

WORLD HEALTH  
ORGANIZATION

EXPERT COMMITTEE ON SMALLPOX

Geneva, 14-20 January 1964



ORGANISATION MONDIALE  
DE LA SANTÉ

Smallpox/WP/12 ✓  
24 December 1963

ENGLISH ONLY

REVIEW OF SMALLPOX SITUATION IN THE WORLD

Prepared by the Secretariat

Incidence and mortality

Figure No. 1 shows in graphic form the world incidence of reported cases of smallpox for the period 1950-63. During this period two peaks of high incidence occurred in 1950-51 and 1956-7 affecting mainly Asia. The second peak was much lower than the first with about half the number of cases. Since then numbers of cases have always remained under a hundred thousand.

Table I gives the world incidence (cases and deaths) of continents for the last five years.

Table II makes it possible to compare the number of cases and deaths notified by each country during the last five years.

88 437 cases and 25 544 deaths were recorded throughout the world in the first 11 months of 1963. Of these a large majority - 72 973 cases and 24 033 deaths - took place in Asia. In this continent India continued to report the largest numbers, 58 649 cases and 18 806 deaths. The second place is occupied by Pakistan which notified 7691 cases and 4947 deaths in the same period. Immediately behind comes Indonesia with 5937 cases but only 132 deaths reported. It is interesting to note that no cases have been notified in the first 11 months of 1963 from Saudi Arabia and Thailand where relatively large numbers were notified in 1959. A few cases were notified by both countries in 1960-1 and 1962. This decrease in the number of cases has occurred following intensive vaccination campaigns.

In Africa a lower number of cases and deaths has been notified in the first 11 months of 1963 than in the years 1961-2. Congo (Leopoldville) reports the highest number of cases, 4873, and deaths, 654, for that continent. Congo (Brazzaville), Congo (Leopoldville), Mali, Nigeria, Northern Rhodesia and Tanganyika have reported more than 500 cases in 1963.

It may be noticed that the number of deaths in relation to cases is much higher in Asia than in Africa. Even allowing for unreliable and irregular reporting of cases in some countries this difference appears to be important. Difference in the virulence of variole strains in Asia and Africa may explain this.

In America a great reduction in cases has occurred. Brazil continues to occupy the first place but has reported only 192 cases against 2759 in 1962 and 1420 in 1961. Ecuador reported 45 cases and Colombia only 4. Argentina, which had reported a few cases every year, has not reported any in 1963. It may be noted that intensive vaccination campaigns have been carried out in all these countries.

In Europe four cases were imported and a total of 141 secondary cases and 11 deaths occurred following these two importations.

Table III shows the approximate incidence rates in countries which reported more than 500 cases in 1952.

It will be seen that the rates are much higher in the relatively sparsely populated countries in Africa than in the densely populated countries in Asia although the latter constituted a more important reservoir of the disease due to the large number of cases.

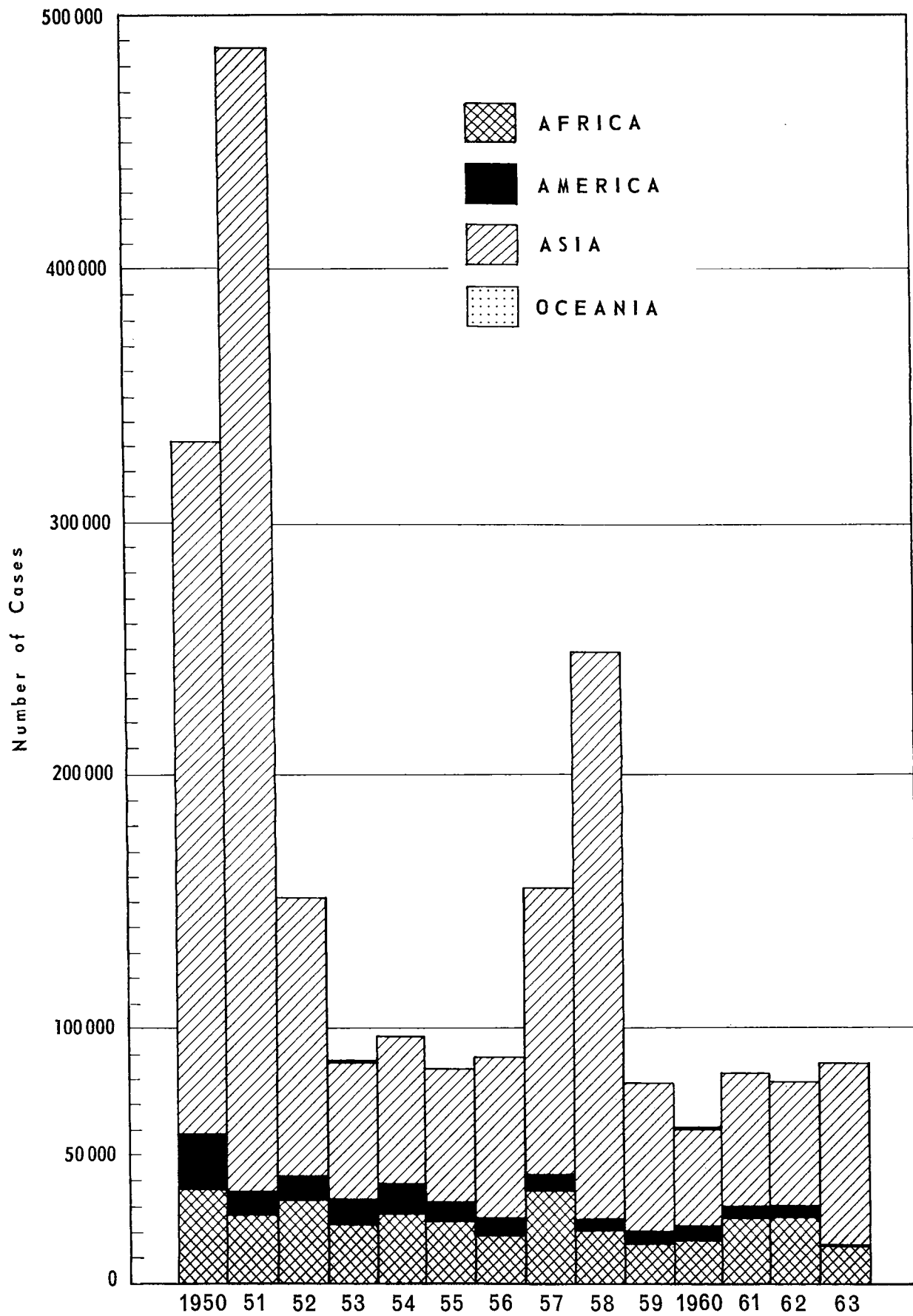
#### Recent epidemics

In Africa there was a serious epidemic at Leopoldville in the closing months of 1961 and in the first month of 1962. It appears that the disease was introduced into Brazzaville, which was free at that time, from where it has spread into the rest of the country (Congo, Brazzaville).

In 1963 the number of cases has increased substantially in Northern Rhodesia.

In Asia, India (58 649 cases) recorded a substantial increase in regard to 1962. The same is true of East Pakistan, 3715 cases against 482 cases in 1962. This is due to an epidemic which affected the eastern parts of India and East Pakistan during the first half of 1963. In Afghanistan an outbreak occurred

Fig. 1 SMALLPOX



in July in the interior of the country following variolization practised by mullahs. The outbreak has been widely spread but it has been impossible to determine the number of cases. An intensive vaccination campaign has been carried out in the area.

In the town of Thimi and surrounding villages five miles south of Kathmandu, Nepal, an epidemic of smallpox started in November 1963. It is estimated that this epidemic has caused between 200 and 600 deaths in an area with a population of about 25 000. An intensive vaccination campaign is being carried out in the affected area and 8000 people had been affected by 1 December, 1963.

In Europe temporary foci arising from cases imported by air were observed in Sweden and Poland in 1963. Twenty-four secondary cases and four deaths occurred in Sweden following the importation of a foreign case. In Poland 116 cases and seven deaths followed one imported case. In Switzerland and in East Germany one imported case in each country did not give rise to secondary cases.

TABLE I

Continent		1959	1960	1961	1962	1963*
Africa	C	13 950	15 851	24 025	24 188	15 078
	D	1 071	1 017	1 798	2 423	1 484
America	C	4 889	3 090	1 939	3 029	241
	D	-	-	-	-	16
Asia	C	58 085	39 221	53 549	46 374	72 973
	D	15 781	9 639	13 081	12 287	24 033
Europe	C	13	47	24	137	145
	D	1	-	4	27	11
TOTAL	C	76 937	58 209	79 537	73 728	88 437
	D	16 853	10 656	14 883	14 737	25 544

\* Cases and deaths notified to IQ up to 29 November 1963.

TABLE II

Country or territory		1959	1960	1961	1962	1963**
AFRICA						
Algeria	C	11	7	8	0	-
	D					
Angola	C	7		-	23	38 10 i
	D	-		-	3	1
Basutoland	C	1	-	83	52	1
	D	-	-	-	-	-
Bechuanaland	C	3	21	16	4	
	D	1	-	-	-	
Burundi	C					4
	D					-
Cameroon	C	17	-	1 345	792	127
	D	-	-	204	108	18
Central African Republic	C	-	1	-	57	3 3 i
	D	-	1	-	21	-
Chad	C	15	4	273	769	
	D	-	-	39	150	
Congo (Brazzaville)	C		-	22	1 254	1 402
	D		-	-	159	117
Congo (Leopoldville)	C	2 471	605	2 251	3 785	4 873
	D	64	26	149	540	654
Dahomey	C	1 708	768	119	132	268
	D	212	119	21	21	32
Ethiopia	C	352	293	761	360	224
	D	17	11	7	8	0
Gabon	C			-	1*	107
	D			-	-	17
Gambia	C	3	7	12	4	52
	D	-		-	-	1
Ghana	C	99	139	70	135	23
	D	13	22	8	8	-
Guinea	C	439	176	-	2 948	218
	D	5	1		335	17
Ivory Coast	C	788	1 634	4 656	2 061	214
	D	35	62	237	102	8

Country or territory		1959	1960	1961	1962	1963**
Kenya	C	314	151	289	96	220
	D	3	5	2	-	1
Liberia	C			1 119	323	34
	D			27	10	-
Mali	C	772	1 212	1 706	1 520	1 099
	D	27	47	89	165	86
Mauritania	C	12	44	8	40	
	D	1	-	-	-	
Mozambique	C	1	81	51	58	80
	D	-	1	1	4	11
Niger	C	1 149	2 408	1 740	1 038	444
	D	108	127	91	107	26
Nigeria	C	1 604	4 140	3 519	3 863	1 726
	D	213	388	347	437	156
Portuguese Guinea	C	24	1	-	1	
	D	-	1	-	-	
Nyasaland	C	554	795	1 465	634	393
	D	14	64	161	69	60
Northern Rhodesia	C	47	350	233	210	1 549
	D	8	31	8	4	201
Southern Rhodesia	C	131	12	3	15	37
	D	-	-	-	-	4
Ruanda Urundi	C	77	19	10		
	D	-	-	-		
Senegal	C	487	6	201	231	88
	D	94	-	3	3	2
Sierra Leone	C	96	12	6	78	14
	D	-	1	1	-	-
Spanish Equatorial Region	C		1			
	D		-			
South Africa	C		65	8	103	159
	D		-			-
Sudan	C	517	135	104	70	
	D	86	2	-	-	

Country or territory		1959	1960	1961	1962	1963**
Tanganyika	C	1 442	1 584	908	973	747
	D	158	83	45	49	37
Togo	C	64	347	281	595	166
	D	5	24	22	18	9
Upper Volta	C	382	126	2 360	1 335	276
	D	7		335	99	22
Uganda	C	363	707	398	628	
	D	-	1	1	3	
TOTALS	C	13 950	15 851	24 025	24 188	15 078
	D	1 071	1 017	1 798	2 423	1 484
AMERICA						
Argentina	C	34	65	6	2	-
	D					
Brazil	C	2 804	650	1 420	2 759	192
	D					16
Canada	C	-	-	-	1*	-
	D					
Colombia	C	867	171	16	41	4
	D					-
Ecuador	C	1 184	2 185	496	205	45
	D					-
Uruguay	C	-	19	1*	10*	
	D	-				
Venezuela	C	-	-	-	11	-
	D					
TOTALS	C	4 889	3 090	1 939	3 029	241
	D	-	-	-	-	16
ASIA						
Aden						
Colony	C	8	8	1*	-	
	D	-	3	-	-	
Protectorate	C	62	5			
	D	24	2			

Country or territory		1959	1960	1961	1962	1963**
Afghanistan	C	438	111	174	303	383
	D	1	-			1
Burma	C	1 533	392	88	21	10 1 i
	D	329	53	5	-	-
Cambodia	C	4	-	1	-	
	D	-	-	-	-	
Ceylon	C		-	34	12	1 1 i
	D		-	8	4	-
India	C	45 115	31 052	45 204	42 478	58 649
	D	11 595	7 876	12 341	11 402	18 806
Indonesia	C	1 129	5 196	4 894		5 937
	D	478	1 000	-		132
Iran	C	288	378	123	28	5 1 i
	D	32	40			-
Korea	C	-	2	1	-	
	D	-	-	-	-	
Malaya	C	42	15			
	D	5	7			
Muscat and Oman	C	8		-	8*	
	D			-		
Nepal	C			5		282
	D			2		126
Pakistan						
East	C	6 292	1 086	456	482	6 318
	D	2 737	489	197	200	4 693
West	C	1 511	912	2 518	3 030	1 373
	D	308	157	524	675	274
Saudi Arabia	C	111	32	17	1*	-
	D		1			
Thailand	C	1 548	32	33	2	-
	D	272	11	4	2	-
Trucial States	C				17	-
	D				4	-
TOTALS	C	58 085	39 221	53 549	46 374	72 973
	D	15 781	9 639	13 081	12 287	24 033



Country or territory		1959	1960	1961	1962	1963**
EUROPE						
Belgium	C		-	1	-	-
	D					
Germany, Federal Republic	C	13	-	4	37	
	D	1	-		3	
Germany, East	C					1 1 i
	D					-
Hungary	C					1
	D					-
Poland	C			-	32	117 1 i
	D					7
Spain	C		-	17	-	-
	D		-	3	-	
Sweden	C					25 1 i
	D					4
Switzerland	C	-	-	-	1*	1 1 i
	D					-
United Kingdom, England & Wales	C	-	1	1	67	
	D	-	-	1	24	
USSR						
Moscow	C	-	46	-	-	-
	D					
Tadzhik SSR	C			1	-	-
	D					
TOTALS	C	13	47	24	137	145
	D	1	-	4	27	11

<sup>i</sup> Imported cases

\* Imported cases included

\*\* Cases and deaths notified to IQ up to 29 November 1963

TABLE III

Country	Approximate rate per 100 000 population
AFRICA	
Cameroon	20
Chad	35
Congo (Brazzaville)	144
Congo (Leopoldville)	29
Guinea	100
Ivory Coast	58
Mali	38
Niger	34
Nigeria	11
Rhodesia & Nyasaland	12
Tanganyika	10
Togo	38
Upper Volta	30
Uganda	10
AMERICAS	
Brazil	4
ASIA	
India	10
Indonesia	1
Pakistan	4

TABLE IV. IMPORTATION OF SMALLPOX  
INTO SMALLPOX FREE COUNTRIES

Table IV gives details reported to the Organization for 1962 and 1963 on imported cases of smallpox into countries where the disease was not present or where there was only a temporary focus the year before the importation.

1962

	Imported cases	Secondary cases	Imported cases	Other information
<u>Africa</u>				
Angola	3 <sup>a</sup>	12+	Congo-Leopoldville	12 secondary cases followed in local area of importation. Country no longer free subsequently.
Central African Republic	2	55	Tchad	By land. Country free again.
Congo Brazzaville	yes	yes	Congo-Leopoldville (Leopoldville)	By land. Country no longer free subsequently.
Gabon	1	-	Congo-Brazzaville (Pointe-Noire)	By sea
United Arab Republic	4	-	India (Bombay) 2 India (Kakinada) 1 Unknown 1	On SS Circassia On SS Indian Tradition On SS Orion (All cases disembarked at Suez)
<u>America</u>				
Canada	1	-	Brazil (São Paulo)	São Paulo-New York by air New York-Toronto by train
Uruguay	2 <sup>b</sup>	9 <sup>b</sup> (1 focus)	Brazil for second imported case	By land.
<u>Asia</u>				
Kuwait	1	-	India (Bombay)	On SS Dumra
Muscat & Oman	1	7	Trucial Oman (Dubai)	By land
Trucial Oman	1	16	West Pakistan	By sea (Pakistani pilgrims on their way to Mecca)
<u>Europe<sup>c</sup></u>				
Fed. Rep. of Germany	2 <sup>d</sup>	36 (2 foci)	Liberia (Monrovia) India (Bombay)	By air By air
Poland	29	3	India (Calcutta)	On SS Indian Resolve
United Kingdom	7 <sup>e</sup>	62 (4 foci)	Pakistan (Karachi) India (Bombay)	5 imported by air <sup>e</sup> 2 imported on SS Oronsay <sup>f</sup>

1963

	Imported cases	Secondary cases	Imported cases	Other information
<u>Africa</u>				
Central African Republic	3	-	Congo Brazzaville	By land
Gabon	several	yes	Congo Brazzaville ("probably")	By land. Focus of 12 cases in local area of importation. Country no longer free subsequently.
United Arab Republic	2	-	India (Calcutta)	On SS Maiden
<u>Europe</u>				
East Germany	1	-	?	By air
Poland	1	116	India (Delhi)	By air
Sweden	1	24	South-East Asia	By air
Switzerland	1	-	Gabon	By air

a No secondary cases following the first two imported cases

b No secondary cases following the first imported case

c More details in EURO/RC13/6

d In December 1961

e Including three in December 1961

f There were no secondary cases following the two cases imported on SS Oronsay from Bombay

Present state of the eradication campaign

An effective eradication campaign is based on two fundamental elements, the adequate organization of the public health services which enables the coverage of at least 80 per cent. of a country's population and the availability of a vaccine, fully potent at the time of inoculation. A third important element is the evaluation of the vaccination campaign to see if the expected goal has been attained.

The resolution to eradicate smallpox was adopted by the Eleventh World Health Assembly and in the Fifteenth and Sixteenth Assemblies it was stressed that the progress has been slow. Due mainly to lack of funds in endemic areas, most of the countries have not yet sufficient trained personnel, facilities for vaccine production, adequate transport or cold storage space for vaccines. Since 1958 WHO has assisted the countries by giving advice on planning and organization and by recommending the use of a good freeze-dried vaccine and, where necessary, supplying it. WHO has also invited the attention of the Member States to the problem and called for their voluntary contributions in cash or in kind (freeze-dried vaccines, transport vehicles and laboratory and cold-storage equipment). WHO has also encouraged the co-ordination of eradication programmes in neighbouring countries in endemic areas and free exchange of information between them.

Table V shows the present state of the eradication campaign in countries where smallpox was endemic in 1958 (year of the adoption of the Eleventh World Health Assembly resolution referred to above).

From this table it can be seen that four countries (Bolivia, Paraguay, Iraq and Lebanon) are now free from smallpox after having completed eradication programmes. Six countries (Argentina, Colombia, Cambodia, Ceylon, Iran and Liberia) have completed eradication campaigns but still report, or have reported up to last year, some residual foci, caused most of the time by imported cases. Most of the countries in Asia, Ecuador and Brazil in America, Ivory Coast, Mali and Sudan in Africa have eradication programmes in progress. The majority of countries in Africa, Afghanistan and West Pakistan have an eradication programme ready but they have not yet begun. Finally, a few countries have not yet reported plans for eradication although, in some, large-scale vaccination is being carried out.

Considering this table by regions, it can be concluded that countries in EURO and WPRO regions are free from smallpox, but they have to maintain a high level of vaccination to prevent the extension of possible imported cases.

In AMRO eradication campaigns are being developed with good results in two countries (Ecuador and Brazil). In Brazil, an eradication campaign started in 1962 by a pilot project in some areas of Rio de Janeiro and of the State of Sergipe, subsequently extended to the State of Alagoas. Later it was extended to other parts of the country with the aim of covering 80 per cent. of the population. The campaign is now in progress and a significant drop in the number of cases in 1963 showed the utility of the programme: 2759 in 1962 and 192 in 1963. A few cases have also been reported in Colombia. All the other countries are in the same position as EURO.

In EMRO two countries have not yet begun their eradication programmes (Ethiopia and Pakistan), three have their campaigns in progress and the others have already finished theirs. In West Pakistan, the eradication programme is not expected to start before 1965. In East Pakistan it was reported that 96.4 per cent. of the inhabitants were already vaccinated up to August 1963, but this year a large epidemic occurred in the Dacca area with more than 3500 cases and this epidemic showed that a systematic vaccination of the Dacca population has not been adequately carried out. These facts also showed the necessity for a revision in the methods, both technical and administrative, employed in the campaign and for an accurate assessment of the vaccination results.

In AFRO most of the countries have their eradication plans ready, but have not yet begun. Three countries have started eradication campaigns. Nigeria plans to start an eradication campaign in October 1964 lasting three years. The cost of the operation is more than 3.7 million dollars and, in addition, 16 million doses of freeze-dried vaccine are needed to implement the programme.

Finally, SEARO, the region with the largest number of smallpox cases reported, has many countries with programmes in progress or even completed, with the exception of Indonesia, which has not yet reported plans. In Burma pilot projects were started in Rangoon City and seven districts in January 1963 preparatory to planning a country-wide eradication programme which should start in 1964 and is expected to last for three years for which 25 million doses will be needed.

Afghanistan has started a pilot project in Kabul and Banian province in 1963 but only about 50 per cent. of the population were vaccinated. Difficulty in securing greater coverage of the population was due to lack of final vaccinations, the nomadic habit of many of the people and insufficient transport. As wet vaccine lymph was of limited success in rural conditions freeze-dried vaccine was substituted. An outbreak of smallpox occurred in the Logar Valley in 1963 and all WHO staff members from the Rural Health and Nursing projects were mobilized for the emergency.

Indonesian plans leading to eradication have not yet been formulated but large-scale vaccination is contemplated, principally in controlling outbreaks of smallpox. Intercommunication between the many islands poses a considerable programme. The Government is planning to increase the production of freeze-dried vaccine in the WHO/UNICEF-assisted project in Bandung.

India is developing a very large and intensive eradication campaign which will be considered in detail when discussing other points of the agenda.

TABLE V

Countries or territories which have as yet not reported plans for eradication	Countries or territories which have an eradication programme ready	Countries or territories where eradication programmes are in progress	Countries or territories which have completed eradication campaigns but where residual isolated foci are still reported or have had few cases in the last 3 years	Countries or territories which have successfully completed eradication and have not reported cases 3 years after the campaign
AMERICAS				
Argentina			x	
Bolivia				x
Brazil		x		
Colombia			x	
Ecuador		x		
Paraguay				x
ASIA				
Afghanistan	x			
Burma		x		
Cambodia			x	
Ceylon			x	
India		x		
Indonesia	<sup>1</sup> x			
Iran			x	
Iraq				x
Lebanon				x
Nepal		x		

<sup>1</sup> Plans leading to eradication have not yet been formulated, but large-scale vaccination is contemplated. Crash vaccination programmes have been undertaken in controlling outbreaks of smallpox.



TABLE V (continued)

Countries or territories which have as yet not reported plans for eradication	Countries or territories which have an eradication programme ready	Countries or territories where eradication programmes are in progress	Countries or territories which have completed eradication campaigns but where residual isolated foci are still reported or have had few cases in the last 3 years	Countries or territories which have successfully completed eradication and have not reported cases 3 years after the campaign
ASIA (continued)				
Pakistan - East		x		
Pakistan - West	x			
Saudi Arabia		x		
Yemen		x		
AFRICA				
Angola	<sup>1</sup> x			
Bechuanaland	<sup>1</sup> x			
Cameroon		x		
Central African Republic		x		
Chad		x		
Congo (Brazzaville)		x		
Congo (Leopoldville)		x		
Dahomey		x		
Ethiopia	x			
Gambia		x		
Ghana		x		
Guinea		x		
Ivory Coast			x	
Kenya	<sup>1</sup> x			

<sup>1</sup> Plans leading to eradication have not yet been formulated but large-scale vaccination is being carried out.

TABLE V (continued)

Countries or territories which have as yet not reported plans for eradication	Countries or territories which have an eradication programme ready	Countries or territories where eradication programmes are in progress	Countries or territories which have completed eradication campaigns but where residual isolated foci are still reported or have had few cases in the last 3 years	Countries or territories which have successfully completed eradication and have not reported cases 3 years after the campaign
AFRICA (continued)				
Liberia			x	
Mali		x		
Mauritania	x			
Mozambique	<sup>1</sup> x			
Niger	x			
Nigeria	x			
Portuguese Guinea	<sup>1</sup> x			
Federation of Rhodesia and Nyasaland	x			
Senegal	x			
Sierra Leone	x			
Sudan		x		
Tanganyika	x			
Togo	x			
Upper Volta	x			
Uganda	x			

<sup>1</sup> Plans leading to eradication have not yet been formulated but large-scale vaccination is being carried out.