba, apart from the regular vaccination of schoolchildren, all persons proceeding overseas are vaccinated before leaving the island.

THE AMERICAS

Argentina

There were 34 cases of smallpox in 1959 and five during the first half of 1960, located mainly in the northern and central areas of the country. The Ministry of Public Health organized meetings in the Provinces of Salta, Juju and San Juan in order to discuss with the health personnel of those provinces their smallpox eradication campaigns, as a basis for planning the programme on a nation-wide scale. For this purpose, negotiations have been undertaken to extend the agreement between the Government and PASB.

The present production of glycerinated vaccine (about four million doses annually) is sufficient to meet the country's requirements.

Bolivia

From August 1957 to December 1959, 2 758 567 vaccinations were undertaken with the collaboration of the International Co-operation Administration of the United States in a nation-wide programme, with the aim of immunizing a minimum of 80 per cent. of the country's total population. Although the second phase of the programme was only partially completed, a good deal of success was achieved as in 1959 only seven cases of smallpox were reported.

The dried vaccine production laboratory, for which equipment was provided by the Organization (PASB/AMRO), entered the production stage and turned out 543 800 doses of vaccine in 1959.

Brazil

The Government of Brazil has approved a national plan for smallpox eradication and has started activities in the States of Maranhao, Alagoas, Rio de Janeiro, Parana, Rio Grande do Sul, and Goias. The Organization (PASB/AMRO) has provided equipment for the dried vaccine production laboratories in the States of Rio Grande do Sul and Pernambuco.

A total of 4 139 872 persons were vaccinated in 1958 and 2 129 233 during the first half of 1959.

Chile

In 1959, as a result of three imported cases and one autochthonous smallpox case, the authorities conducted an intensive vaccination programme, and immunized 1 500 000 persons within one month.

The regular programme consists of vaccinating all infants and immigrants and revaccinating 20 per cent. of the population every five years.

Colombia

The national campaign, which was started in October 1955, gave in March 1960 a total of 8 063 794 vaccinations, and the remaining twelve departments, 3 425 177 inhabitants, are now being attended to. The Government hopes that the programme will be completed during the early months of 1961.

Cuba

The country is producing sufficient glycerinated vaccine to meet the country's needs, as well as small amounts of dried vaccine.

The Organization (PASB/AMRO) provided the necessary equipment for larger-scale production of this type of vaccine, and a consultant is scheduled to visit the country soon to co-operate with the national authorities in achieving this goal. The Government has offered 500 000 doses of glycerinated vaccine to the regional programmes.

Ecuador

Smallpox constitutes a serious public health problem as 1184 cases were reported in 1959 and 1842 during the first nine months of 1960. As of April 1960, 934 766 vaccinations had been carried out in two provinces. There remain 16 provinces with areas of difficult access and where the population is dispersed over extensive mountainous and coastal areas. A systematic campaign has not been developed, resulting in few vaccinations, owing mainly to the lack of funds. The Government hopes that these difficulties will soon be overcome. PASB/AMRO is assisting by providing the services of a consultant.

Paraguay

The campaign which was started in September 1957 was considered to be completed in February 1960. The number of persons immunized represented 86.7 per cent. of the estimated population (30 June 1959). The campaign used glycerinated vaccine produced in Uruguay.

EASTERN MEDITERRANEAN REGION

Aden Colony

There is no eradication scheme in action in Aden but smallpox control is carried out by the medical officers of health and the port health officer, who have a staff of twelve trained vaccinators. The population of Aden is approximately 150 000 and during the three year period 1957-1959, 234 259 vaccinations were performed. During 1959 there were eight cases of smallpox, five of which were imported and three were local cases who were close contacts of the others.

Aden Protectorate

The policy of eradicating smallpox from the Aden Protectorate in time with the world-wide effort urged by WHO has been planned by the Government to include an intensification of control measures and vaccination programmes with mass field vaccination around local foci of the disease along its lines of communication. There is no formal smallpox eradication scheme. Both wet vaccine (from the Veterinary Institute at Asmara) and dried vaccine (from the Lister Institute) for units without refrigeration are used in the Protectorate.

French Somaliland

No smallpox endemic foci are reported from the territory, and no cases were reported for ten years up to last year when, in September-October, an outbreak occurred (110 cases and 10 deaths) along the Ethiopian Djibouti line. The source of infection was related to the introduction of a case from outside. A mass vaccination campaign was conducted and the outbreak was brought under control.

Smallpox can be considered eradicated and the control measures by vaccinations and revaccinations are systematically maintained.

Iran

The mass vaccination campaign indicated to be the first phase in an eradication scheme was conducted during 1956-1959 and covered approximately 80 per cent. of the total population. A house-to-house vaccination programme was adopted in this campaign and 250 vaccinators, 10 statisticians, five physicians and 80 vehicles for transportation were employed. Quarantine control measures were intensified on land routes and the nomadic groups of inhabitants are now being attended to. The second phase of the campaign is expected to start in 1962-63.

One hundred and ninety-six cases have been reported in 1960 (first nine months).

Iraq

On 1 August 1959, a smallpox mass vaccination campaign was launched in the Republic of Iraq. The aim was to vaccinate all the inhabitants within a period of six months by the full co-operation of Iraqi and Soviet teams who worked in accordance with the agreement made between Iraqi and USSR representatives. For the execution of the campaign, the USSR provided a head physician, three senior physicians, 32 nurses, and three interpreters, the vaccine and vaccination equipment. The Government of Iraq contributed the entire facilities for transport and storage, and also provided adequate staff of physicians, nurses and vaccinators.

The whole campaign could not be completed within the target period for reasons of difficult accessibility to remote villages and marshy areas, and vaccination continued for a further few months.

Out of a total population of 6 538 104, the number of vaccinated inhabitants in the campaign was 4 554 785, using 3255 male and 551 female vaccinators. Transport used was - 214 vehicles, 13 boats and 149 animals.

In January 1960, WHO provided equipment and supplies for the production of freeze-dried smallpox vaccine and a fellowship was awarded to the chief of the Smallpox Production Central Laboratory.

Israel

No smallpox cases have been reported since 1950. A vaccination programme includes (a) the compulsory vaccination of infants within the first year of life, immigrants, army recruits, travellers to and from countries where smallpox is endemic; also, the compulsory revaccination every three years of all personnel in Israeli ships and aeroplanes, and compulsory vaccination of all population at risk in case of impending epidemics; and (b) voluntary revaccination at the age of six years (required for school registration).

Jordan

By intensifying smallpox control measures, the Government of the Hashemite Kingdom of Jordan succeeded in maintaining an adequate level of immunity amongst the inhabitants and the disease has been absent for over three years since its last appearance, when an imported case was reported.

Obligatory vaccination of all new-born children, and a periodical mass vaccination takes place at three yearly intervals. A mass vaccination is planned for April 1961.

Quarantine control measures are strictly conducted at different entries and exits of the country - by land, sea and air.

Kuwait

A mass vaccination campaign which was started in 1959 is in progress and is expected to be completed in 1961. All travellers entering the territory are required to possess valid vaccination certificates. No smallpox cases were reported from Kuwait during the period under review, against nine cases reported for the corresponding period of 1959.

Lebanon

The eradication campaign which started in April 1960 is still in progress (mid-November 1960): 1 750 000 doses of glycerinated vaccine donated to the Organization by the Government of Jordan were used for the campaign, in addition to 20 000 doses of Italian-manufactured dried vaccine. Up to mid-November 1960, 1 068 000 inhabitants were vaccinated, i.e. 85 per cent. of the total population of the country.

Pakistan

Still harbouring much endemic foci, particularly in East Pakistan, the Government has decided to launch a smallpox eradication campaign and provision was made in that respect in the health activities of the Pakistan Second Five Year Plan (1960-1965). East Pakistan is starting a pilot project, on 1 January 1961, which will be completed at the end of June 1961, and will involve a mass vaccination campaign in the two districts of Tippera and Faridpur, with a total population of 6-1/2 million inhabitants to be covered by the project. The eradication scheme for the whole province will be implemented on the lines indicated through the experience gained in the pilot project.

The eradication campaign for West Pakistan, which is now in its final stage of preparation, has been approved and will start soon.

The Organization is assisting the freeze-dried vaccine production needed for the campaigns in both East and West Pakistan.

Saudi Arabia

No recent development in the smallpox situation in the country. Plans are made for the inclusion of lymph vaccine production within the Central Public Health Laboratory at Riad, which is being established with WHO assistance.

Sudan

The health authorities have been intensifying the smallpox control measures and vaccination programmes during the last seven years, whereby the incidence of cases was reduced to 266 cases in 1959-1960, against 3030 in 1953-1954.

A plan for the eradication of the disease to cover a period of four years has been prepared by the Ministry of Health. The country will be divided into four zones and each year a complete zone will be vaccinated. The Organization has awarded two fellowships for the study of freeze-dried vaccine production and has provided equipment and supplies to the vaccine-producing unit. The senior laboratory technician in vaccine production has attended the WHO-sponsored training course which was held in Lagos, Nigeria, in November 1960.

Tunisia

Compulsory general vaccination programmes are implemented in the Governorates every five years. Moreover, the vaccination and revaccination of the two months to 17 years age-groups are attended to regularly by the public health services of the country. That adopted system of smallpox immunization resulted in the control of the disease and its absence from Tunisia.

United Arab Republic

(a) Province of Egypt: Smallpox endemic foci were eliminated many years ago from the Province. The territory, however, is exposed to imported cases from the neighbouring endemic area. In 1959, the introduction of the disease caused a small outbreak which was controlled with no difficulty. The control of smallpox is in charge of health units employing permanent vaccinators and the immunity of inhabitants is maintained by a four-year cycle of the vaccination programme. Glycerinated lymph is produced in sufficient amounts for the needs of the country. Freeze-dried lymph is in the experimental stage of production.

(b) Province of Syria: By expanding efforts of vaccination, the endemicity of the disease was overcome some years ago, and smallpox only appears as imported cases from neighbouring countries. This menace of introduction of the disease has not been overlooked by the health authorities, who are maintaining a strict vaccination programme for the Province.

A WHO-assisted freeze-dried vaccine unit to supplement the glycerinated vaccine manufactured in Damascus is now in the experimental stage of production.

Yemen

Smallpox remains a major health problem in the Yemen. Epidemics both large and small occur periodically and the disease is endemic throughout the country. On an emergency basis, the Organization provided 5000 doses of glycerinated vaccine from Egypt (UAR) and 5000 doses from the Jordanian donation in October 1960.

A WHO epidemiologist is due to visit the Yemen in early 1961 to discuss the assistance requested by the Government with regard to smallpox eradication.

SOUTH-EAST ASIA REGION

Afghanistan

A WHO-sponsored seminar on smallpox eradication took place in Kabul in July 1959. A mass vaccination campaign which started in May 1959 is still in progress. Employing 143 male and 15 female vaccinators, the target of attending to approximately 12 million inhabitants is to be reached in five years. In 1959, 1 099 181 vaccinations were undertaken with glycerinated vaccine (WHO-assisted production) and the Organization has provided the Government in 1960 with 500 000 doses of dried vaccine from the USSR donation.

Burma

An intensive plan for the eradication of smallpox was drawn up but has not yet been put into operation. However, much progress has been made with the existing facilities. Twenty-two additional health officers have been recruited and up to now 407 rural health centres have been opened. With the facilities thus provided, and the existing public health staff, drives for mass vaccination are being carried out. The Government anticipates that smallpox will be controlled and ultimately eradicated, especially when the Four Year Economic and Social Plan for Burma - now under preparation - comes into full operation, when the public health section of the medical and health services has its full complement of doctors and when the full target of 800 rural health centres with 800 vaccinators is achieved.

Ceylon

Smallpox was absent from Ceylon during 1959 and the first nine months of 1960. Eradication was achieved through an intensive permanent vaccination programme, rigid quarantine measures and a strict enforcement of the International Sanitary Regulations.

India

The Government of India has planned a national smallpox eradication programme, to start in 1961, during the third five year plan period. One of the preparatory steps taken in this direction is the starting of pilot projects in all the States and the Union Territories of Delhi and Himachal Pradesh during 1960-1961. These pilot projects and the evaluation reports thereon will be completed by 31 March 1961.

The Government is proposing to complete the entire programme within a period of three years; the programme being carried out in two phases, the first phase devoted primarily to planning and obtaining necessary equipment, etc. and the second to the actual implementation of the scheme. Necessary steps towards the completion of the first phase of the programme have already been initiated.

Arrangements are under way to establish two freeze-dried smallpox vaccine production units (in Uttar Pradesh and Guindy) assisted by WHO and UNICEF, and it is expected that the preliminary production trials will be completed by the end of May and full production be achieved by the end of August 1961.

The Organization has also provided the Government with one million doses of freeze-dried vaccine donated by the Netherlands Government to WHO. This vaccine is now being used in a pilot project in the Bolangir District of Orissa State.

Indonesia

No smallpox eradication programme is envisaged in Indonesia, where transportation difficulties are still to be overcome in order to secure the provision of a potent vaccine to remote areas. However, vaccination campaigns have been intensified everywhere they could be conducted without difficulty and an improved routine vaccination programme in urban and rural areas is at present being implemented.

Both wet and dried lymph smallpox vaccines are being produced at the Pasteur Institute, Bandung, West Java. WHO and UNICEF are assisting the production of freeze-dried vaccine with equipment and training of personnel, and it is expected that this production will be stepped up with a target output of about five million doses per annum.

Nepal

Conscious of the urgency of the smallpox problem in Nepal, the Government has decided to launch a pilot project for smallpox control in Kathmunda and Rapti Valleys, beginning the first year of the second five year plan period which commences in 1961. The smallpox control programme will be strengthened and expanded during the period, i.e. 1961-1966, and it is hoped that it may be possible ultimately to convert this scheme into an eradication programme. WHO assistance in 1961 will consist of a sanitarian, transport and equipment to initiate the pilot project.

Thailand

The Ministry of Public Health has decided to launch a three-year smallpox eradication programme, which will start in 1961. The objective of the scheme is to vaccinate at least seven million people annually for three consecutive years. The Government hopes that within these three years approximately 80 per cent. of the total population can be protected against the disease. To achieve the best result, house-to-house vaccination methods will be adopted and the census registration will be used to check absentees.

A WHO/UNICEF-assisted freeze-dried vaccine production unit is now functioning and it is expected to give an output of 25 000 to 30 000 ampoules annually.

The Organization's assistance in smallpox control activities in Thailand has also been given through two WHO medical officers associated with treponematoses control project which carried out smallpox vaccination as an additional activity.

WESTERN PACIFIC REGION

Republic of Korea

About four million persons were vaccinated against smallpox in 1960, and a similar programme for 1961 is now under consideration by the Ministry of Health and Social Affairs.

Federation of Malaya

No endemic foci have been reported from Malaya since 1950, though imported cases occasionally occur, and an eradication programme is not considered necessary in the country.

The strict maintenance of compulsory vaccinations of infants under six months, the vaccination of children in the first year of schooling, and also the control of travellers and the checking of their vaccination certificates, have contributed to the results achieved in the control of the disease. Immunization against smallpox is being carried out at the border areas of the country.