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NIGERIA

Annual Report on THE MEDICAL SERVICES 1950-51

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Annual Report on the Medical Services, 1950-51

I.—INTRODUCTION

This report covers the period 1st April, 1950, to 31st March, 1951. The statistics are therefore not comparable with those of the previous period, which covered fifteen months from the 1st January, 1949, to 31st March, 1950.

2. Once again the degree of development in the facilities of the Department, which was envisaged at the beginning of the year, has, unfortunately had to be limited owing to the increased cost of materials, and severe curtailment of available funds. The regularity and rapidity with which costs have risen has placed the cost of our plans, as originally outlined, outside the scope of the development funds at present available, and has necessitated some revision of our immediate aims. Nevertheless, the demands on the Medical Services have increased steadily throughout the year, and an immense amount of work, including the extension of junior staff training schemes, has been carried out throughout the territory.

3. It can be reported with a sense of relief, that no new major outbreaks of *Cerebro-spinal Meningitis* occurred during the year, and the country was thus spared the distressing experiences of the past three years.

II.—ADMINISTRATION

A.—Staff

4. Dr G. B. Walker, C.B.E., M.B., D.P.H., Director of Medical Services, proceeded on leave during the latter part of the year pending retirement, and was succeeded in February, 1951, as Director of Medical Services, by Dr S. L. A. Manuwa, O.B.E., M.D., F.R.C.S., formerly Deputy Director Western Provinces.

5. Shortage of staff remains a major problem although a small but appreciable increase in the Senior Service in general has been one of the most encouraging features of the year. However, despite the assistance of married Sisters, in temporary employment, the position in regard to Nursing Sisters remains a source of anxiety.

6. The Junior Service staff position is still slow to improve, mainly in respect of female nurses. The major difficulty is to obtain girls of suitable education for training, and up to the present the intake is little above the decrease due to normal wastage. Considerable employment on a temporary basis of married women, in both the senior and junior services has helped to ease the position and, incidentally, the housing situation, as shortage of accommodation also presents a problem.

7. Comparison between the number of nurses actually employed in 1948 and 1950 shows that a most satisfactory total increase of nursing staff has taken place, the figures being :—

Establishment of Nurses

	Approved	*Actual*
1948	1,458	633
1950	1,827	1,383

8. In so far as Pharmacists are concerned, there has been a considerable increase in the output from the two Schools of Pharmacy, but the supply as yet is far from equal to the demand, and barely covers replacements.

	Government		*Native Administration*	*Mission and Private*
	Approved Establishment	*Actual Strength*		
Doctors	300	233	—	180
Dentists	12	7	—	5
Nursing Sisters	165	87	—	—
Health Superintendents	62	39	—	—
Field Unit Superintendents	9 / 71	8 / 47	—	—
Sleeping Sickness Control Officers and Superintendents.	14	14	—	—
Pharmacists	175	137	—	—
Radiographers	9	9	—	—
Nurses	1,827*	1,252	301	—
Midwives, Grade I		131 / 1383†	10 / 311	
Midwives, Grade II	—	—	—	—
Sanitary Inspectors	334	208†	—	—

10. The training of Medical Services personnel is outlined at Section XIII of this Report.

B.—Legislation

The following legislation affecting Public Health was enacted during the year :—

(1) Ordinances 1950

Serial No.	*Date*	*Short Title*	*Provisions*	*Gazette No.*
12	27-4-50	Civil Aviation (Births, Deaths and Missing Persons).	Registration of Births and Deaths in Civil Aircraft Registered in Nigeria.	25 of 27-4-50

(2) Regulations

Serial No.	*Date*	*Short Title*	*Provisions*	*Gazette No.*
7	26-1-50	The Births, Deaths and Burials.	Calabar Public Burial Grounds.	8 of 2-2-50
8	5-1-50	The Diseases of Animals (Amendment).	Amendment of Regulations No. 7 of 1918.	8 of 2-2-50
47	12-10-50	Labour Health Areas (Amendment).	Amendment of Regulations No. 14 of 1948.	57 of 26-10-50
14	21-2-51	Pharmacy Regulations.	Examination for Diplomas and Certificates.	11 of 1-3-51
21	17-3-51	Hospital Fees Regulations.	Regulation of Hospital Fees.	16 of 29-3-51

* Combined with nurses in the Estimates.
† Includes those in training.

(3) Orders in Council

Serial No.	*Date*	*Short Title*	*Provisions*	*Gazette No.*
13	29-3-50	Births, Deaths and Burials.	Lagos Township Cemetery-Yaba (Revocation).	20 of 6-4-50
14	29-3-50	Births, Deaths and Burials.	Christian Cemetery-Gusau (Amendment).	20 of 6-4-50
15	29-3-50	Births, Deaths and Burials.	Christian and Mohammedan Cemeteries-Badagry (Amendment).	20 of 6-4-50
23	26-4-50	Births, Deaths and Burials.	Mamfe Cemetery (Amendment).	26 of 4-5-50
38	10-8-50	The Building Lines (Amendment).	Amendment to Building Lines Order in Council No. 29 of 1940.	46 of 24-8-50
41	28-8-50	The Dangerous Drugs (Control).	*Re* application of Part III of Chapter 50.	49 of 7-9-50

(4) Rules

Serial No.	*Date*	*Short Title*	*Provisions*	*Gazette No.*
6	29-8-50	Public Health (Ajagbodudu Adjoining areas) Building (Amendment).	Amendment of 1946 Rules.	49 of 7-9-50
7	10-10-50	Public Health (Agbor Township Cattle) (Amendment).	Amendment of Rules 13 of 1940.	56 of 19-10-50
8	10-10-50	Public Health (Ogwashi Township Cattle) (Amendment).	Amendment of Rules 12 of 1934.	56 of 19-10-50

C.—Finance

The following are the comparative financial statements for the year 1948-49 and 1949-50 :—

Medical Health and Laboratory Services	£
Total expenditure from Nigerian Revenue, 1948-49 ..	1,304,665
Total expenditure from Nigerian Revenue, 1949-50 ..	1,420,173
Increase	£115,508

Sleeping Sickness Services	£
Total expenditure from Nigerian Revenue, 1948-49 ..	59,558
Total expenditure from Nigerian Revenue, 1949-50 ..	53,279
Decrease	£6,279

The sum of £308,105 has been expended from Development Funds on extension of Medical, Leprosy and other ancillary services.

III.—PUBLIC HEALTH

A.—Health of Expatriate Population

11. Malaria continues to be the main cause of morbidity amongst Europeans. It accounted for 20 per cent of all hospital in-patients and 7 per cent of the total number of out-patients.

12. General health of the expatriate population has been good. Thirty officials were recommended for temporary invaliding, and seven for permanent invaliding during the year. There were nine deaths. The total number of Non-African expatriates who entered Nigeria during the year under review was as follows :—

Europeans	*American*	*Other Non-natives*	*Total*
7,925	296	348	8,569

of these 3,711 were Government officials.

B.—General Health

13. Government Hospital figures for 1949-50 and 1950-51.

	Jan. 1949 *to March* 1950	1950-1951
In-patients	141,766	143,280
Out-patients	1,380,222	1,261,598

14. As stated in paragraph 1 of the Introduction, the above figures are not comparable because those for 1949-50 cover a fifteen-month period. Further field surveys are required to show the morbidity of the commoner diseases of the Nigerian population, which cannot be assessed from the hospital figures.

15. The Medical Field Units have extended their activities during the year, but are yet insufficient in number and staff to carry out the complete surveys necessary to show the over-all morbidity.

16.—*Malaria.*—128,734 cases were treated in Government Hospitals and dispensaries, representing 9 per cent of all patients. This is only a fraction of the total number of cases of a disease which is widespread.

17. *Trypanosomiasis.*—In team surveys and resurveys and dispensary resurveys carried out during the period, 846,871 persons were examined, and 3,161 new cases found, an infection rate of 0.37 per cent.

18. *Helminthic Diseases.*—Ascariasis continues to be the commonest infestation with ankylostomiasis next in frequency. 81,205 cases of helminthic disease were treated by medical officers during the year.

19. *Yaws.*—This continues to be prevalent especially in the Eastern Provinces. It is hoped, if staff allows, to commence mass treatment of the disease in the coming year.

20. *Venereal Diseases.*—Medical Officers treated 21,555 cases of Syphilis and 69,005 cases of Gonorrhoea. The former is recorded more frequently in the northern, and the latter in the southern section of the country.

21. *Rabies.*—Outbreaks of rabies occurred through the country during the year, and eighteen human deaths were recorded. The regulations under the Dogs Ordinance (1949) were brought into effect for lenghty periods in many areas. Of 178 brains examined ninety-four were found to be infected, distributed as follows —Dog eighty-four, Cat five, Human four, Donkey one.

22. So far as Lagos was concerned, it is recorded that, unlike the previous year when all cases occurred on the mainland, during the year under review only two cases occurred on the mainland and twenty-seven on Lagos island. The prophylactic inoculation of dogs is under consideration.

23. *Tuberculosis.*—1,877 pulmonary and 634 other cases with 377 deaths were dealt with in hospitals during the year. The incidence is better gauged by the Lagos mortality figures where 7.05 per cent of all deaths were attributed to tuberculosis.

24. A Chest Clinic was inaugurated in Lagos in the later part of the year under review ; 2,643 patients have been examined and have included patients from general practitioners, candidates for scholarships in the United Kingdom and United States of America, and new recruits for local government service.

IV.—VITAL STATISTICS

25. Registration of births and deaths is carried out in a few towns such as Lagos, Enugu, Port Harcourt, Aba and Calabar, but in the absence of complete registration and accurate population figures, any statistics available are only a rough approximation. Appreciation of the value of birth and death recording is, however, gaining ground and requests for copies of entries in the Registers are on the increase, mainly due probably to the necessity in the larger towns of proving place of birth when registering for employment at the Labour Exchanges.

26. In Katsina Province in the North, the opportunity has been taken of utilising local customs to aid the collection of figures, and attempts are being made to follow the example in other Provinces in the region. The figures obtained, however, are unreliable and can only form a guide to the position.

27. In Lagos, where a census was taken in 1950, the figures can be taken as fairly accurate, and are shown below :—

Vital Statistics (Lagos) 1950

Population as estimated from 1950 *Census :—*	
Lagos Township	230,000
African births registered :—	
Lagos Island	9,308
Mainland	3,562
Lagos Township	12,870
Birth rate—Township	55.9
African deaths registered :—	
Lagos Island	2,974
Mainland	774
Lagos Township	3,748
Death rate—Township	16.2

African Infant Mortality Rate :—

Lagos Island	101.4
Mainland	44.6
Lagos Township	85.7

African still births registered :—

Lagos Island	295
Mainland	44
Lagos Township	339
Rate per 100 births	2.6

28. Attempts to introduce registration in rural areas have met with varied success, some areas showing definite co-operation and others active opposition.

V.—HYGIENE AND SANITATION

A.—Preventive Measures

(*i*) Insect-borne Diseases

(*a*) *Malaria.*

29. The routine measures of oiling and drainage have been maintained, and moisture absorbing trees planted in water sodden ground and on stream banks.

30. The Lagos anti-malarial drainage scheme covering over 4,000 acres of land, in which are over 150 miles of drains with twenty-six miles of bunds. and served by twenty-three tidegates, is in its third year under the control of the Public Health Department of Lagos Town Council. Because of the effects of tidal erosion, it was necessary to reconstruct about a fortieth and to repair almost half the bunds. Regrading of drains was also necessary.

31. Nurseries were maintained for cultivation of Casuarina, Eucalyptus and other trees used to provide shade over, and support for, the land alongside drains.

32. The sand filling of the Apapa mainland swamp continued.

33. In the various wards of Lagos the routine house to house inspections for the detection of mosquito breeding continued.

34. 1980 soak-away pits were inspected.

35. Gas oil alone or mixed with D.D.T. was used as a routine larvicide. 205 gallons of D.D.T. solution were used in the residual spraying of houses.

36. Crab holes remain a major problem in the breeding of mosquitoes and, on the recommendation of the Senior Malariologist gammexane pellets have been brought into use in their treatment and the results are being studied.

(*b*) *Yellow Fever.*

37. One case of Yelow Fever occurred and is referred to under Section VII (Port Health and Administration). Anti-aedes measures have continued to be strictly carried out throughout the territory.

(*c*) *Plague.*

38. No cases of plague have been reported in Nigeria since 1931. Nine ships were fumigated with Hydrogen cyanide during the year, and 184 rats were recovered. Deratisation exemption certificates were issued to twenty-one ships after inspection.

ANTI-MALARIA SPRAYING

DIETETIC INSTRUCTION TO MOTHERS

ANTI-MALARIA WORK : EXAMINING BREEDING SITE

PROTECTING FOODSTUFFS FROM FLIES

(*d*) *Trypanosomiasis.*

39. The Sleeping Sickness Service continues the policy of Tsetse fly eradication by clearing, as rapidly as staff and funds permit. The success of this policy is shown by the fact that in one area, 150 square miles have been freed from the fly, and should soon become available for mixed farming. Surveys have been carried out in connection with development schemes in the Plateau and Bornu Provinces, and the railway extension from Nguru to Maiduguri. A summary of the activities of the Sleeping Sickness Service appears as Appendix I of this report.

(*ii*) Epidemic and Endemic Diseases

(*a*) *Smallpox.*

40. This disease, with its high death rate among the unvaccinated, has remained prevalent throughout the country.

Cases .. .. .. 19,663 Deaths 3,128

Vaccination campaigns are continuous, and the opposition to vaccination appears to be slowly decreasing. One and three quarter million vaccinations were carried out in the Eastern Region alone, of which nearly half a million were done by Medical Field Unit staff in Ogoja Province. New methods are being investigated to ascertain how lymph may best retain its potency under rural conditions. The total vaccinations carried out in the territory were in the region of four millions.

(*b*) *Cerebro-spinal Meningitis.*

41. The beginning of 1950 saw the onset of the greatest epidemic of cerebro-spinal meningitis ever recorded in the Northern Provinces, and the resources of the Department were heavily taxed to combat it. The epidemic continued into the first quarter of the year under review, and records show tha an overall total of 93,964 cases were reported with 18,153 deaths, giving a death rate of 19.5 per cent. Where the disease was previously known to the population, co-operation was extremely good, but in the Eastern part of the Region the extent of the epidemic was somewhat obscured by the unfamiliarity of the population with the disease. Sokoto and Bornu Provinces were the most severely affected, while Katsina, Kano, Bauchi, Adamawa and Plateau Provinces had lesser, though severe, outbreaks.

42. The death rate of 19.5 per cent compares favourably with that in advanced countries such as Great Britain and America and, of course, a great improvement on the pre-war figures of 80 to 90 per cent mortality.

43. It has been estimated that seven in every thousand in the Northern Provinces suffered from the disease in the whole epidemic.

44. Government and Native Administration staff engaged on fighting the outbreak was as follows :—

	M.O's	*Health Superintendent*	*M.F.U. Staff*	*Sanitary Inspector*	*Nurses*	*Dispensary attendants*	*Vaccinators*
Government ..	16	6	117	5	22	—	—
N. A.	—	—	—	172	48	91	77
Total ..	16	6	117	177	70	91	77

45. Even greater numbers of Native Administration district and junior medical personnel assisted, as well as lay and medical staff of various Missions. Treatment of cases was carried out in eleven hospitals, eighty dispensaries, 356 treatment centres, and forty-one Mission stations.

46. It is most satisfactory to be able to record that the major epidemic referred to above was not repeated in the dry season, November, 1950 to March, 1951, a great relief from the experiences of the comparable trimesters of the previous three years. Even so, during the period covered by this report, 30,342 cases with 3,792 deaths were recorded, but the epidemic trimester January to March, 1951, produced only 1,676 cases with 225 deaths.

47. In the Eastern Provinces, 453 cases occurred with seventy-six deaths giving a death rate of approximately 17 per cent. Nothing approaching epidemic conditions occurred in this area.

(*c*) *Dysentery*.

48. The incidence of dysentery was evenly distributed throughout the Regions. 26,343 cases with 467 deaths were recorded.

(*d*) *Leprosy*.

49. The Central Leprosy Board, on which are represented the British Empire Leprosy Relief Association (B.E.L.R.A.) and all Missionary Societies taking part in Leprosy Control in Nigeria, held its first meeting in July, 1950, when agreement was reached on the main lines of future Leprosy Control policy and method. Public opinion in the areas where leprosy is common, particularly in the Eastern Region, has been most helpful and sympathetic in supporting the drive for segregation of infectious leprosy patients. Twenty-six new villages for such patients have been established by local Committees throughout the year. Only in the Western Region, where the incidence of leprosy is lower, has progress been slow.

50. Sulphone treatment has proved most successful, and the Central Leprosy Board endorsed the decision to extend sulphone treatment to all patients. More than 17,600 patients of the Nigeria Leprosy Service have received sulphone treatment, and the number of patients discharged "symptom free"—4,456—was high in comparison with previous years. Clinics and segregation villages supervised from central settlements treated 26,372 patients during the year, the total number of new cases diagnosed being 18,487. The full report on Leprosy Control can be seen at Appendix II.

(*iii*) Other Infectious Diseases

(*a*) *Relapsing Fever*.

51. 439 cases of Relapsing Fever with seventeen deaths were reported. 422 of these and thirteen deaths occurred in scattered foci in Katsina Province, and no spread occurred to neighbouring provinces. Touring treatment units visited and carried out hygienic and chemotherapeutic measures.

(*b*) *Tuberculosis*

52. An intensive effort to obtain accurate assessment of the magnitude of tuberculosis as a public health problem throughout the country is about to begin. Two medical officers have taken courses in the United Kingdom on Tuberculosis Control, and the first steps in organisation are about to be taken.

53. A mass miniature radiography unit has been functioning in Lagos during the year, and first carried out a survey of the incidence of tuberculosis in school children. 3,355, mainly from secondary schools, were examined :—

	Per cent
Recalled for large film—approximate	11
Active Tuberculosis (new)	0.24 male
Active Tuberculosis (new)	0.24 female

The second mass miniature survey dealt with 400 employees of Lagos Town Council :—

	Per cent
Recalled for large film	12.5
Active Tuberculosis (new)	0.25

54. The numbers dealt with under the above surveys were small owing to lack of a medical officer attached to the department. The reading of films was undertaken by the Deputy Medical officer of Health in addition to his normal duties. During the forthcoming year all miniature films will be read by two medical officers.

55. A mass miniature X-Ray mobile unit is now on order, and on arrival, a tuberculosis survey will begin in the Western Provinces.

56. A tuberculosis pavilion is in the process of erection at Bamenda in the Cameroons, and the accommodation at the Lagos Tuberculosis Hospital is being doubled.

(*c*) *Typhoid.*

57. Seventy-nine cases and seventeen deaths have been recorded.

(*d*) *Yaws.*

58. The condition is prevalent in the southern half of the territory with the greatest incidence in the eastern section. An intensive campaign to combat the disease was arranged during the year for a section of the Eastern Provinces, but could not be carried through owing to shortage of staff.

(*iv*) Helminthic Diseases

59. Ascariasis and ankylostomiasis are the commonest helminthic infestations, and are universal. Bilharziasis is more focal in distribution with the greatest incidence in the northern half of the Northern Provinces. Foci of fairly intense incidence occur however elsewhere, for example at Epe on the Lagos lagoon, where the infection rate of urinary bilharziasis (*S. Haematobium*) was found on survey to be 76.8 per cent.

B.—General Measures of Sanitation

(*a*) *Urban and Rural Water Supplies*

(*i*) Urban Water Supplies

60. Regular bacteriological examinations of water from all pipe-borne supplies and many wells were done by the Government Chemist throughout the year.

61. Major water supply schemes were being carried out during the year at Opobo and Abakaliki in the Eastern Provinces, and at Warri, Ede and Ilesha in the Western Provinces. Those at Abakaliki and Warri are now practically complete.

62. Improvements were made by extensions, increased storage accommodation, or by installation of chloronomes where required, at Ibadan, Abeokuta, Ijebu-Ode and Benin in the Western Provinces, and at Onitsha and Enugu in the Eastern Provinces.

63. Major schemes have been prepared, or are in preparation for Oyo and surrounding villages, Shagamu, Iperu, Ishara, Ogere and Akure in the Western Provinces, and for Umuahia in the East.

64. Further schemes are envisaged for Ijebu-Ode, Ijebu-Igbo, Ilaro, Akure and Effon Alaye in the Western Provinces.

(*ii*) Rural Water Supplies

65. Progress in the development of rural water supplies is slow relative to our requirements, the incidence of helminthic disease being an index of the unsatisfactory conditions which exist.

66. In the Northern Provinces several hundreds of wells have been sunk by the Rural Water Supplies Section of the Public Works Department, and many more are scheduled. The incidence of guinea-worm already appears to be decreasing in areas where protected wells have been provided. In the Western Provinces, 202 wells were repaired and completed, and a further 100 are in course of construction. Thirteen tanks were built, six supplies impounded and twenty-seven tube wells put down. In Ogoja and Owerri Provinces of the Eastern Region, fifty-five new wells were completed.

(*b*) *Sewage and refuse disposal*

Sewage Disposal

67. Two small sewage systems exist in Lagos, but otherwise sewage disposal is carried out in part by water-borne system with septic tanks in the urban areas where piped water is installed, but mainly by local disposal. The conservancy system obtains generally, and disposal is by shallow trenching or composting.

68. The composting system in general use in the Northern Provinces has been employed also at Enugu, Onitsha, Aba and to some extent at Port Harcourt and Benin, but final disposal is becoming more and more difficult owing to the expansion of towns, as suitable ground within reasonable distances is hard to obtain. At Ibadan a central disposal ground was acquired and a battery of compost pits constructed. This scheme, which was inaugurated with the collaboration of the Agricultural Department, is still in the experimental stages but shows every prospect of being successful.

69. The demand for compost is increasing, but the rise in costs of labour and transport may soon make the scheme uneconomic. The use of the "Aqua type" system in urban communities is the subject of experimentation, but it appears that constant qualified supervision is required for its success.

Refuse Disposal

70. In general, controlled tipping of refuse is used for reclamation of swampy areas and borrow pits, but the inability of the available transport to cope with the accumulations is always a difficulty.

71. Incineration is still used to a very considerable extent, and is probably the most reliable method under present conditions.

72. Prefabricated public dustbins have proved of value at Enugu. They are cheap to erect, and can be provided in good numbers at sites easily accessible to the public.

(*c*) *Inspection of Nuisances*

73. Routine house to house inspections are carried out by sanitary inspectors throughout the territory.

74. In Lagos, prosecutions taken by the Public Health Department in District Courts in the Township for offences under the Public Health and Destruction of Mosquitoes Ordinance were :—

Cases listed	*No. served*	*No. convicted and fined*
1,021	897	666

75. In the Eastern Provinces 276,710 houses were inspected on which there were 1,260 prosecutions with 1,132 convictions.

C.—School Hygiene

76. Routine inspection of schools is carried out by medical officers and sanitary inspectors, and advice offered and assistance given in improving conditions.

77. The teaching of hygiene in schools is supplemented by lectures to both teachers and pupils by health staff, and the children are encouraged to take part in anti-mosquito work and to keep the school compound clean.

78. Boarding schools are supervised with particular reference to living accommodation and diet.

79. A school medical service is not yet practicable with the staff available, but in Lagos school clinics are held and two medical officers are normally employed on school duties.

80. Elsewhere in the Provinces, a limited number of school children are examined by the medical officers, but nothing on the scale provided in Lagos is yet possible. The part time employment of private medical practitioners, where such is available might it is hoped help to fill this gap in future.

81. Lagos School Clinic figures are :—

Total number of pupils examined	24,405
Total number of attendances	49,537
Children referred to various clinics were as follows :—	
General Hospital (out-patient)	19
School Eye Clinic	766
Orthopaedic Clinic	6
Dermatologist	2
Government Dental Surgeon	92
Infectious Diseases Hospital, or Medical Officer of Health	6

D.—Labour Conditions

82. Labour conditions vary widely throughout the territory. Whilst some of the larger industrial concerns, such as the United Africa Company and the Nigerian Tobacco Company, give much attention to the welfare of their labour forces, conditions in some of the timber camps and rubber plantations still leave much to be desired. The Cameroons Development Corporation has a well developed Medical Service, and has taken major steps to improve the housing of labour in the various estates under its control. In the main, throughout the country, labour conditions are good and provide a standard of living in many respects above that of the surrounding population.

83. In the Northern Provinces, the Minesfields Areas, as defined in Order in Council No. 10 of 1948, are the only areas where labour is employed in large groups in camps.

The requirements of the Labour Health Ordinance result in these mining camps being automatically fairly healthy in comparison with any town of natural growth.

84. In the Minna area, the gold and tin mining camps are satisfactory.

85. In areas where food supplies are unavailable locally, and transport costs are prohibitive, the United Africa Company, and the Cameroons Development Corporation, and Tin Mining Companies buy food in bulk and thereafter sell it at economical prices to their employees.

E.—Food in Relation to Health and Disease

86. Diets of peasant communities have continued to be examined by Medical Field Units on Survey. The problem of malnutrition remains a constant source of anxiety and near famine conditions obtained in parts of the Northern Region during the year owing to the partial failure of the 1949 harvest following the late onset of the rains.

Evidence of lack of first class protein and riboflavine deficiency can be found in most areas, and the position is not improved by the rise in the cost of meat and fish. It is to be hoped that the West African Fisheries Research Organisation Scheme may, in the near future, provide some assistance in solving the problem.

87. In Townships, control is exercised over hawkers of food-stuffs, and inspection of food preparing establishments, bakeries and aerated water factories has done much to eliminate disease due to the grosser food contaminations.

88. Particular attention has been paid to the preparation of food for sale to school children, and to the protection of food exposed for sale.

89. Seventy "school kitchens" now exist on Lagos island and thirty-seven on the mainland. All are regularly inspected by sanitary inspectors and food overseers.

90. Ignorance, illiteracy and conservatism on the part of food sellers is hard to combat, but there is welcome evidence of steady improvement in the conditions under which food is exposed for sale.

91. At Lagos eight food overseers were appointed at the beginning of the year their primary duty being to educate food sellers in a practical manner.

92. The increased price of foodstuffs in many areas has precluded the average inhabitant from taking a well balanced diet, and varying degrees of malnutrition and avitaminosis are common.

93. The development and expansion of timber and rubber plantations in certain areas has led to neglect of farmlands with a resultant scarcity of foodstuffs.

94. The marketing of iodised salt in special areas has continued.

F.—Housing and Town Planning

95. Progress is being made in the large centres with regard to planned layouts for the extensions of Townships.

96. Certain areas of towns such as Lagos, Enugu, Ibadan have been designated "planning areas" by the Town Planning Officers, and when developed will provide much improved living conditions. The lease of plots will be contingent on compliance

with certain conditions, one of which is that plans will not be approved for more than one third of the plot to be built upon.

97. An interesting feature at Enugu is that it has been decided to impose a levy of £60 per plot in order to finance the development of the layout-roads, drainage, etc. Present rates are inadequate to support existing services apart from financing the layout of new areas.

98. The regrettable tendency still remains of building houses with the maximum number of the smallest rooms permissible thus leading to unsatisfactory buildings.

99. Steady progress has been made in the Northern Provinces and at Sokoto a model village has been constructed which shows at a glance the essentials of village housing. Visits to this with explanations by the Health staff, are popular with District and Village Heads. No new major layouts were instituted in the Northern Provinces, but numerous minor ones and improvements to existing ones were carried out.

100. An acute shortage of housing accommodation for senior and junior service staff still exists, but large building programmes have been instituted by Government.

G.—Health Propaganda and Education

101. Throughout the country health propaganda and education have been carried out according to the degree with which local communities may be expected to absorb the information given, and also along the lines of the more pressing local needs.

102. In the Northern Provinces, where epidemic conditions often arise, health talks and advice are given in the vernacular over the radio diffusion service, and posters of local significance are displayed in the waiting halls of medical institutions. Health films have been shown at Kaduna only.

103. In the Western Provinces, where the standard of general education is somewhat higher, Health Weeks and Baby Shows have been held with some success, and exhibitions of short films and film strips have been most popular. There appears to be no doubt that, in this Region at any rate, visual presentation is the most effective method of spreading health knowledge.

104. In the Eastern Provinces, health propaganda is playing a large part in community development, and lectures have been given, a Health Week held, and a film on smallpox had a wide showing. That this propaganda is appreciated in this Region is shown by the fact that in one area the local community has itself started a swamp drainage scheme under the supervision of a Health Superintendent.

VI.—PORT HEALTH WORK AND ADMINISTRATION

105. No seaport or airport was declared infected during the year. The chief ports of Nigeria are Lagos, Port Harcourt, Calabar, Tiko, Warri and Sapele. All ships are visited by Port Health staff on arrival, except at Tiko where they are cleared by Customs Officers.

106. *Plague.*—Rats are examined for plague at Lagos, Port Harcourt and Calabar and the flea indices checked by fleas collected from live rats.

	Live rats examined	*Flea index*	*Cheopis index*
Lagos	4,069	0.48	0.41
Port Harcourt	408	1.9	1.45

10,117 rats were dissected at Lagos, and none were found infected.

107. *Smallpox.*—Smallpox showed a decline from tne previous year. 279 cases occurred in Lagos during the period, with a steady fall in incidence throughout the year, so that in the first trimester of 1951 only eight cases were reported. 4,748 vaccinations were carried out at the Port Health Office, Lagos. Details are as follows :—

International Certificates	434
Crew	641
Deckers	2,858
Road Post	604
On shore	127
Others	79

Three cases of typhoid fever occurred during the year.

108. *Malaria.*—Port installations, small craft and canoes were regularly inspected for anopheline breeding. On ship inspection it is confirmed that the captain is in possession of the items required for protection against malaria in accordance with the instructions of the Ministry of Transport.

109. *Yellow Fever.*— One fatal case occurred on board a ship lying at Calabar, the victim being a Dutch seaman. The importance of yellow fever protective inoculation of all seamen sailing to West Africa has thus again been tragically demonstrated. Prompt measures were taken to deal with the port area, and other ships and the movements of the ship concerned were followed up. Burutu and Abonnema which appeared to be possible sources of infection, took all necessary measures in their areas.

110. *Aircraft.*—The volume of traffic at the airport at Kano, Lagos (Ikeja) and Maiduguri has been maintained, and the importance of Kano as an international airport is increasing.

VII.—HOSPITALS, DISPENSARIES AND OTHER UNITS

A.—Existing Facilities

111. These include :—

	Govt.	*N.A.*	*Mission*	*Private*	*Total*
Hospitals	80	9	29	44	162
Maternity Centres	3	105	64	19	191
Beds available	5,002	1,655	1,488	1,084	9,229
Rural Health Centres	2	1	—	—	3
Rural Dispensaries	20	642	82	14	758

Figures indicating the use made of these facilities are :—

Government and Native Administration Hospitals (in-patients) new cases	131,850
Government and Native Administration Hospitals (out-patients) new cases	1,270,788
Government and Native Administration Hospitals, major operations	29,725
Government and Native Administration Hospitals, minor operations	31,442
Government and Native Administration Hospitals, maternity cases	62,191
Native Administration Dispensaries, new cases	2,336,211
Native Administration Dispensaries, total attendances	7,991,153
Government Sleeping Sickness Service, total examinations	846,871

PLAY–PEN AT INFANT WELFARE CLINIC

HOME VISITING AND INSTRUCTION

B.—Additions to Hospitals and Training Schools

112. *Lagos and Colony.*—Orthopaedic Hospital, Igbobi : As a result of pressure on accommodation, it became necessary to convert an old building into a temporary ward, thus bringing the total accommodation to 196 beds. Plans have been completed for new wards, a Traumatic Unit, and a senior service wing.

113. At Lagos a new additional operating theatre is nearing completion at the General Hospital, and two new out-patient consulting rooms have been added to the out-patient block. The residential preliminary training school for female nurses was completed, and is ready for occupation.

114. A new out-patient dispensary was completed at Yaba and opened in November, 1950, and a new dispensary opened at Railway Headquarters, Ebute Metta.

115. Work is proceeding on an extension of the tuberculosis hospital, which will provide at least double the original accommodation.

116. In the *Eastern Provinces*, Onitsha hospital neared completion, progress was made in the extension to Aba Hospital, and on the new hospitals at Ogoni and Bamenda.

117. A motor launch, with barge fitted as a mobile dispensary, was stationed at Degema for use in the Creeks.

118. *Northern Provinces.*—Here, improvements have been made to the women's operating theatre at Katsina, and an out-patient block extension was completed at Sokoto hospital. An additional thirty-bed ward at Gusau, and a twelve-bedded ward at Yola are almost completed. Extensions are being proceeded with at Kafanchan, Offa and Bauchi.

119. A new hospital at Birnin Kebbi is nearing completion, and now awaits the installation of electricity, water and sanitary fittings. At Maiduguri and Lokoja, work on the new hospitals is proceeding.

120. Training Schools.—At the Zaria Pharmacy School, a laboratory block has been completed and the building of the hostel continues. The new Nurses Preliminary Training School, the Native Administration dispensary attendants' hostel and the midwives' training school and hostel, all at Kano, are nearing completion.

121. *Western Provinces.*—A site for the permanent 500-bed teaching hospital for the University College, Ibadan, has now been decided on. Plans have been prepared and the general layout approved. It is expected that the work will start in the coming year.

122. Abeokuta Infectious Diseases Hospital : The land for a new building has been acquired, and the building will begin early.

123. New Mental Hospital (Abeokuta) : The water supply arrangements are started, and a water tank has been constructed, but no building has yet taken place.

124. At Ijebu-Ode General Hospital, a new twenty-bed maternity ward was completed, and at Shagamu work on the new hospital has continued and a second thirty-bed ward, an administration block, out-patient block and mortuary were finished. Building continues on the operating threatre and junior service staff quarters.

125. Work is proceeding on an additional thirty-bed general ward, and a twenty-bed maternity ward at Warri, and on a thirty-bed ward at Benin hospital. The new Akure General hospital was officially opened in June, 1950, and work is proceeding on the ancillary buildings.

126. New ambulances were supplied to Abeokuta, Sapele, Agbor and the Rural Health Centres at Auchi and Ilaro.

127. The costs of the majority of the above projects have been met from Colonial Development and Welfare Funds.

C.—Rural Health Centres

128. Government Rural Health Centres were opened at Ilaro and Auchi during the year. A third at Kankiya in Katsina Province is under construction. These Rural Health Centres are being built as demonstration units, and their functions will be :—

(*a*) To form a focal point from which provincial health teams will operate.

(*b*) To supervise and correlate the work of the network of dispensaries, maternity homes and sanitary posts provided by Native Administration, reaching the lowest community level.

(*c*) To serve as models which the local communities may follow in expanding their rural medical facilities.

(*d*) Eventually to form an integral part of the Rural Health Services round which public health administration in a tropical country must revolve.

The aim is to provide one Government model health centre in each Province.

129. A Regional Model Demonstration Area in Rural Hygiene has been formed in the Western Region at Fiditi, a small, well-populated and typical rural district, which has been subjected to intensive health survey and propaganda followed by health control measures.

D.—Medical Field Units

130. The revised programme aims at establishing, by 1951, twelve units instead of the contemplated eighteen. Each will have twenty dressers.

131. The junior personnel for eight units have been trained and are in the field, but only six units function as such because of senior staff shortages. Dressers for two new units are completing their basic training at the Makurdi school. More advanced courses of tuition have been given at the Kaduna school, but nothing can replace practical training in the field under experienced medical officers and superintendents.

132. During the year all six established units and field staff detailed to work under other Medical Officers, have concentrated on vaccinations. The Plateau unit, with additional staff, was mobilised in September to undertake a mass vaccination campaign in the Eastern Region.

133. Northern Nigeria's experience, in the three dry seasons 1947-50 of over 150,000 cases of cerebro-spinal fever naturally gave cause for concern. Preparations were made to combat a fourth recurrence in the 1950-51 dry season, since it was known that at least one previous series of epidemics had recurred annually for five years. Field Unit officers toured all provinces known to have suffered in past outbreaks. Detailed plans for mobilisation of Government and Native Authority staff, and of transport, were drawn up in consultation with administrative and medical officers. There was a recrudescence of infection, but its onset was later than usual and its extent was much less than had been feared.

134. Progress in improving technique for field investigations and in acquiring much-needed knowledge of the incidence and severity of various endemic diseases in rural populations is slow but steady. Techniques and recording methods are being standardised, and proper statistical analysis will soon be possible. Several units have

now, in consultation with administrative and other officers, selected areas in which permanent preventive measures have begun. Real progress in such field investigations and in rural preventive work demands more continuity and experienced, enthusiastic officers.

135. In 1951, the junior personnel for the eleventh and twelfth units will be recruited, and a reasonably efficient striking force against epidemic outbreaks will have been created, when additional senior staff becomes available.

A summary of the work carried out by the Medical Field Units appears at Appendix III of this report.

VIII.—MATERNITY AND CHILD WELFARE

136. The demand for these services in the South continues to increase, and no propaganda is needed to popularise them. In fact, the demand for hospitalisation for even normal labours has become such that it has become necessary to transfer the accent to domiciliary services, and the expansion of these is now under active consideration.

137. In rural areas, Health Centres will combine with their other functions training in domiciliary midwifery, and supervision of the many small maternity homes which have been and are being established by Native Administrations, Voluntary Agencies and local village groups.

138. In the North, where conservatism is a feature, an intensive effort has been made to develop domiciliary services, and an increased number of Health Sisters has been posted there during the year. The greatest single difficulty is the lack of girls of sufficient education available for training as, without locally trained staff, only limited impact can be made on local tradition.

139. In the Eastern Provinces four-bedded maternity homes are being erected in numbers which are quite beyond the possibilities of surpevision. In some areas, Missions have volunteered to assist in supervision, and have themselves established numbers of well built homes and maintain Sisters who visit regularly.

140. The Western Region has well over 100 Maternity and Child Welfare centres, of which Abeokuta, Akure and Ijebu-Ode are busiest. The service is extremely and increasingly popular and 33,425 ante-natal and 8,427 post natal cases were treated at Government institutions alone.

141. At the Lagos ante-natal clinics, 9,908 cases were examined, with 48,972 attendances. General out-patients accounted for 11,342 cases with 50,606 attendances. Total admissions were 7,649 for the year, which compares with 6,098 for the previous period under review which covered fifteen months. Of maternal deaths at the Maternity Hospital (Massey Street), it is estimated that 25 per cent were the result of interference by self-styled "native doctors" before admission to hospital. 480 Obsterical operations were performed and, apart from patients admitted for diseases associated with pregnancy 1,242 abnormal obstetric cases were treated during the year. The total junior staff increased by twenty-two. Of a total staff of eighty-one, forty-two are pupils.

142. *Infant Welfare.*—The infant Welfare Clinics at Port Harcourt and Lagos have had a successful year. With the posting of a Health Visitor to the Cameroons, eight new infant welfare clinics were opened and are making good progress, with monthly attendances in the region of 800. Ante-natal work is combined in these new clinics, but has not shown the same progress so far.

143. Port Harcourt obtained the services of a Health Sister for part of the year, and much extremely useful work in re-organisation of the infant welfare clinics was carried out. Domiciliary follow-up visits have been paid as a routine, and visits have been made to Aba and Calabar with a view to stimulating interest in the work.

144. At Lagos the work of the clinics has increased, and the number of attendances rose by 1,900.

New Cases	3,789
Old Cases	8,004

including thirty-four motherless children and fifty-nine twins. Mothers now attend much more regularly and for longer periods. Minor treatments at the clinics increased by 1,500 showing evidence that mothers are taking more interest in the detailed care of their babies. 1,066 food demonstrations were given.

145. District Visiting figures are :—

Visits paid	37,028
First visits to homes of newly-born children ..	14,032

146. District Visitors have had a very successful year, and domiciliary visits have become a feature of infant welfare clinics, which is much appreciaed by mothers.

IX.—MENTAL HEALTH

147. In the Northern Region the mentally deranged, if a danger to themselves or to society in general, are cared for in small asylums attached to Native Administration Prisons. Otherwise they are placed or left in the hands of relatives. No facilities are available in that Region for the proper treatment of mental illness.

148. In the Western Region, Lantoro Asylum, Abeokuta, continues to provide, accommodation for all types of male lunatic, under the care of the Alienist. Mention has been made of the new Mental Hospital near Abeokuta at paragraph 123 of this report.

149. In the Eastern Provinces there is an asylum at Calabar admitting all types of lunatic, and a similar institution exists at Yaba on the Lagos mainland. Otherwise the mentally sick are cared for in the same manner as in the Northern Provinces.

150. *Figures.*—

	Yaba		*Abeokuta*		*Calabar*		*Total*	
	Male	*Female*	*Male*	*Female*	*Male*	*Female*	*Male*	*Female*
Number on 31-3-50 ..	133	79	50	—	31	9	214	88
Admitted	87	36	23	—	—	2	110	38
Discharged	67	24	13	—	2	—	82	24
Died	11	10	—	—	4	1	15	11
Remaining 31-3-51 ..	142	81	60	—	25	10	227	91

The high admission and discharge figures for Yaba are due to the fact that it is used extensively by the Lagos Magistracy for "observation" cases. In other districts, such cases are observed in prison.

X.—DENTAL SERVICE

151. During the period under review, the staff remained at one senior Dental Surgeon and six Dental Surgeons. The position in regard to recruitment of staff is therefore even less satisfactory than during the previous year as a new Dental Centre at Ibadan, and a Mobile Unit have been brought into use.

152. A further new centre is nearing completion at Kano, and although it will not be possible to post a Dental Surgeon until the staff position improves, it will provide in the meantime the necessary facilities for the touring officer.

153. Provision of a new centre at Enugu to replace the existing temporary building is under active consideration. Extension of the facilities available in Lagos has now becoms necessary, and provision has been made for a new centre on the mainland at Yaba, bue the site remains to be chosen. Touring by Dental Surgeons was somewhat curtailed during the year owing to shortage of staff.

154. *Mobile Dental Unit.*—A mobile dental unit arrived at Ibadan in July, 1950, where it functioned first as a static surgery until the new centre opened, when it toured the Ondo and Benin Divisions. Further experience is required to decide whether the advantages of a mobile dental clinic in this territory outweigh those of other methods of touring.

155. The training of apprentices is summarised at Section XIII of this report.

156. *Treatment carried out* (1st April, 1950 to 31st March, 1951):—

Patients	8,707
Fillings	2,941
Dressings	1,731
Extractions	5,183
Scalings	1,033
Root treatments	88
Dentures	1,132
Repairs	394
Crowns	4
General surgical cases	112
General anaesthetics	241
Patients under 14 year of age	403
Attendances	12,360

XI.—X-RAY SERVICES

157. Eight new centres have been opened, and there are now twenty-nine X-ray units in eighteen X-ray Departments. In addition, five obsolete units have been replaced by modern shock-proof apparatus. Five complete sets of equipment are ready for installation as soon as power is available. Eight further sets of equipment and two large four-valve X-ray units, in addition to a completely mobile and self-contained mass miniature radiography unit for tuberculosis surveys, are on order. When the programme is completed we shall have forty-six machines in thirty-four departments. Details of the services as envisaged are shown in chart form at Appendix IV.

XII.—LABORATORY SERVICE

158. Some expansion of the Laboratory Service took place during the year with the opening of new laboratories at the General Hospital, Sapele and the Rivers Area Leper Settlement, Osoba.

159. The Regional Pathologist, Northern Provinces, now carries out the bacteriological, serological biochemical and histological work for the Northern Region, which was hitherto carried out at Lagos and Yaba.

160. A start has been made with the buildings to house the new scheme for preparation of dessicated combined yellow fever smallpox vaccine. Equipment has yet to arrive. Smallpox and rabies vaccine was produced on an ever increasing scale.

161. Recruitment of suitable trainee technical assistants has improved. The summarised report of the work of the Service is shown at Appendix V.

XIII.—TRAINING OF MEDICAL SERVICES PERSONNEL

Doctors.

162. Courses of study have been held in Pathology, Bacteriology, Medicine. Surgery, Obstetrics and Gynaecology, and Preventive and Social Medicine at Ibadan, Some of the Preventive and Social Medicine courses have been conducted in Lagos, and students have attended special courses in Lagos on Malariology, Forensic Medicine, Orthopaedics and diseases of the eye, ear, nose and throat, and of the skin.

163. The last batch of students taking the course leading to the Yaba Diploma have now finished all their examinations.

164. The teaching of Anatomy, Physiology, Pharmacology to pre-clinical Students is now carried out at Ibadan. The Medical School at Yaba was vacated in October, 1950

Examinations.

165. The Second Medical Examination under Special Relationship with the University of London was held for the first time in June, 1950. The results were creditable. Clinical teaching of the successful students commenced in November, 1950. Considerable difficulty was experienced owing to lack of adequate clinical teaching facilities.

Student Numbers.

166. Accommodation for pre-clinical students during the period under review was adequate, and there was no difficulty about accommodation for clinical students. The Departments of Anatomy, Physiology and Pharmacology are located on the permanent site of the College. Teaching of the Pre-Clinical students is carried out in the hospitals and at the temporary site.

Teaching Hospitals.

167. The Board of Management set up to look after the teaching hospitals experienced considerable difficulty, and there was some confusion about its powers and sphere of influence. The administration of the teaching hospitals was consequently affected, and by the end of the period it was apparent that a review of the consittution of the Board of Management was necessary. The attention of the Nigerian Government was drawn to the difficulties, and at the end of the period steps were put in hand to review the whole scheme for development of a teaching hospital, and considerable changes in the accepted scheme were proposed.

168. *University College, Ibadan.—*

RECORDS OF MEDICAL STUDENTS

	April-June, 1950	*October* 1950-*March*, 1951
1st Year Intermediate Students (Pre-Medical) ..	31	17
2nd Year Intermediate Students (for Intermediate Science and exemption first M.B.)	29	31
1st Year Pre-clinical Students	3	27
Carried forward	63	75

	April-June, 1950	*October*, 1950-*March*, 1951
Brought forward	63	75
2nd Year Pre-clinical Students (for second M.B. Examination)	14	5
1st Year Clinical	—	12
2nd Year Clinical	—	—
Yaba Diploma 4th Year	6	—
Yaba Diploma 5th Year	8	6
Total	91	98

RECORD OF EXAMINATIONS

	Sat	*Passed*	*Referred*	*Fail*
2nd M.B. Examination, June, 1950	14	7	6	1
2nd M.B. Examination, June, 1951	5	1	3	1
Yaba Diploma (Final Professional Examination) 1950	8	8	—	—
Yaba Diploma (Final Professional Examination) 1951	6	5	1	—

NOTE.—One student referred in 2nd M.B. Examination, 1950, was to repeat the course.

Dentists.

169. Two students at Ibadan University have taken their London University 2nd M.B. and have been recommended for Scholarships in dentistry at United Kingdom training schools.

Nurses.

170. A new Lagos residential Preliminary Training School for nurses has been completed, and female students will take up residence early in the coming year.

171. During 1950, approximately 150 pupils, male and female, completed the six months course at Preliminary Training Schools, and were distributed throughout the various training hospitals.

172. With the increasing numbers and size of hospitals, it has become obvious that until many more suitable candidates come forward, particularly females, the staff situation will remain acute. Of nurses-in-training, 165 passed the qualifying examination and became Registered Nurses.

173. Twenty-five Midwives completed their training at Government Maternity Training Hospitals and qualified as Grade I Midwives.

Grade II Midwives.

174. These are trained at Mission and Native Administration hospitals and clinics for employment in local communities. They are not employed as such by Government, and their main function is domiciliary midwifery. They will in future take a large part in the Rural Health Services. Seventy-eight new Grade II Midwives registered during the year. Very many more passed but failed to effect their Registration.

Assistant Physiotherapists.

175. Five qualified during the year and seven are in training. Seven assistant physiotherapists were posted to regional hospitals during the period.

Laboratory Technical Assistants.

176. Training continues in Lagos and was begun also in the Northern Provinces at the Kano Pathological Department.

177. It was decided during the year that technical assistants in training should enter through a preliminary training school giving a course of six months duration, after which successful students are appointed to Government service as Third Class Technical Assistants on probation.

178. Tests for progress, accelerated promotion and confirmation of appointment were carried out during the year with twenty-seven passes and fifteen failures in the various categories.

Sanitary Inspectors.

179. A new Sanitary Inspectors' Training School at Aba started an advanced course for Government Sanitary Inspectors. A total of forty-one sanitary overseers were trained during the period. In the North, twenty-five sanitary inspectors passed the examinations and qualified. In the Lagos school there were fifty-four first and second year students; thirty of these completed the course and twenty-five were successful in qualifying as sanitary inspectors. Fourteen sanitary inspectors obtained the certificate of the Royal Sanitary Institute.

180. During the year new regulations were announced for admission to the Examination of the Royal Sanitary Institute for Sanitary Inspectors in British West Africa. The standard of education of entrants was raised to London Matriculation or Cambridge School Certificate.

Dental Technicians.

181. The final details of the training scheme have been completed and four pupils came into training under the Dental Technician Instructor on 1st November, 1950. Progress is satisfactory but the numbers to be trained are at present limited by the available accommodation. The period of training will be three years.

X-Ray Technicians and Operators.

182. The second session of the School of Radiography commenced on 1st October, 1950, with thirteen students. Ten students will go forward to examination in the coming year. In the forthcoming session, the numbers admitted will be limited to six in order that each may have an adequate amount of regular practical training.

Pharmacists.

183. At the School of Pharmacy, Yaba, 104 students received instruction throughout the year, and twenty-one of those who completed training and passed the necessary examinations were awarded diplomas as qualified Chemists and Druggists.

184. At the Zaria School, where the education standard is lower, the Certificate awarded is the Dispenser's Certificate (Northern Provinces). During the year thirty-four students were under training, and the number who completed the course and received certificates was eight.

185. The total number of persons registered under the Pharmacy Ordinance has therefore been increased by twenty-nine during the period, a very welcome addition to the average annual increase.

186. Coincidentally with the work of the Schools, a large number of preparations were manufactured at the Schools of Pharmacy during the year. Although this type of work is not properly part of the functions of a teaching institution, it nevertheless provides additional practical training.

Dispensary Attendants (*Native Administration*).

187. Dispensary Attendants for the Native Administrations in the Northern Provinces are trained at schools at Kano and Zaria. Elsewhere the attendants are trained at local hospitals.

Medical Field Unit Staff.

188. These are trained at the Makurdi School.

Dispensary Attendants (*Sleeping Sickness*).

189. These are trained at Kaduna. The numbers under training are diminishing and the school's main purpose is to provide refresher courses as well as more advanced training for field unit personnel.

Malaria Service—Teaching and Training.

190. A course of one week's duration was run for senior medical students of Ibadan University. Two courses of fourteen days duration were run for sanitary inspectors and twenty-three in all attended. Dressers from Field Units were given intensive courses of six weeks in malaria parasitology with the aim of producing competent microscopists trained in malaria diagnosis. All the courses were popular, and examinations held at their close gave satisfactory results.

Leprosy Control.

191. The organised training of Nigerian leprosy inspectors to operate rural control services continued. Of twenty-five inspectors in training during the year, fifteen passed their examination at the end of the training period.

General.

192. A Medical Auxiliaries Ordinance is at present being formulated in order to control and legalise the position of trained medical personnel who do not come within the scope of the Pharmacy, Midwives or Nurses Ordinances.

XIV.—RESEARCH AND SURVEYS

1. Leprosy Research

193. The work of the evaluation of sulphone treatment which started in 1948 has continued into 1950, and produced ample evidence that sulphone therapy is vastly to be preferred to hydrocarpus oil treatment, and that sulphone therapy can be used safely on a large scale. In 1950, therefore, sulphone therapy was introduced generally in the Nigeria Leprosy Service under the general advice of the Leprologist of the Research Unit.

194. The work of the Research Unit has turned now to an investigation of the relative merits of the various sulphones and to an assessment of optimum dosage, and

full and detailed results are to be published. Preliminary findings show that the activity of the various sulphones is in direct proportion to the amount of diamino-diphenyl-sulphone liberated in the body, and that greatest efficiency is produced by enteral administrations. Diamino-diphenyl-sulphone given by mouth, therefore, is the sulphone therapy of choice. The optimum dosage has been shown to be considerably less than was at first supposed and equivalently good results, with fewer toxic complications, can be produced with a reduction in dosage from that originally used. The full report on four years experience of sulphone treatment of leprosy was published in the *Transactions of the Royal Society of Tropical Medicine and Hygiene* Vol. 44, No. 6 of 1st June, 1950 (Page 635).

195. Work is proceeding on preliminary investigations into the role of streptomycin in the treatment of leprosy.

196. Work has also started on an investigation of the treatment of leprosy with thio-semicarbazone.

2. Malaria

197. The research activities of the malaria service were extended during the year and included the following :—

(*a*) *Epidemiology of Malaria.*

198. An investigation of the natural history of malaria in African infants was concluded, and its preliminary results briefly reported at the World Health Organisation Malaria Conference at Kampala. A complete report of this investigation will be published shortly.

(*b*) *Chemotherapeutic Field Trials.*

199. A method of evaluating the activity of anti-malarial drugs on three "standardised" groups of 245 African school children naturally infected with *P.falciparum*, *P.malariae* and *P.ovale* was used for comparative field trials of mepacrine, proguanil and chloroquine (niva-quine). The complete report was published in the *Transactions of the Royal Society of Tropical Medicine and Hygiene* (March, 1951). A similar method was used with success for the first field trials of the new anti-malarial 2 : 4-diamino-(BW.50-63) pyramidine.

Survey of Anti-Malarial Drugs in Nigeria

200. A survey of the incidence of malaria in the non-African population of Nigeria and the relation of this incidence to the prophylactic administration of anti-malarial drugs was carried out by means of a medical and general questionnaire, the response to which was gratifying. This survey has revealed that prophylactic proguanil is used by the non-African population of Nigeria with a considerable degree of success, although occasional failures of it cannot be denied. The slow therapeutic effect of proguanil and its failure to produce a radical cure of *P.falciparum* infections were confirmed. This survey was reported in the *British Medical Journal*, 1950, Vol. 2, page 7.

(*c*) *A Report on Malaria in Nigeria.*

201. A comprehensive report on malaria in Nigeria was presented by the Senior Malariologist at the World Health Organisation Malaria Conference at Kampala (Uganda), and will be published in the forthcoming Bulletin of the World *Health Organisation.*

(*d*) *Experimental Malaria Eradication Project.*

202. The project continues at Ilaro, and a summary of progress reports is given at Appendix VI. So far, it appears that one of the vectors, *A.funestus*, has been eradicated.

(*e*) *Trials on aircraft disinsectization.*

203. Trials carried out at the Lagos airport in two types of aircraft used for inter-colonial flights (de Havilland "Dove" and Bristol "Wayfarer") utilised the new type of Aerosol bomb ("low pressure Freon propelled aerosol dispenser"), and revealed that the effective use of the formulation must amount to a dose of at least 0.06 grammes pyrethrins per 1,000 cubic feet of aircraft space. The importance of the personal comfort factor during spraying of aircraft in tropical areas was evaluated. A report on these trials was published in the Monthly Bulletin of the Ministry of Health, 1950 page 142.

(*g*) *Ecology of Crab-hole breeding mosquitoes.*

204. Previous work carried out on the ecology of scrab burrows of the Lagos seashore was reviewed and related to the ecology of mosquitoes breeding in crab holes. It was found that there is a definite relationship between the species of crabs and the particular species of mosquitoes breeding in crab burrows, within the three main ecological zones of the West African seashore. The successful use of gammexane pellets for control of mosquitoes breeding in crab-holes and tree-holes was described. This report was presented at the annual meeting of the American Mosquito Control Association in Chicago (U.S.A.) in March, 1951.

3. Virus Research Institute

205. The former Yellow Fever Research Institute previously under the control of the Rockefeller Foundation is now part of the Colonial Medical Research Service under which it has been named the Virus Research Institute. The scope of the Institute has been extended to include general virus research.

206. Dr R. G. Hahn, a staff member of the International Health Division of the Rockefeller Foundation and former Director of the Yellow Fever Research Institute, rounded off his work on the scratch method of yellow fever vaccination.

207. In the spring of 1950, a large number of vaccinations was made in the Warri Province using the combined yellow fever-smallpox vaccine. Protection tests in post-vaccination sera were carried out by Dr Hahn, and his paper on the subject is about to be published.

208. Preliminary arrangements were also made for the further study of anaemia, neurotropic viruses and rabies.

General Work

209. The testing and distribution of the remaining supplies of Rockefeller yellow fever vaccine continued throughout the year. 100,000 doses remain for general use. The

total distribution of yellow fever vaccine from 1st April, 1950 to 31st March, 1951, was 20,160 doses, as follows:—

	Nigeria	*Gold Coast*	*Sierra Leone*	*Gambia*	*Total*
Military	2,140	—	—	—	2,140
Civil	5,700	2,200	4,000	—	11,900
Virus Research Institute	6,120	—	—	—	6,120
Total No. of doses ..	13,960	2,200	4,000	—	20,160

210. Routine serological tests for yellow fever were made on sera from Sierra Leone, Gold Coast and Nigeria.

4. Tropical Physiology

211. The Hot Climate Physiological Research Unit is carrying out work on the detailed study of the sweat rates and of the skin and body temperature changes exhibited by unacclimatised Africans working in a variety of different climates. Initial investigations into the peculiarities of renal physiology in the tropics have also been started, as well as research on the endocrine control of heat.

5. Loaiasis Research Scheme (Kumba)

212. During the period under review, progress has been slower than expected but the results have been reasonable. Information has been obtained on the bionomics of the vectors particularly their biting habits. The vectors have been shown to be present in large numbers in the forest canopy, thus further suggesting a connection with monkey filariasis. On the medical side further surveys of the human and monkey population were carried out.

213. Plans for the immediate future are mainly entomological and several large scale investigations are being put in hand.

XV.—MEDICAL WORK OF MISSIONS

214. Mission hospitals have done excellent work with limited facilities and staffs which are hard pressed. In the Western Provinces there are five hospitals which provide accommodation for 300 in-patients. In addition Mission maternity centres provide 175 beds.

215. The Eastern Provinces Missions, with thirteen hospitals and twenty maternity homes and dispensaries, provide 536 beds.

216. In the Northern Provinces, eleven hospitals and seventy-three dispensaries provide 477 beds. Here also the major efforts to deal with leprosy have been carried out by the Missions on a humanitarian basis, and Government is now about to organise the control and treatment of the disease by provision of technical staff and funds, under the guidance of the Assistant Director of Leprosy Control. Modern X-ray plants and equipment have been installed during the year in several mission hospitals and, where requested, the Government inspecting radiographer has advised and assisted in installation. A report on Leprosy work in non-Governmental bodies is embodied in the report at Appendix II.

XVI.—MEDICAL LIAISON WITH NEIGHBOURING TERRITORIES

217. Liaison has continued to a limited degree with territories bordering on Nigeria during the year. It is hoped that Regional Directors will visit their *confreres* in the French territories at least once in the coming year and that medical officers working on the borders will visit those on the opposite side biannually.

XVII.—DISTINGUISHED VISITORS

218. Among the many distinguished visitors to Nigeria during the year were the following :—

Dr E. D. Pridie, C.M.G., D.S.O., O.B.E., Chief Medical Officer, Colonial Office, who visited the country on inspection.

UNDER THE NUFFIELD FOUNDATION SCHEME

Surgery	Professor Rodgers, O.B.E., F.R.C.S., Department of Surgery, Queen's University, Belfast.
Ophthalmology	Dr G. I. Scott, M.A., F.R.C.S., Consultant Ophthalmologist, Edinburgh.
Orthopaedics	Professor H. J. Seddon, M.A., D.M., F.R.C.S., of the Royal National Orthopaedic Hospital.

Their visits were much appreciated by the staff, and were of the greatest value to the Department.

Medical Research	Professor H. P. Himsworth, M.D., F.R.C.P., Chairman of the Colonial Medical Research Committee, and Secretary of the Medical Research Council.
	Dr R. Lewthwaite, O.B.E., D.M., F.R.C.P., Director, Colonial Medical Research Service.
	Dr Max Theiler, Rockefeller Institute for Medical Research, New York.
	Col. H. E. Shortt, C.I.E., F.R.S., M.D., Guest Research Worker, West African Institute Trypanosomiasis Research, President of the Royal Society of Tropical Medicine.
Medical Education ..	Dr R. R. Struther, and Dr R. S. Morrison, from the Medical Sciences Division of the Rockefeller Foundation.
World Health Organisation	Professor Brock, D.M., F.R.C.P., University of Capetown to study the clinical features, aetiology and ecology of kwashiorkor.
	Dr Autret, a member of the Staff of the Food and Agricultural Organisation, Washington, U.S.A.
	Dr D. M. Blair, World Health Organisation and Southern Rhodesian Medical Services. Consultant on Bilharziasis.

XVIII.—DEATHS IN THE SERVICE

219. It is with great regret that we have to record the loss of the following young members of the senior service staff who died suddenly while on active duty at their stations :—

Dr H. G. McQuade at Ilorin on 1-9-1950.
Dr William Mullen at Calabar on 25-2-1951.

TABLE I

RETURN OF DISEASES AND DEATHS FOR THE YEAR 1950-51

ALL RACES

No.	*Diseases*	*In-patients*	*Deaths*	*Out-patients*	*Deaths*
1	Typhoid and Parathyphoid fever	79	17	37	—
2	Plague	—	—	—	—
3	Scarlet fever	—	—	—	—
4	Whooping cough	157	12	1,866	—
5	Diptheria	17	—	—	—
6	Tuberculosis of respiratory system	1,169	345	708	—
7	All other forms of tuberculosis	416	32	218	1
8	Purulent infection and septicaemia (non-puerperal).	102	29	105	—
9	Dysentery	4,159	467	22,184	—
10	Malaria	10,730	239	120,361	—
11	Syphilis	6,706	76	14,870	—
12	Yellow Fever	1	1	—	—
13	Smallpox	2,204	361	334	—
14	Rabies	23	18	122	1
15	Typhus fever	5	—	10	—
16	Diseases due to helminths	6,453	46	74,752	—
17	Other infective or parasitic diseases	10,686	704	58,410	—
18	Cancer and other malignant tumours of the bucal cavity and pharynx.	19	2	14	—
19	Cancer and other malignant tumours of the digestive organs and peritoneum.	76	12	150	—
20	Cancer and other malignant tumours of the respiratory system.	3	1	—	—
21	Cancer and other malignant tumours of the uterus.	26	3	19	—
22	Cancer and other malignant tumours of the breast.	27	2	29	—
23	Cancer and other malignant tumours of other or unspecified organs.	206	11	274	—
24	Non-malignant tumours or tumours of undetermined nature.	768	23	2,247	
25	Rheumatic fever	81	2	3,966	
26	Chronic rheumatism and gout	1,657	8	69,005	
27	Diabetes mellitus	151	8	509	—
28	Diseases of the thyroid and parathyroid glands	88	5	384	—
29	Other general diseases	58	5	1,855	—
30	Vitamin-deficiency diseases	603	115	11,980	—
31	Pernicious and other anaemias	1,623	123	15,604	—
32	Leukaemias and other diseases of the blood and blood-forming organs.	339	40	6,763	—
33	Chronic or acute alcoholism	26	—	18	—
34	Other chronic poisonings	103	20	409	—
35	Diseases of the medulla and spinal cord, other than locomotor ataxia.	176	47	70	—
36	Non-meningococcal meningitis	13	4	26	—
37	Intra-cranial lesions of vascular origin	384	90	319	—
38	Mental disorders and deficiency	444	9	210	—
39	Epilepsy	212	13	645	—
40	Other diseases of the nervous system	815	43	15,937	—
41	Diseases of the eye, ear and their annexa	3,711	4	91,032	—
42	Pericarditis (including chronic rheumatic pericarditis).	15	2	4	—
43	Chronic affections of the valves and endocardium.	51	9	76	—
44	Diseases of the myocardium, including aneurysm of the heart.	309	94	373	—
45	Diseases of the coronary arteries and angina pectoris.	28	10	46	—

TABLE I—*continued*

RETURN OF DISEASES AND DEATHS FOR THE YEAR 1950-51

ALL RACES

No.	*Diseases*	*In-patients*	*Deaths*	*Out-patients*	*Deaths*
46	Other diseases of the heart	602	151	691	—
47	Arteriosclerosis and gangrene	109	18	174	—
48	Other diseases of the circulatory system	1,641	26	11,540	—
49	Bronchitis	3,637	53	82,473	—
50	Pneumonia and broncho-pneumonia	6,639	588	3,779	—
51	Pleurisy (non-tuberculous)	381	18	2,794	—
52	Other diseases of the respiratory system except tuberculosis.	848	41	12,244	—
53	Ulcer of the stomach or duodenum	595	23	5,869	—
54	Diarrhoea and enteritis (under 2 years of age)	1,343	113	18,439	—
55	Diarrhoea, enteritis and ulceration of the intestines (2 years of age and over).	1,940	131	82,534	—
56	Appendicitis	173	6	202	—
57	Hernia, intestinal obstruction	7,917	182	5,697	—
58	Cirrhosis of the liver	1,340	65	262	—
59	Other diseases of the liver and biliary passages, including biliary calculi.	1,699	114	71,878	—
60	Other diseases of the digestive system	2,837	121	56,765	—
61	Other diseases of the kidneys and ureters	656	129	1,206	—
62	Nephritis	247	14	441	—
63	Calculi of the urinary passages	89	5	60	—
64	Diseases of the bladder, except tumours	539	6	2,559	1
65	Diseases of the urethra urinary abscess, etc.	1,026	42	3,120	—
66	Diseases of the prostate	45	5	43	—
67	Other diseases of the genital organs, not specified as venereal or connected with pregnancy or the puerperal state.	6,399	74	22,955	—
68	Diseases and accidents of pregnancy	2,546	93	3,827	—
69	Abortion without mention of septic conditions	2,276	7	1,951	—
70	Post abortive infection	43	4	17	—
71	Infection during child birth and the puerperium	195	26	14	—
72	Other accidents and diseases of child birth and puerperium.	17,302	183	297	—
73	Diseases of the skin and cellular tissue	8,937	91	169,816	—
74	Diseases of the bones and organs of movement, except tuberculosis and rheumatism.	1,646	16	16,968	—
75	Congenital malformations (still-births excepted).	152	26	233	—
76	Congenital debility	140	15	1,289	—
77	Premature birth (still-births excluded)	789	95	16	—
78	Injury at Birth	19	5	4	—
79	Other diseases peculiar to the first year of life	664	206	1,327	—
80	Senility, old age	86	17	181	—
81	Suicide	10	4	2	—
82	Homicide	120	1	105	—
83	Automobile accidents (all motor-driven road vehicles).	332	14	128	—
84	Other violent or accidental injuries (automobile accidents excepted).	10,553	160	130,364	—
85	Injuries of persons (in military service during— and of civilians) due to operations of war.	38	—	512	—
86	Causes of illness unstated, or ill-defined	1,407	44	26,519	—
87	Others	351	13	5,897	1
	TOTALS	143,280	5,997	1, 61,598	4

APPENDIX I

SUMMARY OF ANNUAL REPORT—SLEEPING SICKNESS SERVICE 1950-51

Administration.—The method of field administration which has been described in previous reports is being constantly improved.

2. The overall position in the central, old endemic provinces of Zaria, Plateau and Benue has remained stable with the exception of three potentially dangerous foci. In these provinces, control is being consolidated and made absolute by various tsetse-eradication projects. At the perimeter of this area, however, a number of epidemiological situations have arisen which merit thorough investigation and attention. Such foci were detected in Niger, Katsina, eastern Kano, Adamawa, and Cameroons Provinces. Work complementary to this has been performed by Field Unit staff, whose reports are always at the disposal of the Sleeping Sickness Service, and in the case of Adamawa Province, an important and most interesting focus was disclosed. The year's work has covered a very large area throughout which the epidemiological situation is well defined, except in Bauchi Province and part of the Cameroons.

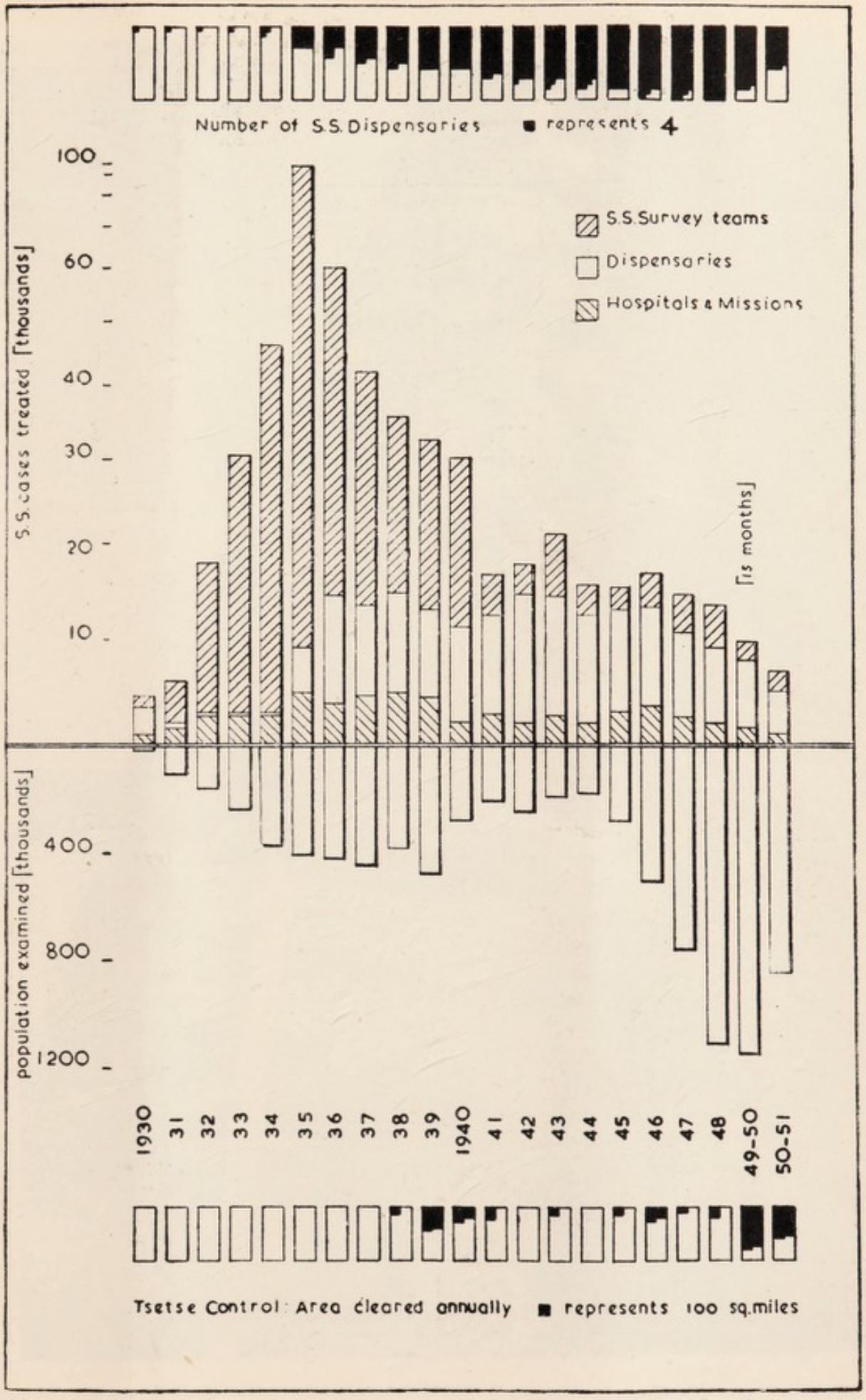
3. *The Main endemic Area: Zaria Province.*—Team surveys were undertaken over a large area of the southern part of this province, and the general situation was found to be satisfactory. The infection rate as disclosed by Team resurveys showed 0.29 per cent, and that of Dispensary resurveys, 0.25 per cent.

Plateau Province.—Part of the high grassland of this province is free from tsetse, and Field Unit operations confined to this area produced no cases of sleeping sickness. The dispensaries along the escarpment continue to report numbers of cases, and the dispensary resurvey figures from Shendam and Pankshin Divisions indicate a relatively high endemicity of the disease. Shendam Division is now being tackled by mass survey and treatment together with a tsetse eradication programme. Prophylactic Pentamidine continues to be given to all mines labour, and not a single break-through has been reported. A problem in Jemaa, Southern and Shendam Divisions, is the planned resettlement of populations from the unproductive hill areas; in one of these pentamidinization is practised; in the others, regular surveillance. The infection rate disclosed by Sleeping Sickness Team Surveys is 0.4 per cent, by Dispensary Surveys 1.3 per cent, and by Surveillance of minesfields etc., 0.4 per cent.

Benue Province.—The Field Unit Service, working in the endemic areas of Wukari, disclosed the risks attendant upon infected Tiv immigrating into this division. A resurvey by a Sleeping Sickness Assistant revealed a 4.8 per cent infection rate in Ndzorov clan area in north-east Tiv Division, which had not been visited for five years. The infection rate disclosed by Sleeping Sickness Team re-surveys is 0.6 per cent and that by Dispensary resurveys 0.4 per cent.

Ogoja Province.—Although politically within the Eastern Provinces, Ogoja occupies the south-east corner of the main central endemic block, and sleeping sickness in this province is clinically and epidemiologically similar to that which occurs in southern Benue. The Infection rate disclosed by Sleeping Sickness Team resurveys is 0.7 per cent and that by Dispensary resurveys 0.7 per cent.

4. *Satellite Foci at the Perimeter.*—Constant attention has been directed to the provinces which border on the central endemic area described above. A number of potentially dangerous foci have been detected and controlled. There exists the likelihood of a centrifugal expansion of these methods becoming necessary as the opening


Number of S.S. Dispensaries ■ represents 4
S.S. cases treated [thousands]
100
60
40
30
20
10
S.S. Survey teams
Dispensaries
Hospitals & Missions
[15 months]
population examined [thousands]
400
800
1200
1930
31
32
33
34
35
36
37
38
39
1940
41
42
43
44
45
46
47
48
49-50
50-51
Tsetse Control: Area cleared annually ■ represents 100 sq. miles

ANTI-MALARIA SQUAD

RURAL HEALTH CENTRE, ILARO

ANTI-MALARIA SPRAYING GANG, ILARO

up of the country continues in the east and west. The necessity for such vigilance at the perimeter of the endemic areas taxes resources owing to the long distances which must be covered, and the demands made upon time, transport and senior personnel.

Niger Province.—Two small teams have worked continually in Minna and Bida Divisions for the greater part of the year. Infection rates of up to 5 per cent have been disclosed in certain hamlets on the lower reaches of the Kaduna and Gboko river systems. In addition to this, dispensary staff has performed small resurveys with interesting and valuable results. A small but important survey at Rabba, an old port on the Niger River, revealed an incidence of 4.0 per cent with individual hamlets giving figures of between 5.0 per cent and 12.0 per cent. This finding was of sufficient interest to merit further investigation. The annual figures for the province as revealed by Sleeping Sickness Team resurveys showed an infection rate of 0.6 per cent and that by Dispensary resurveys of 0.5 per cent.

Sokoto Province.—Little activity was required in this peripheral area. In Yauri Emirate a survey was performed in Shanga District as a precaution in connection with a cotton development scheme. The infection rate disclosed by Sleeping Sickness Team resurvey is 0.03 per cent.

Katsina Province.—Only the southern part of this province up to the Northern limit of *G.tachinoides* distribution, lies within the Sleeping Sickness area. In Kankara district about 170 cases were detected during an extensive resurvey. Although no high infection rates were found in individual hamlets, this area needs, for its human and cattle population, furtherance of the protection previously given by strategic clearings and resurveys of villages. The infection rate disclosed by Sleeping Sickness Team resurveys is 0.1 per cent and that by Dispensary resurveys 0.3 per cent.

Kano Province.—Sleeping Sickness has now a very low incidence in the south and west, these areas being part of the central endemic block which has received so many years of attention. During the year, however, a focus of considerable historical repute again sprang to life in Jafun District of north-eastern Kano, along the Hadeija river. In April, 1951, a team of experienced Dispensary Attendants are to begin mass surveys and treatment along the Hadeija river system. The infection rate disclosed by Sleeping Sickness Team resurveys is 0.1 per cent and that by Dispensary resurveys (Southern Kano) 0.2 per cent.

Bornu Province.—Work in this far-flung province has been largely confined to Bedde Emirate on its western border and that of the Sleeping Sickness staff attached to the Bornu Field Unit working mainly in Biu. Little infection exists in this province at present, except in a few villages near Gorgoram, along the Hadeija river system. The infection rate disclosed by Dispensary resurveys is 0.2 per cent.

Bauchi Province.—Near Kalatu the regular examination of mines labour has proceeded throughout the year. The Infection rate as disclosed by Dispensary resurveys of Mines Labour is 0.4 per cent and that by Dispensary resurveys 2.0 per cent.

Adamawa Province.—Reports from Bautaji dispensary in the Wukari Division of Benue Province suggested that a focus in Bakundi District of southern Adamawa, which had not been investigated for thirteen years, had again become active. A team of Sleeping Sickness personnel conducted a resurvey followed by mass treatment over a very wide, thinly-populated area. The infection rate revealed by the Sleeping Sickness Team resurvey is 1.2 per cent.

British Cameroon.—Attention was directed to the presence of sleeping sickness by the discovering of scattered foci and by reports of similar foci in neighbouring parts of *French Cameroons.* A detailed knowledge of the incidence in the adjacent areas of Mamfe and Bamenda was lacking, and a survey team was introduced at the end of 1950, to enlarge considerably the scope of the resurveys which had previously been conducted by the Sleeping Sickness Dispensary Attendants at Fontem dispensary. In Bamenda, Sleeping Sickness personnel worked throughout the year in conjunction with the Cameroons Field Unit. Although no evidence of epidemic conditions, such as exist in French territory, has been found, a number of small foci with infection rates of up to 10 per cent have been detected in Mamfe Division, scattered throughout areas which seem totally free from infection. The infection rate disclosed by Sleeping Sickness Team surveys is 0.7 per cent and that by Dispensary surveys 2.0 per cent.

Rivers Province.—Surveys were continued from the previous year, and completed in September, 1950. No further foci of transmission, such as that of Lobia, were detected. The infection rate disclosed by Sleeping Sickness Team survey is 0.06 per cent.

5. *Total Figures for Nigeria :—*

	Number examined	*New S.S. cases*	*Infection rate*
S.S. Teams	536,647	1,801	0.33 per cent
Dispensary resurveys	254,479	1,067	0.4 per cent
Mines examinations	20,571	109	0.5 per cent
M.F.U. surveys with S.S. personnel	35,174	184	0.5 per cent
Total Examinations ..	846,871	3,161	1.37 per cent

The total number of new cases diagnosed during the year was 7,495—the lowest since 1931. In 1947 the figure was double this number in spite of the fact that about 100,000 fewer people were examined. It may be said that the last four years have seen the passing of an epidemiological era of twenty year! during which country wide epidemics arose and were reduced to relative innocuous proportions. However, the price of safety is eternal vigilance, and it remains essential to maintain a system whereby potentially dangerous foci can be detected at an early stage of their development, and small mobile striking forces readily despatched to threatened areas.

6. *Clinical Aspects.*—Much consideration has been given to the changing clinical aspects of the disease in Nigeria. The field resurvey system has the advantage, *inter alia*, of detecting cases at an early stage of the disease and therefore promises the best possible results from treatment. The average voluntary case, however, has a much poorer prognosis, and notwithstanding the increased resurvey activity of recent years, the proportion of virtually incurable relapsed cases is increasing.

Figures for the last four years are :—

	1947-48	1948-49	1949-50	1950-51
New cases	14,474	13,575	10,241	7,495
Relapses	—	1,647	1,615	1,343

The proportion of relapses of any one year to the new cases treated in the previous year gives a rough guide to the situation, thus :—

1948-49	1949-50	1950-51
1,647/14,474	1,615/13,575	1,343/10,241
or 1 in 8.7	or 1 in 8.4	or 1 in 7.6
or 11.5 per cent	or 11.9 per cent	or 13.2 per cent

It is impossible to say yet whether this is a natural and transient phenomenon attendant upon the reduction in new infections each year ; if so, then the wave of relapses will subside as either recovery or death takes place among the individuals. It is equally likely, however, that years of mass treatment have eliminated all but the most resistant strains of trypanosome, that the relapsed state is going to become increasingly common, and that within a few years chronic Sleeping Sickness may become an even greater burden upon hospitals, asylums and prisons. With this possibility in mind, drug trials have been proceeding with the object of finding a reliable and non-toxic substitute for the time-honoured Tryparasamide in relapsed cases. It is too early to indicate the likely outcome of this work on account of the long follow through period required for accurate interpretation of results.

7. *Tsetse Control.*—Four superintendents were recruited. Officers were posted to Kano, Katsina, Zaria, Plateau and Benue provinces and, temporarily, to the Kontagora Division of Niger Province. A second entomologist was engaged, giving a tsetse control staff of two entomologists and eleven control officers and superintendents.

The revision of the Ten-Year Development Plan did not include provision for the £365,000 scheme for extension of tsetse control measures. A revised plan, costing £77,000, for eradicative work in Kano, Katsina and Zaria, to be supervised by the existing permanent staff, has been submitted to the Production Development Board. During the year the Board granted £5,000 for labour costs in this area.

Fly has been eradicated from a further 580 miles of stream by partial clearance.

In the Gwarzo and Karaye Districts of western Kano, eighty-five miles were cleared along the River Marashi system in the River Chalawa basin. A further 236 miles of the River Shika system in Zaria were completed and, in neighbouring parts of the Dan Ja District of southern Katsina, 170 miles of stream were cleared on the headwaters of the Shika and Chalawa rivers.

Including old ruthless clearings and the area done last year, a block of 500 square miles in the upper parts of the River Shika system is now fly-free, in Dan Ja, Makarfi and Giwa Districts. The lower reaches of the main river, and some of its larger tributaries, have abundant running water throughout the dry season. The excellent crops now growing in the old protective clearings are ample demonstration of the value of the land being reclaimed, and dense though the population is already, agricultural opinion is that more rich valley land has been made available in certain areas this year than the present population can utilise immediately. Propaganda is being made to ensure that this utilisation is balanced, with provision for nomadic herds, mixed farmers' cattle, sugarcane and market gardening. If this is done, tsetse eradication in such well-populated land is undoubtedly economic. The labour costs for the Zaria-Katsina area cleared this year were as low as £15 per mile of stream.

In southern Zaria work continued in Lere District where until recently the labour employed was wholly or largely communal. Inspection showed that, although satisfactory for ruthless protective work, control of unpaid communal labour is insufficient

to undertake efficient partial or selective clearance. New work amounted to thirty-eight miles of partial clearance, plus the tidying up of thirty-eight miles in last year's area, which is not included in this year's new work.

A focus of infection having been found near Kafanchan, in the Jema's Division of Plateau Province, plans were made to clear thirty miles of the River Matsirgo and its tributaries on the borders of this province and Zaria, and eleven miles were completed.

The growth of Kaduna town and its satellite villages and institutions is causing increasing man-fly contact especially to the south of Kaduna Junction. Five miles of two tributaries of the River Kaduna have been cleared to protect sites for a new prison and school. Both had dense *Raphia sudanica*. Along one stream local farmers immediately set up forty-two farms, some of which gave good crops despite a late start. Both streams could probably be easily dammed and provide much-needed vegetables for the township.

Work was resumed in the Shendam Division of Plateau Province but consisted mainly of preparatory surveys in the settlement area and checking up of old work elsewhere in the division.

Surveys were made and clearance costs estimated for the Kontagora (Utacu) Resettlement Scheme. To protect villages and cattle seven miles of stream were cleared and application is being made by the Resident for funds for large-scale eradication.

To the south, around Gboko, in the Tiv Division of Benue Province, a further thrity-five miles of partial clearance was accomplished. This heavy work cost £70 per mile in labour alone, but it is considered worthwhile since the local strains of human infection are very resistant to treatment, and Zebu cattle can now be kept throughout the rains.

The entry of animals into the ninety square miles freed from tsetse is now controlled by the Native Administration, in order to prevent over-stocking where Zebu cattle could not previously live.

Special fly surveys have been done in various parts of Bornu, Adamawa and Bauchi Provinces, including a survey of the proposed Nguru-Gashua-Maiduguri railway extensions, and observation made of streams in cleared and uncleared areas in Kano, Zaria and Plateau Provinces.

To reduce maintenance in old clearings, some of which still require slashing after thirteen years, more attention is being paid to very thorough de-barking, piling and burning. This will kill more mature trees and immature trees of some species. But others, totalling over twenty known species, show vigorous re-growth from their roots, and can only be destroyed by digging out the stump or whole root system. After dry season clearance, headmen with small labour gangs are employed on this work. The raphia palm (*Raphia sudanica*) presents a special problem, a method of dealing with which was described in the 1946 annual report. This is being improved, and most successful treatment appears to be to break up and remove piecemeal the apical bud, which may extend three feet below ground level.

APPENDIX II

ANNUAL REPORT FOR 1950 ON COLONIAL DEVELOPMENT AND WELFARE SCHEME D.366

Leprosy Control in Nigeria

I.—SUMMARY

1. *The Leprosy Control Scheme.*—As a result of the experiences gained during the first five years of the Leprosy Control Scheme, a revised plan for the conduct of Leprosy Control in Nigeria was submitted to the Secretary of State for the Colonies, and received his approval in January, 1950.

This revised scheme plans the co-ordination of the efforts of all those engaged in anti-leprosy work, whether they be voluntary, governmental or para-governmental bodies, and envisages the payment from public funds of subventions to Voluntary Bodies. The Leprosy Service of the Medical Department is the co-ordinating body and is advisory to Government on the disbursement of such funds as are available for Leprosy Control.

Leprosy Control Services in Nigeria are organised on a provincial basis, and the scheme can be summarised as follows :—

(*i*) In each province in Nigeria there shall be a central leprosy Settlement of not more than 1,000 patients, and fully equipped with hospital and laboratory facilities. Medical Missions are assisted from public funds to establish such settlements where none exist, and to develop existing settlements. Such a settlement is to be the control centre for leprosy work throughout the province, and primarily is for the treatment of the more seriously ill or seriously infective patients and of leprous children.

(*ii*) Based on the central settlements and under the supervision of its leprologist is a net work of rural control services with leprosy segregation villages provided by local communities for their own infective patients. African personnel, trained at the settlement and under supervision thereform, operate these rural control services.

(*iii*) Out-patient treatment centres, in the absence of any facilities for the segregation of infective cases, are discouraged.

Control services on these lines already exist in seven of the twenty-five provinces of Lagos Colony, Nigeria and the Cameroons ; in another nine provinces, Settlements already exist to provide a starting centre for the provincial control scheme. The provinces in which new centres will have to be established are Bauchi, Niger, Plateau, Abeokuta, Ijebu, Ondo and the two provinces of the Cameroons. The incidence in Lagos Colony does not necessitate anything more than a "Transit Station" for leprosy patients.

2. *Achievement during* 1950.—Expansion during 1950 of the scope of the Nigeria Leprosy Service has been curtailed by the decision to revise all Colonial Development and Welfare Schemes. New financial commitment of public funds towards Leprosy Control could not be undertaken pending a final decision on the Development Schemes as a whole.

The temporary delay in progress thus occasioned has been made use of to give opportunity for wide discussion of Leprosy Control plans so that the new scheme may be implemented without delay on 1st April, 1951.

The Central Leprosy Board, on which are represented the British Empire Leprosy Relief Association and all Missionary Societies taking part in Leprosy Control in Nigeria, held its first meeting on 20th July, 1950. Agreement was reached on the main lines of future Leprosy Control policy and methods.

During 1950 the work of the Nigeria Leprosy Service has been consolidated in the Benin, Warri, Onitsha, Owerri and Rivers Provinces. In the Eastern Region especially public opinion has been most sympathetic, and local communities have supported largely the drive for the segregation of infective leprosy patients. Twenty-nine new villages for infective patients have been established by local communities during the year.

Expansion of leprosy control work along similar lines has been most encouraging in Bornu Province where the Sudan United Mission is operating, and in Benue Province where the work is in the hands of the Dutch Reformed Church Mission.

The sulphone treatment of leprosy has been proving most successful and has stimulated great interest. The Central Leprosy Board endorsed the decision to extend widely this form of treatment. On 31st December, 1950, there were over 18,000 patients in Nigeria on sulphone therapy ; the treatment of choice is considered to be the administration of Dapsone (diamino-diphenyl-sulphone) by mouth. This treatment is given to all patients with active disease, on the condition that provedly infective patients are segregated while under treatment.

The main difficulty in the way of progress is the serious shortage of Medical Officers. Recruitment of lay-workers for the Leprosy Service has been good, but expansion of leprosy control must continue to be slow while supervision by qualified medical personnel remains scanty.

The Research Unit of the Leprosy Service continues to supply useful data essential to informed planning of the leprosy scheme. The Unit has been studying in detail the question of dosage of Dapsone in relation to toxic and therapeutic effects. This study already has resulted in a decision to lower the dosage, and a recommendation for twice weekly treatment instead of daily. Certian of the complications of sulphone treatment are being investigated and a study of the action of streptomycin and of thio-semicarbazone in leprosy has been undertaken.

It becomes increasingly apparent that a Research Unit of this sort is essential to the planning of an efficient Leprosy Control Service ; the investigations which have been and are being carried out have proved, and are proving, of tremendous importance.

3. *Statistics.*—The following statistics give some indication of the amount of anti-leprosy work carried out in Nigeria :—

Number of Settlements on 31-3-51	19
Number of Segregation Villages on 31-3-51	135
Number of In-patients under treatment on 31-3-51	27,743
Number of Out-patients under treatment on 31-3-51	28,139
New cases admitted for treatment during 1950-51	11,803
Patients discharged symptom-free during 1950-51	4,700
Number of child contacts under observation on 31-3-51	704

II.—Report for 1950 on Nigeria Leprosy Service Institutions

1. *Staff.*—The number of vacancies for Medical Officers has been reduced by the appointment of one during the year. Three vacancies still remain and the necessity

very shortly of posting a Leprosy Medical Officer to the Northern Region will create grave difficulty in maintaining adequate medical supervision of Leprosy Service Institutions in the South. Of the four posts for Administrative Assistants, one has been filled by the promotion of the Senior Leprosy Control Officer, so leaving the latter post vacant. The Leprosy Control Officer establishment has been filled by the appointment of three new recruits. There are four vacancies for Nursing Sisters of which one is filled by the temporary appointment of a married lady ; one new recruit was appointed on agreement during the year.

Recruitment to the Junior Service has been satisfactory though some posts remain vacant because candidates with the necessary educational standards have not been forthcoming.

In respect of patient staff a new problem has arisen as a result of sulphone therapy ; the great majority of nursing staff are recruited from the patients themselves, and usually such personnel are non-infective patients ; in this type of patient sulphone treatment renders them symptom-free so quickly that the training of a nurse is hardly complete before he becomes fit for discharge.

2. *Settlements : Patients.*—On 31st March, 1951 the number of patients under treatment for active leprosy in Settlements was :—

Ossiomo Settlement	1,072
Oji River Settlement	1,094
Uzuakoli Settlement	935
Rivers Settlement	111
Total	3,212

On 31st March, 1951 the number of patients under treatment in the clinics and segregation villages supervised from the central Settlements was :—

Benin-Warri Province	4,751
Onitsha Province	8,087
Owerri Province	10,485
Rivers Province	3,049
Total	26,372

Of this total, 6,426 were segregated in leprosy patients' villages established by the various local communities. 3,021 patients, as compared with 1,907 in 1949, were discharged as symptom-free during the year.

The effort to give priority of admission to lepromatous patients has resulted in a more satisfactory position whereby the Settlements now have a far higher proportion of lepromatous cases as compared with 1949.

Hospitals.—The early stages of sulphone treatment have placed an additional burden on hospital services already short of beds. More accommodation badly is needed at Ossiomo and Uzuakoli, especially at the former Settlement where the existing hospital building is in danger of collapse.

The Nursing Council of Nigeria has agreed to recognise the Oji River and Uzuakoli hospitals as teaching centres.

Buildings and Installations.—The building programmes at Rivers and Uzuakoli Settlements made excellent progress, and all the work with the exception of furnishing was completed by 31st March, 1951.

At Oji River and Ossiomo, progress has been seriously delayed although Inspectors of Works have been available throughout the year.

The water supply installations still are far from complete, except at Ossiomo, where repairs already are necessary. At Oji River, due to many delays in construction, the water supply is worse than it has been for years. At Uzuakoli the work of installation at least has been started. At Rivers nothing has been done beyond the provision of a few shallow wells.

The plan for Electrical installations has had to be abandoned in an effort to effect economy.

Replacement with semi-permanent structures of the local type mud and thatch houses for patients has commenced in every settlement ; the work is being done by the patients themselves. When complete, the reduction in recurrent maintenance costs will be considerable.

3. *Area Control Organisation : Training.*—The organised training of African Leprosy Inspectors to operate rural control services continues. Out of twenty-five inspectors in training during the year, fifteen passed their examination at the end of their training period.

Segregation.—Co-operation by local communities in favour of the segregation of their infective patients is increasing in most areas. In the Benin-Warri area only, little help is forthcoming. Our refusal to give sulphone treatment to unsegregated infective patients, has provided a useful means of persuasion. Twenty-six new villages for infective patients have been established during the year.

The policy of establishing numerous clinics with segregation centres for the infective patients of localised communities is proving amply justified. The results in those provinces where work has been going on for some years is typified by the recent findings in a careful survey of the Abua Clan in Ahoada Division of Rivers Province ; after ten years' work the incidence of leprosy has been reduced to one third of that found by a similar survey in 1939.

4. *Treatment.*—The outstanding event of the year has been the change over from Hydrocarpus oil to sulphone treatment. The discovery that a simple sulphone is effective for twice-weekly treatment by mouth, inexpensive enough for mass treatment and safe enough with due precautions, has been a great advance in the treatment of leprosy. This form of treatment now has been extended, outside of the central settlements, to all patients who are in a position to attend regularly ; ineffective patients are treated only if they agree to segregation at an approved centre. 17,621 patients of the Nigerian Leprosy Service have received sulphone treatment during the year.

5. *Research.*—The Research Unit has been without a European laboratory worker since September, 1949. This has made the work more difficult, but has not prevented the continuation of most useful investigations. The work done includes a consolidation of previous work on the sulphones in general, with special reference to an assessment of the activity of the various sulphone compounds, and a study in detail of the question of optimum dosage. Further studies have been made of the glandular fever syndrome during sulphone treatment, and of the anaemia produced by sulphones and its treatment. An investigation of the action and role of streptomycin and of thio-semicarbazone in Leprosy has commenced.

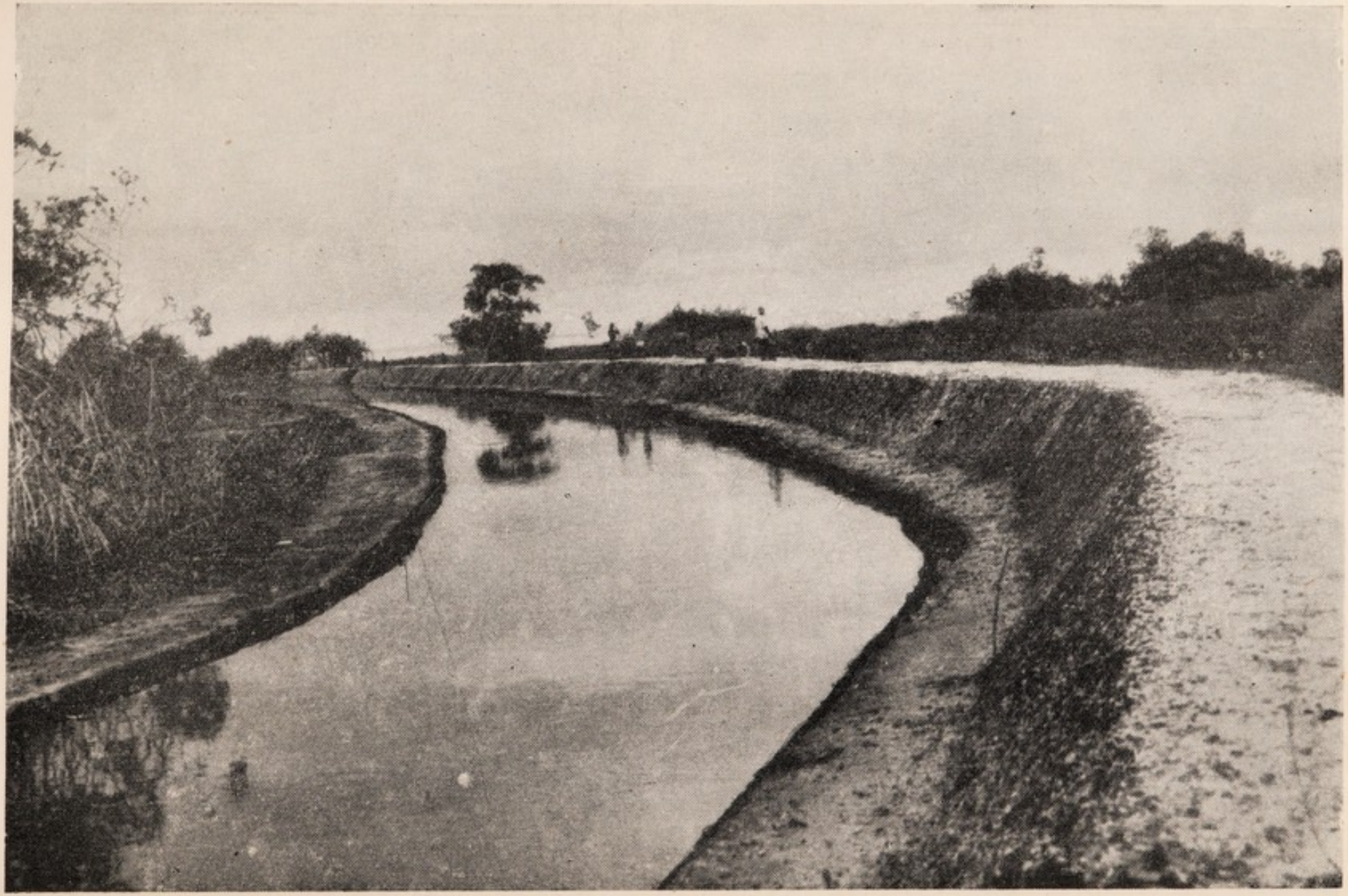
III.—Report on the Work of Non-Government Bodies

1. *Western Region.*—The American Baptist Mission at Ogbomosho are operating leprosy control services in Oyo Province. A full-time leprologist has been appointed, and the work progresses most satisfactorily. There is a Settlement of 663 patients and nine segregation villages supervised by the leprologist.

COASTAL SWAMP DRAINAGE SHOWING A SLUICE GATE

HEALTH WEEK DEMONSTRATION

HEALTH INSTRUCTION TO EXPECTANT MOTHERS



COASTAL SWAMP DRAINAGE SHOWING BUNDING

The Native Authority at Abeokuta continues to maintain a small leper village which is supervised by the Medical Officer in Abeokuta.

The compound for leprosy patients attached to the Methodist Mission's hospital at Ilesha has been closed down, and the patients transferred.

At Akure in Ondo Province, the Native Administration maintains a leper village. An approach has been made to the Catholic Mission as to whether medical supervision can be given to a new segregation centre planned to be established under more favourable conditions near Owo : it is hoped that the Akure centre then can be closed.

In Lagos Colony the local authority is being pressed to establish a "Transit Centre" for leprosy patients, in which they may be segregated while awaiting transfer to Settlements elsewhere.

2. *Eastern Region.*—In Northern Ogoja Province the Catholic Mission continues excellent work and now have two Medical Officers for their leprosy control. There are Settlements at Abakaliki and Ogoja, and six segregation villages supervised therefrom.

The work of the Church of Scotland Mission in Southern Ogoja continues to be hampered by a land dispute, which is delaying the establishment of a properly equipped Settlement. They have eight segregation villages with patients under treatment.

In Calabar Province the Itu Colony continues excellent work with 3,211 patients. The Qua Iboe Mission have a small Settlement at Ekpene Obom with a full-time resident lay-worker under supervision by the Medical Officer of their General hospital at Etinan.

In the Cameroons no organised leprosy work yet has started, but there are two small segregation "camps" maintained by Native Authorities.

3. *Northern Region.*—In Benue Province leprosy control services are expanding most satisfactorily under the supervision of the Dutch Reformed Church Mission, who now have a full-time leprologist. Three new segregation villages have been established during the year, and the Sudan United and Sudan Interior Missions are co-operating by giving lay supervision, under direction from the Benue Settlements, to segregation villages established near their stations.

In Kabba, Ilorin, Sokoto, Katsina and Kano Provinces the Sudan Interior Mission operate Settlements, and now have four full-time leprologists. It is hoped to build up control services under supervision from these Settlements.

The Sudan United Mission are carrying out leprosy work in the Plateau and Bornu Provinces. In Bornu Province the work is expanding slowly under the supervision of a full-time leprologist. In Plateau Province lay-workers only are carrying out the work with occasional visits from and under the general direction of the Medical Superintendent of the Society's General Hospital at Vom.

At Garkida in Adamawa Province the Church of the Brethren Mission has a large colony and no rural control services.

The Zaria Native Authority maintains a small settlement in that province, which is under the management of a British Empire Leprosy Relief Association lay-worker, and which receives medical supervision from the C.M.S. General Hospital at Wusasa. The Albarka Fellowship have a small village for leprosy patients near Kaduna Junction ; a qualified nursing sister is in charge, but there is no doctor supervising the work.

In the Niger and Bauchi Provinces, leprosy work is only incidental to the work of some general medical centres.

The conduct of Leprosy Control in the Northern Provinces is about to be reorganised by the posting of a leprologist to co-ordinate and direct the activities of the different bodies engaged in leprosy work in that Region.

APPENDIX III

SUMMARY—MEDICAL FIELD UNIT SURVEYS APRIL, 1950—MARCH, 1951

Benue and Bornu Provinces

	Benue		*Bornu*	
	No.	*Per cent*	*No.*	*Per cent*
Population	33,030	—	—	—
No. Examined	23,159	70.1	6,886	—
Spleen Rate	434/1,262	34.4	1,132/1,742	65.0
Parasite Rate	479/1,488	32.2	1,407/5,566	27.1
Trypanosomiasis	88	0.3	2	0.03
Leprosy	61	0.2	21	0.3
Yaws	1,788	7.7	—	—
Syphilis	—	—	185	2.7
Gonorrhoea	333/5,204	6.4	100/1,744	5.7
Ulcer	135	0.6	515	7.3
Scabies	885	3.8	246	3.6
Schistosomiasis	887/5,097	15.4	1,030/5,738	18.0
Stools Examined	3,139	—	4,404	—
Ankylostomiasis	1,182	37.6	262	6.0
Taeniasis	6	0.02	70	1.6
Ascariasis	545	17.4	61	1.4
Other Parasites	31	1.0	65	1.5
Guinea Worm	15	0.06	43	0.6
Filaria	595/5,558	10.7	323	4.7
Avitaminosis	1,609	7.0	3,427/6,884	49.9
Aneamia	1,579/15,583	6.8	4,814/6,395	75.3
Eye Diseases	278	1.2	388	5.6
Smallpox previous attendance	534	2.3	1,252	18.2
Pre. Vaccination	2,162	9.3	1,640	23.8
Primary Vaccination	11,427	45.0	3,469	50.4
Tuberculosis	6	0.02	4	0.06
Goitre	254	1.09	7	0.1
Undernutrition	431	1.8	457	6.6

Plateau and Sokoto Provinces

	Plateau		*Sokoto*	
	No.	*Per cent*	*No.*	*Per cent*
Population				
No. Examined	3,545	—	14,180	—
Spleen Rate	1,016/1,249	81.3	3,974/6,650	59.7
Parasite Rate	66/1,250	5.3	1,492/7,668	19.4
Trypanosomiasis	—	—	—	—
Leprosy	8	0.23	30	0.2
Yaws	22	0.6	—	—
Syphilis	—	—	—	—
Gonorrhoea	—	—	—	—
Ulcer	28	0.79	353	2.5
Scabies	16	0.45	172	1.2
Schistosomiasis	5	0.1	1,730	28.0
Stools Examined	2,967	—	6,188	43.7
Ankylostomiasis	117	3.9	1,176	19.0
Taeniasis	89	3.0	209	3.4
Ascariasis	171	5.8	12	0.2
Other Parasites	18	0.6	42	0.3
Guinea Worm	—	—	11	0.08
Filaria	151/1,801	8.4	14	0.1
Avitaminosis	2,597	73.3	7,226	51.0
Anaemia	1,241/1,617	76.8	4,688	33.1
Eye Diseases	365	10.3	577	4.1
Smallpox previous attendance	164	4.6	2,975	21.0
Pre. Vaccination	314	8.8	2,478	17.5
Primary Vaccination	1,632	46.0	7,610	53.7
Tuberculosis	—	—	—	—
Goitre	255	7.2	51	0.3
Undernutrition	187	5.3	2,707	19.1

Northern Provinces

	No.	Per cent
Population		
No. Examined	33,590	—
Spleen Rate	6,556/10,903	60.1
Parasite Rate	3,444/1597,221	21.6
Trypanosomiasis	100	0.3
Leprosy	120	0.4
Yaws	1 810	5.4
Syphilis	185	0.6
Gonorrhoea	433/6,948	6.2
Ulcer	1,031	3.1
Scabies	1,319	4.0
Schistosomiasis	3,652	10.8
Stools Examined	16,698	49.6
Ankylostomiasis	2,737	16.4
Taeniasis	374	2.2
Ascariasis	789	4.7
Other Parasites	156	1.0
Guinea Worm	69	0.2
Filaria	1,083	3.2
Avitaminosis	14,869	44.2
Anaemia	12,322	36.7
Eye Diseases	1,608	4.8
Smallpox Previous Attendance	4,925	14.6
Pre Vaccination	6,584	19.5
Primary Vaccination	24,138	71.7
Tuberculosis	10	0.03
Goitre	567	1.6
Undernutrition	3,782	11.2

Abeokuta and Cameroons

	Abeokuta		*Cameroons*	
	No.	*Per cent*	*No.*	*Per cent*
Population			18,450	
No. Examined	942	—	13,883	75.2
Spleen Rate	132/667	19.8	349/3,949	8.8
Parasite Rate	451/707	63.6	148/2,059	7.2
Trypanosomiasis	—	—	2	0.01
Leprosy	—	—	89	0.64
Yaws	131	13.9	1,517	10.9
Syphilis	—	—	50	0.36
Ide Test	95/721	13.2	14/66	21.2
Gonorrhoea	22/389	5.6	262/3,869	6.8
Ulcer	59	6.3	452	3.2
Scabies	183	1.9	2,306	16.6
Schistosomiasis	63	6.7	1/284	0.3
No. of Stools Examined	831	—	8,316	—
Ankylostomiasis	197	23.7	874	10.5
Taeniasis	—	—	62	0.74
Ascariasis	377	45.4	6,083	73.1
Other parasites	48	5.8	607	7.3
Guinea Worm	—	—	—	—
Filariasis	94/919	10.2	149/834	17.9
Avitaminosis	722	76.6	—	—
Anaemia	584	62.0	—	—
Eye Diseases	30	3.2	427	6.9
Smallpox Previous Attendance	59	6.3	57	3.1
Re-Vaccination	685	72.7	2,464	17.7
Primary Vaccination	227	24.1	10,794	77.7
Tuberculosis	—	—	12	0.09
Goitre	3	0.3	130	0.9
Undernutrition	110	11.6	—	—

APPENDIX IV

THE X-RAY SERVICES IN NIGERIA

FROM JANUARY 1949 TO THE PRESENT TIME APRIL, 1951
(Including future programme)

	Watson M.X. 2	*Solus Schall 2 Valve*	*Schall Mobile*	*Schall non-Shockproof*	*Medical non-Shockproof*	*Phillips Portable*	*Watson 2 Valve*	*Total January, 1949*	*Watson Mobilex*	*Watson M.M.R.*	*Watson 2 Valve*	*Watson M.X. 2*	*Solus Schall 2 Valve*	*Schall Mobile*	*Solus Mobile*	*Phillips Portable*	*Total at present*	*Watson 4 Valve*	*Wotson M.M.R.*	*Watson M.X. 2*	*Total for Installation*	
GENERAL :																						
General Hospital ..	1	–	1	1	–	–	–	3	–	–	–	1	1	1	–	–	3	–	–	–	–	(Non-Shockproof removed)
Igbobi	–	–	1	–	–	–	1	2	–	–	1	1	–	1	–	–	3	1	–	–	1	(2 valve will be spare)
M. MR. Lagos ..	–	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	1	–	–	–	–	
WESTERN :																						
Adeoyo	–	–	–	–	1	–	–	1	–	–	–	–	1	–	–	–	1	–	–	–	–	(Non-Shockproof disused)
Jericho N.H. ..	–	–	1	–	–	–	–	1	–	–	–	–	–	1	–	–	1	–	–	–	–	
Abeokuta	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	–	1	–	–	–	–	(Still to be installed)
Warri	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	1	1	
Benin City ..	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Oshogbo	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Akure	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	
Mobile M.M.R. ..	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
EASTERN :																						
Enugu	–	–	1	–	–	–	–	1	–	–	–	1	–	1	–	–	2	–	–	–	–	
Port Harcourt ..	–	–	–	1	–	–	–	1	–	–	–	–	1	1	–	–	2	–	–	–	–	(Non-Shockproof removed)
Calabar	–	–	1	–	–	–	–	1	–	–	–	–	–	1	–	–	1	–	–	–	–	
Victoria	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	
Bamenda	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Onitsha	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Owerri	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Aba	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Okigwe	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	

APPENDIX IV—*continued*

THE X-RAY SERVICES IN NIGERIA

FROM JANUARY, 1949 TO THE PRESENT TIME APRIL, 1951
(Including future programme)

	Watsnn M.X. 2	*Solus Schall 2 Valve*	*Schall Mobile*	*Schall non-Shockproof*	*Medical non-Shockproof*	*Phillips Portable*	*Watson 2 Valve*	*Total January, 1949*	*Watson Mobilex*	*Watson M.M.R.*	*Watson 2 Valve*	*Watson M.X. 2*	*Solus Schall 2 Valve*	*Schall Mobile*	*Solus Mobile*	*Phillips Portable*	*Total at present*	*Watson 4 Valve*	*Vatson M.M.R.*	*Wat on M.X. 2*	*Total for Installation*	
NORTHERN :																						
Kaduna	1	–	–	1	–	–	–	2	1	–	–	1	–	–	–	–	2	–	–	–	–	(Non-Shockproof disconnected)
Kano	–	–	–	–	1	1	–	2	1	–	–	–	–	–	–	1	2	1	–	–	1	(Non-Shockproof revomed)
Jos	–	1	1	–	–	–	–	2	–	–	–	1	1	1	–	–	3	–	–	–	–	
Katsina	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	
Zaria	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	
Yola	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1	–	–	–	–	
Maiduguri	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	–	(Still to be installed)
Sokoto	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	–	1	–	–	1	1	
Gusau	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Bida	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Minna	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Makurdi	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Hadejia	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	1	
Birnin Kebbi ..	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Total	2	1	6	3	2	1	1	16	3	1	1	9	4	9	1	1	29	2	1	14	17	
	(16 in ten departments)								(29 in 19 departments including two not yet installed)													

There are 3 M.X. 2 in stores and 2 M.X. 2 in workshop, 3 of these are awaiting spares.

We have on order 8 M.X. 2 units, 2 Watson 4 valve, and 1 M.M.R. unit plus a large amount of spares, all of which are expected to be delivered this year.

Five non-Shockproof Machines await Board of Survey. (They have been replaced with modern machinery).

STAFF : Consists at present of eight Radiographers, fifteen X-ray Technicians and three X-ray Operators.

NOTE.—When this programme is completed, we shall have forty-six machines in thirty-four Departments.

APPENDIX V

LABORATORY SERVICE

The Laboratory Service consists of the Laboratory Service Headquarters, three units manned by Pathologists and twenty-four out-station laboratories in principal centres of the country.

Headquarters, Yaba.—In addition to the administration of the Laboratory Service, the work done consists of Clinical Pathology, manufacture of Vaccine and Sera, teaching and training of Technical Assistants and research. A scheme for the production of desiccated combined Yellow Fever-Smallpox Vaccine is well under way.

1. *Clinical Pathology Examinations.*—

Blood—53,608 of which 14 per cent were positive for Sub-Tertian Malaria.

Faeces—55,395 with Ascaris and Hookworms predominating.

Urine—9,322 urethral smears with almost 50 per cent positive incidence of gonococci.

Sputum—8,120 with about 28 per cent positive incidence of Tubercle Bacilli.

Nasal Smears for Leprosy—7,712.

Biochemical—3,957.

Miscellaneous—4,364.

Histopathology—344 sets of tissues were examined. 117 tumours were found to be malignant. Squamous carcinoma of skin—26.

Rabies Investigation—178 brains were examined; ninety-four were positive for rabies.

Yellow Fever—There was one case of Yellow Fever.

Post-mortem—These totalled 1,084. 487 of these were due to violent deaths 289 to diseases of the respiratory system, 126 and 114 to alimentary and cardio-vascular systems respectively.

2. *Bacteriology.*

Serology—A total of 12,099 tests were performed; these included (1) Widal Tests 311; (2) Weil Felix Tests 249; (3) Brucella 22; (4) Kahn Tests 11,275 with 2. 751 positive; (5) Ide Tests 821 and (6) Paul Bunnell Tests 3.

Cultures in blood, urine and faeces numbered 1,488.

Miscellaneous tests including 162 pregnancy tests were performed.

Antigen and Media Preparation—This amounted to Kahn Antigen 1,098; Ide Antigen 5,329; Culture Media of different types 342,000.

Vaccine—The yield of pulp was 29,207 grams from 925 sheep. Vaccine issued totalled 5,019,880 doses.

Rabies Vaccine—177,290 mls were prepared. The potency and stability of vaccine were tested and found satisfactory.

Medico-Legal—153 articles were examined for human blood. 183 articles and smears were examined in connection with alleged rape.

1,506 Yellow Fever inoculations were given to meet the travel requirements of those who travel by air.

APPENDIX VI

ILARO EXPERIMENTAL MOSQUITO ERADICATION SCHEME

In 1948 the Expert Committee on Malaria of the World Health Organisation discussed the respective merits of two conceptions of malaria control :—

(*a*) Eradication of the vector species, *i.e.*, destruction of the adult and larval stages of the vector by intensive action in a limited zone during a relatively short period.

(*b*) Control by regular periodical spraying of residual insecticides over several years without attempting actual eradication of the vector species.

Lately the two conceptions of malarial control show a tendency to merge since it became obvious that the successful eradication must be based on a prolonged persistent attack, while on the other hand some control schemes have resulted in such a reduction of the anopheline vectors that they seem to achieve the aim of the eradication.

Eradication projects in Sardinia and Cyprus have been carried out in territories protected from reinfestation by natural barriers. The Expert Committee on Malaria of the World Health Organisation recommended in 1948 that an experimental eradication scheme be carried out in an area not protected by natural barriers, and preferably in Africa.

The experimental eradication scheme instituted at Ilaro (Southern Nigeria) by the Malaria Service, Medical Department, aims at implementation of the suggestion of the Expert Committee on Malaria of the World Health Organisation.

The choice of the area was based on the following principles :—

(*a*) Situation within the hyperendemic zone, with *A.gambiae* and *A.funestus* as main vectors of malaria.

(*b*) Preliminary survey of the area to estimate prevalence of malaria and the density and infectivity of the vectors during each season of the year.

(*c*) Institution of control measures with careful check on the prevalence of malaria and anopheline density and distribution.

The Ilaro scheme commenced in February 1949, when Ilaro, a medium-size Yoruba town in South-Wes ern Nigeria, was chosen for an experimental "island" anopheles eradication. Ilaro has some 12,000 inhabitants and 2,300 houses, and is a typical mixed urban and rural community, situated within a geographical zone that corresponds to hyperendemic malarial conditions in Nigeria.

A preliminary malaria survey carried out between March 1949 and March 1950, has revealed that the amount of malaria in Ilaro is on the hyperendemic level with a pronounced sub-clinical endemic wave that starts shortly after the beginning of the rainy season and lasts for at least four months.

P.falciparum is the main parasite species with the concomitant *P.malariae*.

A.gambiae and *A.funestus* are the main vectors with *A.funestus* persisting throughout the year, while *A.gambiae* has a pronounced seasonal importance during the rains.

The residual spraying of Ilaro commenced in March, 1950. The insecticide used for it is the BHC. wettable powder P.520 containing 6.5 per cent gamma isomer. The dosage is between 10 and 15 milligrams gamma isomer per square foot. The routine spraying equipment consists of Eclipse "Super Triumph" bucket sprayers (stirrup pump pattern) with a twenty-foot hose, trigger release and straight nozzles provided with a disc of 3/64th inches apperture giving a flat fan-shaped swathe. Modifications of this equipment are being tested. There are four spraying squads each composed of one recorder and four sprayers.

The spraying of the 2,300 houses containing over 11,000 rooms is repeated every three months. All dwellings within a three miles area, round Ilaro are also treated. The results of the residual spraying are being assessed by means of entomological (anopheline density, larval density, infectivity rate) and malariometrical (spleen rates, parasite rates, parasite densities, morbidity etc.) data.

Four complete sprayings of Ilaro Township and its adjacent hamlets have been completed by the end of 1950, and the scheme is progressing smoothly.

It is still too early to assess the results of this scheme, which must last for three full years before any valid information is obtained. Nevertheless, the preliminary results can be estimated and summarised as follows :—

There was a spectacular decrease of adults of *A.funestus*, one of the two main vectors of malaria throughout Africa. The average number of adult *A.funestus* collected per Capture Station room/day has dropped from 2.5 in 1949 to 0.01 in 1950—an approximate reduction by 99.6 per cent.

The amount of larval breeding of this particular mosquito decreased from about twenty larvae per 100 dips in April-May 1950 to figures varying from 0 to 0.1 during the last months of 1950—a thousandfold reduction.

Comparative figures for *A.gambiae* are 3.3 adults per room during the second half of 1949 and 0.2 during the corresponding period of 1950, a reduction of 9.75 per cent. The larval index for *A.gambiae* has decreased from 150 per 100 dips in April 1950, to about 10 for the last six months of 1950.

The infectivity of *A.gambiae* fell from the average monthly 6.3 per cent during the last half of 1949 to an average monthly 1.3 during the corresponding period of 1950, and for the last four months of 1950 no infections were found. The infectivity of *A.funestus* fell spectacularly from an average 3.5 in 1949 to zero in 1950.

The decrease of malariometrical indices in the local population is slow, but this is not entirely unexpected in an area previously "saturated" with malaria. The most pronounced reduction of the parasite rate occurred during the last half of 1950 in very young age groups. In infants the reduction was from 28 per cent to 11 per cent, in children between one and two years of age the reduction was from 80 per cent to 50 per cent. Other age groups show a slowly decreasing trend of parasite rates.

It is still too early to expect any spectacular decrease of the amount of malaria and all collected data are being consolidated, analysed and prepared for future publication.

There was, during the last months of 1950, a considerable reduction of malaria morbidity recorded at the Ilaro dispensary.

It is interesting to note that the registry of vital statistics which operates at Ilaro under the Malaria Service has shown during 1950 an increase of live births as compared with 1949, and a relative decrease of infant mortality.

The response of the population of Ilaro to this scheme has been most gratifying.

The scheme is operated by the Malaria Service entirely out of its expenditure under the Colonial Development and Welfare Scheme. The average cost of the Ilaro scheme is £3,000 per year, or approximately 5s per head of the local population.

The Expert Committee on Malaria of the World Health Organisation expressed officially to the Government of Nigeria its thanks for the initiation of the Ilaro Scheme, and recommended that the attention of other Governments be drawn to the principles under which this scheme operates.

INTERROGATING MOTHERS AT A RURAL HEALTH CENTRE