Annual medical and health report / Nigeria.

FEDERATION OF NIGERIA

ANNUAL REPORT

ON THE

MEDICAL SERVICES

FOR THE YEAR 1952-53

NINEPENCE NETT

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CONTENTS

LIST OF ILLUSTRATIONS

FOREWORD

This annual report of the Medical Department covers the activities of the Department for the year 1952-53. Anyone who reads this report and compares it with previous annual reports will see what great progress has been made in the field of health in Nigeria.

2. The Medical Department is still working under handicaps which appear in various forms: the greatest of which is the shortage of doctors. However, steps are being taken to alleviate this shortage and Government also hopes shortly to be able to avail itself of the services of those young students who are shortly due to qualify at the University College, Ibadan.

3. In the introduction by the Inspector-General reference is made to the activities of some international agencies. Nigeria has benefitted greatly from the most willing help which is being given by the World Health Organisation and the United Nations Children's Emergency Fund. These two bodies have given assistance in our campaigns against malaria, yaws and leprosy and much has been done towards alleviating the incidence of these diseases.

4. Despite the many difficulties with which we are confronted the medical services are still expanding and our aim is to build up in Nigeria a medical service which will be second to none in West Africa. To this end our efforts have been directed in the past and in the future we intend to pursue the attainment of this ideal in the hope that our efforts will ensure a life more abundant for all the people of Nigeria.

5. I would like to record my appreciation of the services given by all members of the Medical Department who have made our past achievements possible and I trust that they will continue in their efforts towards the betterment of the medical services in Nigeria.

S. L. AKINTOLA,
Minister of Health

Lagos, Nigeria.
17*th September,* 1954.

Annual Report on the Medical Services, 1952-53

I.—INTRODUCTION

This Report covers the first full year of the new constitutional arrangements, fully described in the 1951-52 Report, whereby regional autonomy and administrative decentralization were increased.

2. All our Ministers of Health again undertook strenuous tours, visited many governmental and other institutions, and established closer contact with the general public and local representative bodies. Regional diversity is well indicated by the particular subjects to which ministerial effort and interest were specially directed during the year. These were—health education and propaganda in the North ; community diseases, domiciliary midwifery, school medical services and plans for the establishment of cottage hospitals in the East ; and the formulation, in the West, of proposals for a four-year plan of development and for free medical treatment for school children. There can be no doubt of the value of the increased public knowledge of departmental plans and difficulties which resulted from these tours or of the great interest in health matters which had been awakened among the general population by the direct participation of their chosen representatives in the control of medical policy.

3. As in recent years, development and expansion were again still subject to restrictions imposed by finance, staff or accommodation. In the Eastern Region, rising costs and financial strain precluded additional major projects although the year could be described as one of quiet, unspectacular consolidation with emphasis on securing the best use of existing facilities and gradually increasing staff. Critical shortages of medical officers, particularly of those for general duties, and of some junior technical cadres, occurred in the Northern Region, causing difficulty in running existing services and postponement of new projects.

4. I regret that only slow and uneven progress can yet be recorded regarding the implementation of our plans for a more comprehensive Rural Health Service to which reference was made last year. Although two new rural health centres were opened and one medical field unit was embodied, the number of medical officers available for rural health duties showed no increase over that of the previous year. Emergency epidemic duties were, fortunately, less but, on the other hand, all Regions view with misgiving the persistent desire of local government bodies for the rapid, sometimes unjustified, expansion of their rural dispensaries and maternity centres at a time when departmental supervision is necessarily reduced and maintenance costs often exceed their financial resources.

5. The activities of international agencies gave a great stimulus to our rural health effort. The establishment at Brazzaville of the Regional Office of the World Health Organisation (WHO) and of the Area Office of the United Nations' Children's Fund (UNICEF) followed the International Conference held at Monrovia in August 1952. At this conference the Inspector-General of Medical Services, who had been appointed by the Secretary of State as leader of the United Kingdom Delegation which represented the British African territories, gave a comprehensive outline of Nigeria's great needs and proposed a number of schemes for which WHO and UNICEF set aside funds pending local examination in detail by their specialist staff. During the year, ten officers of these organisations visited

Nigeria to consult with Central, Regional and, where possible, Provincial authorities. The three major schemes (against malaria, yaws and leprosy) which received preliminary approval and are now the subject of negotiation, have a distinctly rural bias. Nigeria's contribution to them will be mainly through fuller utilisation of her existing rural health and allied services, and the consolidation and follow-up of these new projects fit well into plans already formulated by the Department.

6. The general expansion of facilities for individual medical care continued. Four new hospitals were opened, construction advanced at other new sites, while substantial additions and improvements were made to old institutions. Indeed, in the Northern Region, new buildings were completed faster than they could be staffed. Voluntary Agencies, aided by Government grants, also made notable building progress. A new Dental Centre was opened at Enugu and the existing Centre at Kaduna was extended. At Kano a small, but much needed, orthopaedic unit was started by a newly recruited and experienced orthopaedic specialist. Urban curative facilities are still grossly inadequate by modern standards but there was steady improvement both in quantity and quality, though local staff shortages may defer their full availability to the public.

7. Less satisfaction can be expressed regarding urban preventive efforts. Two Regions record having, for part of the year, only one fully qualified medical officer of health each. There is still great apathy regarding environmental defects among the public as individuals and in their local government councils. In combating the major community diseases, gains made against sleeping sickness were consolidated and the Leprosy Service continued to win ground and to extend its work, particularly in the East and North, on well-proven lines which have now won international approbation. Some progress was also made in defining the problem of onchocerciasis to which reference will be made later in this Report (*see* paragraphs 101 and 102). Despite decreases in notifications, no complacency is felt regarding the recurrent scourges of smallpox and cerebro-spinal fever. There was no serious outbreak of yellow fever but special attention was given to possible danger spots in the Eastern Region. These and other diseases of importance—malaria, virus infections, tuberculosis, yaws and the helminthiases—were the subject of a considerable volume of research and field work.

8. The taking of a new all-Nigeria decennial census which was in progress during the year will no doubt yield information of the highest possible medical importance and value. As in other territories, the two inter-related problems of an expanding population and of its nutrition are subjects which cause concern not only to this and to other departments, but also to administrators and to the informed members of the public. Recent local censuses and existing (though imperfect) knowledge of vital trends indicate that Nigeria's population, now estimated at over thirty-one millions, may double in number before the close of the century. To improve the departmental contribution to the solving of these and cognate problems, one specialist health officer who had had wide experience of, and been specially trained in, medical statistics was posted to Central Medical Headquarters to organise a special statistical unit, whilst another specialist officer was furthering his studies in nutrition abroad and was to be appointed an Adviser on Nutrition on his return.

9. Our chronic staff shortage more than ever emphasises the fact that the training of staff of all grades must continue to be one of our most important functions. Plans are of course afoot for the construction of new training schools

and for the expansion of present ones which it is to be hoped will in due course be approved. The great difficulty will of course be, as usual, the recruitment of teaching staff. However, a new school for leprosy staff was opened, one for midwifery attendants was completed and work began on the School for Medical Assistants at Kano. Improvements were made both in buildings and in teaching methods at other schools. It was still difficult, even in the educationally advanced Eastern and Western Regions, to attract suitable girls in sufficient numbers to nursing as a career. Despite staff shortages, over twenty medical officers were granted overseas study leave and three attended the Malaria Training Course sponsored by WHO and run by the Nigerian Malaria Service.

The Work of the Regions

10. In this Report a number of Returns have been expressed and analysed, for the first time, by Regions. The figures given below indicate the very great differences in Regional activity. It is suggested that they furnish further proof (if indeed any was needed) that, as between the Regions, with such variations in population, area, finance, prevalent diseases, and public preferences, no rigid uniformity of practice is desirable or is indeed possible, and that the widest degree of latitude in medical administrative treatment and procedure must be allowed :—

	Northern Region	*Eastern Region*	*Western Region*
Population, millions	16.84	7.97	6.37
Area, square miles	281,782	46,065	45,403
Government medical expenditure £'000s ..	1,002	704	824
Government medical expenditure *per head*, in pence, including share of Central funds	14.3	21.2	31.1
Medical staff, all grades	69	71	75
Nursing and health sisters	35	41	37
Other senior service staff	61	32	44
Pharmacists	51	43	48
Sanitary inspectors	63*	100	92
Nurses and midwives	345*	577	584
Medical auxiliaries	300	178	148
Hospital beds, government and native administration	3,294	2,179	1,836
Hospital beds, mission, commercial and private	596	2,334	797
Hospital beds, all agencies, per million people	231	565	412
Maternity centres, all agencies	17	164	130
Dispensaries, native administration ..	303	265	211
Dispensaries per million people	18	33	33
Leprosy settlements	13	10	2
Leprosy segregation villages	31	134	37
Leprosy treatment centres	68	160	41
Inpatients, government and native administration hospitals	53,791	44,130	39,332

* Augmented by relatively large N.A. staff.

Note.—Central staff are not included in the above figures.

	Northern Region	*Eastern Region*	*Western Region*
Outpatients, government and native administration hospitals	295,903	386,915	328,206
Outpatients, government and native administration dispensaries	1,959,945	1,066,325	797,810
Institutional deliveries, all hospitals and centres	6,952	37,131	29,370
Smallpox cases	4,381	594	197
Yellow fever cases	—	10	—
Cerebro-spinal fever cases	2,675	205	12
Trypanosomiasis cases	6,060	437	2
Leprosy cases treated	17,079	28,273	8,241

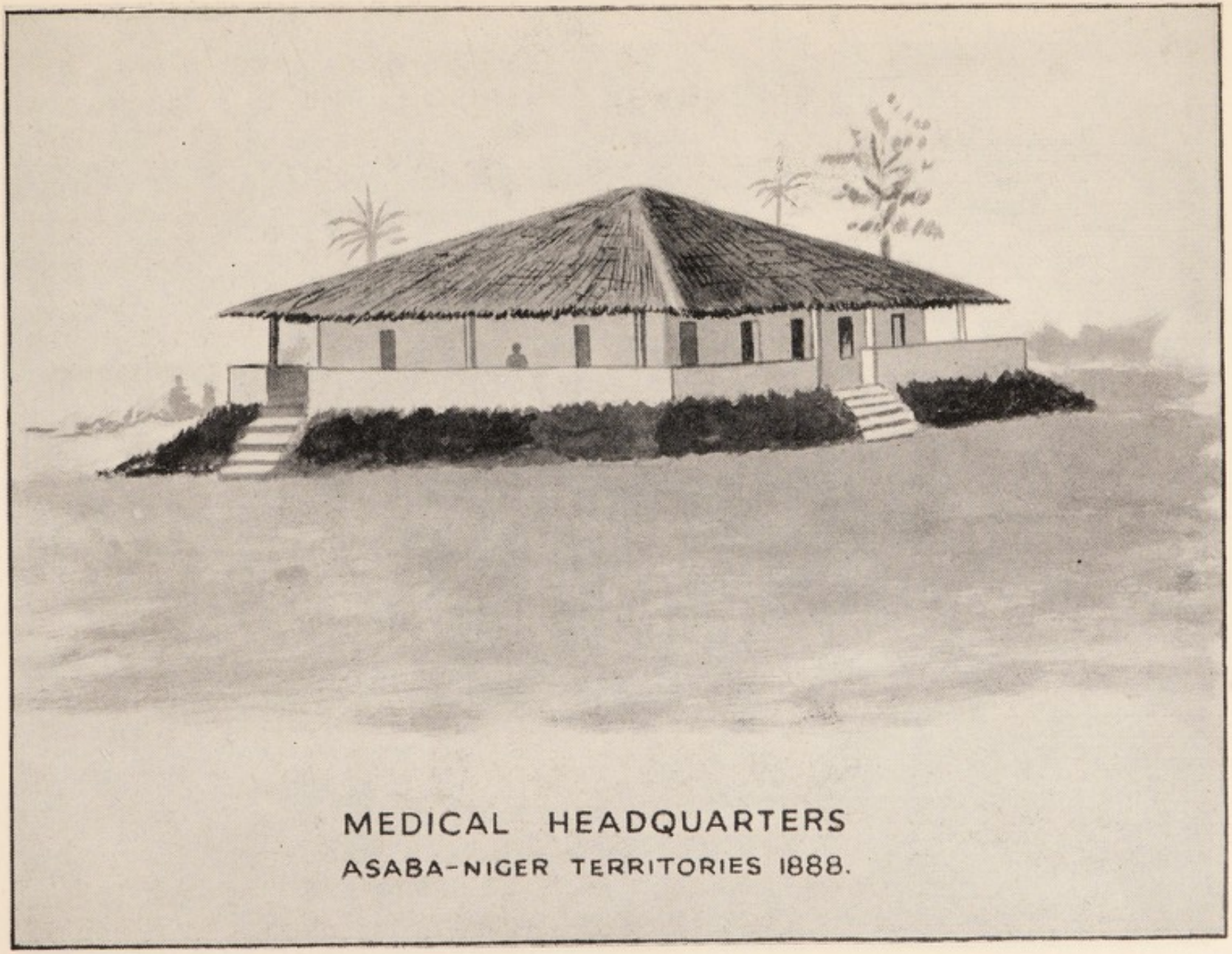
The Medical Services—A Retrospect

11. The year 1952-53 which this Report covers was just over 30 years since re-organisation of the Nigerian Medical Services took place following the amalgamation of the Northern and Southern Medical Services and the assumption of responsibility for the Trust Territory of the Cameroons in 1921. The time seems opportune, therefore, to make a brief retrospective survey of some of the changes and advances which have occurred during that period.

12. The following figures represent the increases which have taken place in the matter of Government staff, medical facilities, and expenditure :—

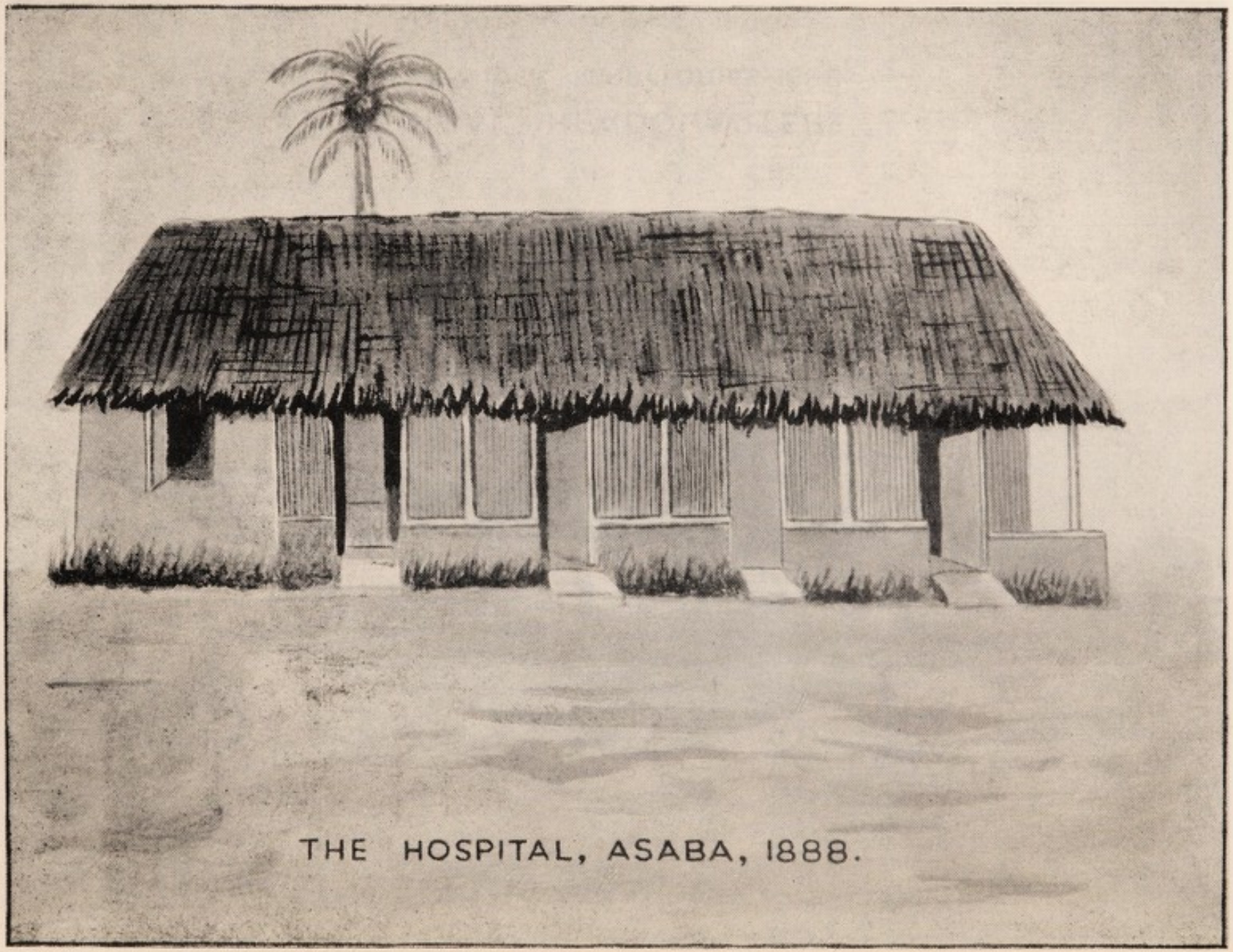
Government Staff	*1921*	*1952-53*
Doctors	103	241
Nursing and health sisters	23	120
Health and laboratory superintendents ; sleeping sickness, tsetse control, leprosy, and field units senior staff ..	7	116
Nurses and midwives	190	1,569
Pharmacists	70	157
Sanitary inspectors	81	255
Medical auxiliaries	few	670
Facilities and Expenditure		
Hospital beds, government and native administration ..	1,596	7,467*
Rural dispensaries, government and native administration	7	843
In patients	20,748	137,745
Out patients	150,738	4,837,058
Operations	3,949	61,558
Vaccinations	318,672	3,093,847
Leprosy cases treated	573	53,593
Sleeping sickness cases treated	26	6,499
Expenditure, government	£203,051	£3,062,503
Expenditure, native administration	slight	£800,000

* If the beds provided by Missions (2,950) and private and commercial enterprises (777) are included, the total number in 1952-53 was *11,194*



MEDICAL HEADQUARTERS

ASABA-NIGER TERRITORIES 1888.



THE HOSPITAL, ASABA, 1888.

MEDICAL HEADQUARTERS, LAGOS, 1953

ARTIST'S DRAWING OF UNIVERSITY COLLEGE HOSPITAL, IBADAN

13. The medical service of the early 1920s was aptly described as a "barracks" service. It catered mainly for government employees and only to a small extent in the larger stations for the general public. The number of doctors was relatively large but there were few sisters, nurses, or health staff. More than half of the hospitals were temporary shacks; their average complement was about twenty beds. In severe epidemics official reports dealt only with the small proportion of cases reported to medical officers.

14. In the 1930s, despite growing financial difficulties, training schemes were initiated, expanded or improved. Although the number of doctors fell, that of sisters was maintained, and more superintendents were engaged for health and sleeping sickness work. Junior Service cadres were growing and were considerably augmented by Native Administration staff. Hospital beds increased steadily in number, 300 new dispensaries were opened, and welfare centres began to function. Sleeping sickness epidemics were being brought under control, much more environmental sanitation was being undertaken in towns and villages, and active health education efforts had begun.

15. Since 1938 the numbers of hospital beds, dispensaries, welfare centres, hospital patients and operations, had all doubled. By 1952-53 junior nursing staff had trebled in number but, with a high proportion of trainees and shorter working hours, they were much too few in proportion to beds. Doctors for purely clinical hospital duties totalled about 165 but incidence of study and recuperative leave reduced the effective strength to about 120, each of whom, in addition to administrative, health, medico-legal, touring, schools and other inspection duties, had some sixty hospital beds to look after, saw thirty-five *new* out patients and admitted four in-patients each working day. Similarly there were only about 70 nursing sisters available at any one time for over 7,000 beds, and they had heavy teaching and clinic duties. The public now expects, and gets, a reasonably high quality of professional service at our general and special hospitals, but the staffing standards are low and any deterioration may seriously affect the quality of the services rendered.

16. It is sometimes forgotten that in those overseas countries which are more advanced than ours it took fifty years or more of sustained legislative, technical and community effort to obtain the environmental conditions—of housing, water supply, food hygiene, disposal of refuse and sewage—on which existing public health practice and high social standards are based. There has, as yet, been no sanitary revolution here in Nigeria, nor has there been sufficient time for one. A good start was made in the 1930s when there was a cadre of seventeen medical officers of health and senior health officers, mostly devoted to urban sanitation, when training and examination standards for sanitary inspectors were raised, and an active health propaganda unit was created. Professional supervisory officers for urban health duties are now much fewer, and the growing force of health superintendents and inspectors cannot be expected to undertake all the tasks it faces without first-class guidance and supervision and the support of a more health-conscious public. It must be noted here, with regret, that urban or rural health work has very little appeal for our Nigerian medical officers, the majority of whom prefer the more congenial clinical work in hospitals. This disinclination for health and preventive medical work must be overcome and eradicated if we are to make any real progress or command lasting international respect for our health service.

17. The development, in recent years, of a cadre of health sisters and of efforts to improve the care of school children promises great returns. The success of health sisters has been particularly notable in the Northern Region, where their work has been of great value in the field of health education and in ante-natal and child welfare work.

18. The undisputable claim of the huge rural population of this territory to its fair share of curative and preventive activities was emphasised in my Report for last year. I regret therefore that concern is now being expressed by all Regions at the deterioration evident in the Native Administration rural dispensaries, whose work must be re-orientated and for the constant supervision of which more rural medical officers than we at present have are required and must be provided. It is essential to emphasise also that touring administrative officers no less than medical officers must share in this work of constant and regular supervision. Including research, advisory, and field workers (whole- and part-time), the various rural services now absorb the equivalent of about thirty doctors, over seventy other senior service officers and many hundreds of government and local authority auxiliary staff. Among the major endemic and epidemic afflictions it must be remembered that small-pox is still a problem; protection against yellow fever requires considerable effort; and field investigations show the wide extent of bilharzia and onchocerciasis. Sleeping sickness is no longer a serious threat but it demands constant expenditure; really hopeful work against leprosy is expanding steadily, and deaths from cerebro-spinal fever can be enormously reduced although epidemics cannot yet be halted. As already indicated, with the aid of international technical assistance, plans are now in being for large-scale action against yaws, malaria, and leprosy. These, and the rapidly expanding welfare services for mothers and children, make heavy commitments, and, to have any real measure of success, they must be carefully organized and integrated.

19. There has been a steady growth in volume and variety of those research, advisory and laboratory services which are essential for the solution of many serious problems, and care is taken to preserve close liaison between them and practical needs in the field. The cadre of professional officers is, however, precariously maintained; there are, indeed, no more pathologists now than in 1930, and three laboratories in the Regions which then had pathologists now have none.

20. The great increases which have occurred in the senior and junior clerical and accountancy establishments are a reflection not only of the greatly expanded departmental activities but also of the increasing volume and pressure of paper work. Higher professional administrative posts (from A.D.M.S. grading upwards) in 1952-53 were however actually fewer than in 1930. This was partly compensated for by attaching senior health officers and occasionally drafting certain senior medical officers to regional headquarters for wholly administrative duties—not as yet an entirely happy solution, since it unduly weakens both the clinical and preventive services. The ideal is a situation in which the majority of officers will be able to concentrate on their professional and technical duties, but it is far from being attained.

21. The essential tasks envisaged by our predecessors were to build a balanced service and to provide well trained cadres of junior staff to offset shortages in higher professional and technical groups. There is much in her medical services of which Nigeria can well be proud or even claim to be in the forefront, but there are also recognized defects. There are undeniable problems both in preserving

a balance—as between urban and rural needs, and as between curative, preventive, investigational, welfare and administrative needs—and in maintaining high standards while continuing planned and foreseen expansion. The core of the problem in each field of effort is the need for *experienced* officers each interested, encouraged, and kept up-to-date in his or her chosen line of duty, and each freed from non-essential tasks to give the maximum time to professional or technical work. With heavy commitments and staff shortages likely to continue, the necessity for making great effort to use senior staff efficiently and economically is one which is of course recognised by all Regions.

Summary of Progress

22. We may now proceed to summarise and quote examples to illustrate the progress made, and to examine some of the factors which have made that progress possible. First, it must be noted that, covering as it does an area of 373,250 square miles and with a population of just over 31 million, Nigeria is the largest and most populous British colonial territory. It thus has the largest Medical Service. Although much still remains to be done and it would be imprudent to be complacent, it may be confidently declared that there can be no doubt that Nigeria's record of achievement in the field of medical progress during the past 30 years has been a significant one. As will be evident from a comparison of the two maps of medical facilities in 1927 and 1952-53 respectively at the end of this Report, great strides have indeed been made in recent years in the provision of these facilities particularly in the rural areas, in which there are now large numbers of dispensaries and maternity centres. These facilities are of course still far from adequate, both in quality and quantity, and the development programmes in all Regions envisage the provision of many more as rapidly as the necessary supervisory staff can be recruited and the junior staff found and trained. Notable, perhaps, among curative facilities has been the establishment of a gradually increasing number of dental centres and particularly of our orthopaedic hospital at Igbobi, Lagos, which was a by-product of the last war. The first and largest hospital of its kind in West Africa, extensive use continues to be made of the facilities it provides by all four West African territories.

23. The need for the provision of a distinct rural health service was recognised as far back as 1919, but it was not till 1927-29 that the first three touring medical officers were appointed. The unexpected success of these officers led to the proposal by the then Director of Medical Services, the late Sir Walter Burford Johnson, for the establishment of a widespread native administration dispensary system supervised by a staff of full-time medical inspectors. From a small number, these dispensaries have now increased to nearly 800 (*i.e.* 25 per million population) and, together with the mobile Medical Field Units and the Leprosy Service (both of which came to be established within the last 10 years) and, with the Sleeping Sickness Service, which has now reduced the menace of sleeping sickness to negligible proportions, they have made a notable contribution to the tackling of the problem of rural health. Nigeria was indeed the first British West African territory to recognise the importance of organised and integrated planning of its rural health services by appointing a specialist officer as Adviser on Rural Health, a policy which was recently endorsed by the World Health Organisation Expert Committee on Public Health Administration.* A post of Adviser in Nutrition was also established. Our appointment of a Leprosy Adviser

* *Vide* page 40, "Methodology of Planning an Integrated Health Programme for Rural Areas" World Health Organisation Technical Report Series No. 83, 1954.

and a Leprosy Research Specialist was also a notable advance, and it was quickly followed by the evolution of a policy of leprosy control and methods of treatment which have attracted international attention, approbation and emulation. Nigeria was the first West African territory to appoint, in 1949, a specialist malariologist and to establish a Malaria Service, a unit which has carried out a great volume of research, surveys, planning of control projects, and training of medical and health personnel. Under the sponsorship of the World Health Organisation it organised, in 1952, the first International Malaria Training Course in Africa for medical officers and entomologists from various African colonial territories.

24. The importance and practical value of the fundamental researches carried out and of the numerous contributions to scientific literature made by our research specialists particularly in the fields of malaria, virus disease, heat physiology, and helminthiasis have been widely recognised. The "North Persian Forces Medal" which is awarded every two years to the medical officer in the Royal Navy, R.A.M.C., R.A.F. and Colonial Medical Service who has made the best contribution to tropical medical literature has been won on three separate occasions since 1938 by an officer of the Nigerian Medical Service—a record which is believed to be unique for any territory in the Colonial Service*. One of the best known text-books on tropical pathology based on his unrivalled and locally acquired experience in this subject was written by one of our pathologists (the late Dr E. C. Smith, SC. D., M.D.) ; and the well-known work of the late Dr Dyce-Sharp on the life history of *Acanthocheilonema perstans* was a classical example of what could be achieved by a busy ordinary medical officer in a bush outstation with little time and less equipment. A number of our officers have also been in demand as scientific advisers to other territories or as expert delegates to international conferences. Perhaps no other single factor has helped to place Nigeria so firmly on the medical scientific map as its representation on these international bodies in recent years, and it is perhaps worthy of historical note that the territory was represented in 1951 at Dakar at an international medical gathering for the first time by two sons of the soil, namely, Sir Kofo Abayomi, KT., M.D., and the present Inspector-General, who is also a member of the World Health Organisation Expert Panel on Public Health Administration.

25. The expansion, also in recent years, of our Pathological Laboratories at Yaba is reflected by the fact that Nigeria now manufactures smallpox, rabies and typhoid vaccines not only for its own needs, but for those of the other British West African territories and Liberia as well ; and we hope shortly to obtain World Health Organisation international recognition for our yellow fever vaccine, after which the new laboratory which we have set up for its manufacture will go into full production to supply the requirements of Nigeria and of neighbouring territories. We have also recently established, at Oshodi, the first Forensic Science Laboratory in tropical Africa.

26. The last 30 years have seen the inauguration or considerable expansion of our training schemes for professional officers and auxiliaries. The Pharmacy School at Yaba (Lagos) has grown from small beginnings at the end of the last century to an institution which now trains approximately to British professional standards and which, with the Zaria School (opened in 1930) now turns out some thirty pharmacists and dispensers annually. The Registration of Nurses Ordinance which established for the first time in 1947 a Nursing Council for Nigeria gave added impetus to training, led to the establishment in each Region of preliminary

* As this Report goes to Press (April 1955), news has just been received that this award has again been won, for the fourth time, by an officer of the Nigerian Medical Service.

training schools conducted on modern lines and to a train of events which, we hope, will soon result in the official reciprocal recognition by the General Nursing Council of England and Wales of the training given by at least one of our training institutions. Established in recent years also was the Medical Field Units School at Makurdi ; with the training schools for sleeping sickness attendants at Kaduna, the schools for dispensary attendants at Kano and Zaria, and the schools for assistant physiotherapists and for dental, laboratory, and X-ray technicians at Lagos, it has made an important contribution to the training of medical auxiliaries, a contribution which will increase in importance and scope when the new School for Medical Assistants at Kano gets well under way. Each Region also now has a School of Hygiene at which sanitary inspectorate staff are trained up to Royal Sanitary Institute (West Africa) standard.

27. The apex of our professional educational pyramid is of course represented by the University College Medical School at Ibadan. The Medical School is the direct successor of the old Government Medical Training College which was inaugurated at Yaba (Lagos) in October 1930 and which, till its transmutation into the University College Hospital Medical School, Ibadan, in 1948, successfully turned out a generation of excellent medical assistants and assistant medical officers, most of whom ultimately reached medical officer status. Many of its products subsequently successfully took the United Kingdom and Irish Conjoint qualifications. The University College Medical School trains up to the standard of the University of London, with which the University has Special Relationship, its students undertaking their pre-clinical studies at Ibadan and completing their clinical studies for their diploma or degree in the United Kingdom. It is expected that the Teaching Hospital of the Medical School, a drawing of the magnificent buildings of which is shown elsewhere in this Report, will be completed by 1956, when it will take over full teaching locally for the examinations for the London M.B., B.S. qualification.

28. It is of interest at this point perhaps to note that there has been an enormous increase in the number of Nigerian students who have proceeded overseas in recent years. During the 1920s, the flow of Nigerian students overseas was comparatively a trickle. In 1952, however, there were 2,028 Nigerian students known to be in the United Kingdom prosecuting various branches of professional study, and 334 in the United States and Canada—a total of 2,362. Of this number, 492 students, *i.e.*, just over one-fifth (21 *per cent*), comprising 216 men and 276 women, were studying medical and ancillary subjects. The majority of the women were private students or Government scholars studying nursing and midwifery, their number (259) being slightly more than half (53 *per cent*) of the total of all women students (486) in all branches of study, and over nine-tenths (94 *per cent*) of women studying medical and related subjects. The figures are as follows :—*

(*a*) Total Number Nigerian Students in United Kingdom, United States of America and Canada during 1952 :—

	Men	*Women*	*Total*
United Kingdom	1,558	470	2,028
U.S.A. and Canada ...	318	16	334
Total	1,876	486	2,362

* *Vide* pages 117-119 of "The Nigerianisation of the Civil Service—A Review of Policy and Machinery" by Sir Sydney Phillipson and Mr S. O. Adebo : Government Printer, Lagos, Nigeria, 1954.

(*b*) Total number Nigerian Students studying medical and ancillary subjects in United Kingdom, United States of America, and Canada :—

	Men	*Women*	*Total*
United Kingdom	203	275	478
U.S.A. and Canada ...	13	1	14
Total	216	276	492

(*c*) Details of courses of study :—

MEN STUDENTS

Course	*Scholars U.K.*	*Private U.K.*	*U.S.A. & Canada*	*Total*
Dentistry	4	8	—	12
Medicine	15	156	11	182
Pharmacy	5	15	2	22
	24	179	13	216

WOMEN STUDENTS (SCHOLARS AND PRIVATE)

	U.K.	*U.S.A. & Canada*	*Total*
Child Welfare and Nursery Nursing ...	2	—	2
Dentistry	2	—	2
Nursing and Midwifery...	258	1	259
Mental Nursing	1	—	1
Health Visitors Course	1	—	1
Medicine	6	—	6
Optics	3	—	3
Radiography and Physiotherapy ...	2	—	2
	275	1	276

The number of Government scholars cannot be said to be large, compared with that of private students, though many of the private students were Government sponsored. The award of Government scholarships has however rapidly increased in the last one or two years as Regional Governments now grant an increasing number of scholarships to regional students in addition to awards by Central Government.

29. By "Nigerianisation" of the Civil Service in this country is understood the filling, by competent and qualified native Nigerians, of posts which had formerly been normally filled only by Europeans. The record of the Department of Medical Services in this sphere during the last 30 years can truly be described as phenomenal and is certainly not surpassed by any other department. Thirty years ago, the number of Nigerian officers holding what were then known as "European" (and later as "Senior Service") posts was less than half a dozen, all of them being of the rank of medical officer only. On 1st June, 1952, there were no less than 64 Nigerians of full medical officer rank, which was 42 *per cent* of the total number of general duty medical officers. This does not include the number of assistant medical officers, which was 19. Also, out of a total strength of 556 officers in

Senior Service posts of all categories on that date, 157 (28 *per cent*)* were Nigerians ; the number only 4 years before was 75. Four Nigerian medical officers have achieved specialist rank, the first Nigerian being appointed to a surgical specialist post in 1938. There are now 5 Nigerian senior medical officers out of a cadre of 16, the first Nigerian senior medical officer having been appointed in 1949. The largest percentage increase has been in the number of Nigerian health superintendents, who now represent 61.2 *per cent* of the total strength of this cadre. The progress made here will be appreciated when it is remembered that it was only in 1944 that the first Nigerian was appointed health superintendent. Similarly the first Nigerian nursing sister was appointed in 1948 and the first nursing superintendent in 1949. Now the number of Nigerians on the Senior Service nursing staff is nearly a third of the total strength, and includes 20 Nigerian nursing sisters, 10 nursing superintendents and 4 mental nursing superintendents. Finally, the appointment of the first Nigerian to a Directorate post—that of Deputy Director (now designated Director) in the Western Region—was made in 1948, to be followed by the appointment of another Nigerian to an Assistant (now Deputy) Directorate post in 1952 ; and the present Head of the Department who was appointed Director (now Inspector-General) of Medical Services, Nigeria in 1951 is himself a Nigerian.

30. I cannot conclude this record of the progress made by this Department during the last three decades without referring to the four principal factors which have made that progress possible. Foremost and freely must of course be acknowledged the debt of gratitude which we owe to our predecessors who laid the foundation on which we had been building what I may term the "ground floor" of our medical superstructure. Our predecessors, captained as they were especially in recent years by exceptional leaders such as Thomas Rice (Director of Medical Services 1920-23), William Alexander (1923-1929), Sir Walter Burford Johnson (1929-1936), Sir Rupert Briercliffe (1936-1940), Joseph Harkness (1942-1946), and George Walker (1946-1951), well and truly laid a sound foundation. Secondly, much of the progress we now record would have been largely impossible but for the funds so generously placed at our disposal as a free gift by the Government and people of Great Britain under the Colonial Development and Welfare Act of 1945 as a contribution towards a ten-year development plan —a remarkable gesture made to her colonial territories by Great Britain at a time when she was herself hovering between survival and destruction in a global war such as history had never known—a gesture indeed which all her colonial peoples will ever remember, even on the attainment of self-government. To the original Imperial allocation of £23 million was subsequently added an additional £16 million, to enable the original ten-year plan to be extended by another five years, and 13 *per cent* of the total allocation will be spent on our medical and health services.† It is perhaps not too much to say that had various unavoidable circumstances not prevented us from carrying out our medical development plan as originally drawn up, our expanded medical services in Nigeria today would undoubtedly have been one of the best in tropical Africa. Thirdly, we must gratefully acknowledge the large contribution which has been made by the Christian Missions. Lastly, tribute must be paid to the very hard work, often under very great difficulties, of all senior and junior officers of the Department:

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* In February 1954 there were 199 Nigerian Senior Service officers out of a total strength of 573, percentage of 34.7.

† *Vide* page 148 of "The Colonial Office List" 1954, H.M. Stationery Office, London.

they are the loyal and ever willing executants, in the field, of departmental policy and without them the schemes of the planners and of the administrators would surely have come to nought. They have laboured without stint, and as a magnificent team, to help consolidate the gains won by our predecessors. The stage of consolidation is about to end; we are now poised to advance to the next stage—the stage of expansion, the stage of the construction of the "first floor" of the medical superstructure to which I have referred. Detailed and comprehensive plans are being or have now been made, and funds allocated, by all Regions for a very ambitious expansion of their medical services—plans which, at any rate in respect of at least one Region, will only be limited in their execution by the availability of trained and supervisory staff. Our Regional Governments are fully alive to their responsibilities in the field of health and, with our own efforts, aided by the substantial assistance which we expect to receive in material, equipment and advice from international organisations such as the World Health Organisation and the United Nations International Children's Fund, it is the belief and hope of all that Nigeria is on the threshold of a forward march in health which will be no mean contribution to the welfare and happiness of her people.

II.—ADMINISTRATION

A—DEPARTMENTAL ORGANIZATION

31. There were no major changes to record. The Ministry of Education was separated from the Ministry of Social Services in the Northern Region and a Minister of Health was appointed. The Central portfolio was still that of Social Services and included the Departments of Social Welfare, Education, and Medical Services. The departmental structure remained as described in detail in the 1951-52 Report and is here briefly re-capitulated. The Inspector-General, assisted by a Deputy and Assistant Inspector-General, has mainly advisory, co-ordinating and inspectorial functions except in certain matters which involve major over-all national interests, for which he still retains administrative and executive responsibility. The Regional Ministers of Health and Directors have virtually full control over health matters in their respective Regions. In each Region the unit of administration is the Medical Area, which usually coincides with one or more political divisions; it is based on a general hospital and is in charge of a medical officer responsible for both medical and health work in the area except in some cases where there is a medical officer of health or a rural medical officer. Medical Areas are grouped into Medical Divisions which are co-extensive with one or more political provinces, each Medical Division being in charge of a Senior Medical Officer. Each of the three Regional Medical Headquarters, now responsible for medical care and public health in almost all their aspects, has a Director, a Deputy Director, a Senior Health Officer and a Matron; the Northern Region has, in addition, senior officers on its headquarters staff responsible for its Leprosy Service, Sleeping Sickness Service, and Medical Field Units. Particularly in the North, Medical Divisions are too large to be satisfactorily administered by a single Senior Medical Officer but the planned increase, in that Region, from four to six Divisions by the splitting up of two of the existing Divisions could unfortunately not yet be implemented owing to lack of staff, and increased devolution to Senior Medical Officers was not possible. In the Eastern Region, the Leprosy Service and Medical Field Units are administered directly from Regional Headquarters as a first step in their eventual integration in the Rural Health Service.

Certain special services and medical stores are also directly administered by Regional Directors. Chart I on page 94 gives details of the present arrangements.

B—STAFF

32. Table I (page 21) shows the total of established posts and of posts filled at the end of the year. There were serious deficiencies in each Region in one or more of the three largest cadres, those of qualified medical staff, nursing sisters and superintendents. When related to population, needs and facilities, these deficiencies were really grave in the Northern Region which has, in Government and Native Administration hospitals, a thousand beds more than have the other Regions, and a larger number of dispensaries more widely dispersed. Moreover the North is less able to fill gaps by local employment of temporary nursing and medical officers.

Senior Service Staff

33. *Medical Staff.*—During the year the Northern Region lost thirteen medical officers, including its two pathologists, and recruited only four. For clinical duties the loss was actually eleven officers. The number engaged on administration rose from six to eleven. All except the largest hospitals had a single medical officer for most of the year, leave reliefs were difficult to find and unexpected casualties almost precipitated a crisis. It is realised that without adequate numbers of general duty officers plans for development cannot pass the paper stage and maintenance of existing services will be in jeopardy. Three promotion posts, as Senior Clinical Medical Officers, were created during the year and were filled by officers of long clinical experience; such officers rarely wish to forsake clinical for purely administrative duties. With eight qualified medical officers of health, the four duty posts were constantly filled and experienced men were posted to open two new rural health centres.

34. The Eastern Region had less difficulty in providing essential reliefs although many stations had at times one or even two medical officers less than their necessary establishment. There was only one substantive medical officer of health; there is a pressing need for others at Onitsha, in the Cameroons and in Calabar Province.

35. At the larger Western Region stations it was possible to post a second medical officer or assistant medical officer. Staff in Lagos, which formed the regional emergency pool, fluctuated considerably but the major units maintained their essential establishment and temporary staff could be engaged locally to fill the worst gaps. Rural medical officers fell in number at the end of the year. Only one of the four health posts was filled throughout the year, but a second medical officer of health returned from study leave in September.

36. The Central vacancies were for specialists, pathologists and research officers.

37. *Nursing sisters and nursing superintendents.*—Despite many changes and persisting shortages, overall numbers were maintained or slightly increased in each Region, but temporary staff, notably from the Catholic Mission, is still employed. The Western Region is beginning to benefit from the return from training in

Britain of Nigerian girls, five of whom joined the service ; despite this access, Lagos was, at times, in difficulty though the establishment was maintained at out-stations.

38. Of thirteen posts for Sister Tutors, only six were filled (one of them temporarily), three by nursing tutors and three by midwife tutors, and the training of junior staff was seriously affected. Arrangements are being made to grant study leave for sisters to qualify as nursing tutors.

39. The year started well with twenty Health Sisters in an establishment of twenty-five, but ended with sixteen. At the beginning the Northern Region had one in each province. They achieved miracles of improvisation, despite lack of facilities, staff and finance, and it is felt that maintenance of this cadre, and its eventual expansion, will be of solid value.

40. *Health Superintendents.*—The establishment was fully recruited in the Western Region, but the North had four vacancies and the East five. These officers are mostly employed in urban duties, for which their training is more appropriate, but their use in rural areas is being extended. Refresher training is required for numbers of them who are not now fully conversant with recent technical introductions.

Junior Service Staff

41. The most serious deficiencies were in nursing and clerical staff.

42. *Nurses.*—The Northern Region was short of 120 in its Government establishment of 345 nurses and midwives. In fact, it employed two *less* than it did the year before, despite an establishment increase of 74. This is believed to disclose a trend that may eventually affect other groups for which entry to Government service depends on the possession of educational qualifications which few in this Region possess, and it is felt that the permissible lowering of the educational standards for Northern recruits will be of little value unless accompanied by a corresponding simplification of training syllabuses or qualifying examination standards. With regionalisation, the flow of qualified recruits from other Regions, upon which the North depends to staff its medical services, must dwindle and eventually cease. The dearth of female nurses of whom only forty-one were qualified and thirteen in training, was especially serious as it will be many years before there will be a sufficiency of educated Northern girls. Native administrations in the Region employed 295 Nurses or Assistant Nurses ; their standards are lower than in Government service, but the demand for improved training is growing, stimulated by the desire to qualify for Government grants.

43. Every effort continued to be made to increase the intake of female student nurses to the Eastern Region Preliminary Training School at Aba but many prefer to train either at University College or Mission hospitals. The Western Region with substantial numbers of nurses-in-training, a fair proportion of whom are girls, was in a less difficult position.

44. *Clerical Staff.*—Despite a great increase in number, efficiency is not yet satisfactory, a fact which is reflected in the tardiness and inaccuracy of essential returns. Officers in charge of a busy hospital and with many additional responsibilities in their Medical Area, including supervision of Native Administration dispensaries and maternity homes, find it an increasing strain to keep office work up to

date, the more so as few of them have any aptitude or liking for clerical and accounting duties. Fair progress was made in appointing almoners, preference being given to pensioners.

45. *Housing of Staff.*—This continued to cause concern, both as regards its quantity and quality, and posting of doctors and other senior staff may even, in some areas, be determined by the availability of quarters rather than by medical needs or departmental policy. Fortunately, in the Eastern and Western Region, Nigerian officers frequently prefer to make private arrangements. Except in the Eastern Region there was improvement in the supply of quarters for essential junior hospital staff, but there has been no progress towards the ideal of providing good modern quarters for rent to all staff.

C.—LEGISLATION

46. Regional legislation is given in detail in the Regional Reports.

47. The Medical Auxiliaries Ordinance encountered difficulties and is now not likely to be put into practice. In the Northern Region the Dogs (Prevention of Rabies) Law, 1952, amended the Dogs Ordinance to provide for the compulsory vaccination, with avianized vaccine, of all dogs as a condition of the issue of a licence. The Order in Council required for the control of yellow fever in the Udi area of Eastern Region was revoked in August. In October, by Government Notice under the Destruction of Mosquitoes Ordinance, two superintendents were appointed Sanitary Authorities in the Nsukka and Udi districts, to enforce control of *Aedes* breeding in water pots. Another item of interest in the Eastern Region was the passing of the Awgu Native Authority Community Cottage Hospital Rates Rules.

48. Central legislation on health matters is now less than formerly. Only two Ordinances and one Order in Council were gazetted, *viz*:—

ORDINANCES

Serial No.	*Date*	*Short title*	*Provision*	*Gazette No.*
16	—	Medical Auxiliaries Registration Ordinance.	To provide for the registration of medical auxiliaries.	29 of 22–5–53
26	16–10–52	University College Hospital Ordinance.	To provide for the establishment and regulation of a teaching hospital.	34 of 19–6–52

ORDERS IN COUNCIL

14	11–8–52	Yellow Fever and Infectious Diseases (Immunization).	Revocation of Order in Council No. 5 of 1952.	43 of 21–8–52

D.—FINANCE

49. The Financial Statement for the year 1952-53 with some comparative 1951-52 figures is given below.

I—Estimated Expenditure, 1952–53

	Central	*Northern*	*Eastern*	*Western*	*Total*
	£	£	£	£	£
Nigerian funds	278,560	734,715	478,850	675,290	2,167,415
Colonial Development & Welfare Schemes ..	268,425	619,204	391,540	338,680	1,617,849
Total	546,985	1,353,919	870,390	1,013,970	3,785,264

II—Actual Expenditure, 1952-53

	Central	*Northern*	*Eastern*	*Western*	*Total*
	£	£	£	£	£
Nigerian funds	354,816	652,926	457,469	658,335	2,123,566
Colonial Development & Welfare Schemes ..	177,742	348,771	246,368	166,056	938,937
Total	532,558	1,001,697	703,837	824,391	3,062,503

Total expenditure in 1951–52 was £2,696,603

III—Revenue 1952-53

Central	*Northern*	*Eastern*	*Western*	*Total*
£	£	£	£	£
68,266	40,540	36,858	65,330	210,994

IV—Estimated Medical Expenditure as a Proportion of Estimated Revenue

	Revenue Estimated	*Medical Expenditure Estimated*	*Proportion of Revenue allocated for Medical Services*
	£	£	£
(*a*) *Excluding* Colonial Development and Welfare Grants 1952-53	38,499,740	2,167,415	5.6 per cent
1951-52 (revised)	40,665,510	1,957,325	4.8 per cent
(*b*) *Including* Colonial Development and Welfare Grants and Expenditure 1952-53	42,582,410	3,785,264	8.9 per cent

50. Of the total estimated 1952-53 expenditure of £3,785,264, only £3,062,503 or 82 *per cent* was actually spent. The distribution of the funds which were *not* spent indicates clearly the failure to recruit staff and to complete the building programme planned under Colonial Development Schemes, *viz*:—

	£
Nigerian funds	43,849
Development—recurrent	277,899
Development—special expenditure	401,013
	£722,761

Table I—Establishment

Note.—Figures in brackets = strength at 31st March, 1953

Senior Service Staff	*Central*	*North*	*East*	*West*	*Total*
Medical officers, specialists, research and headquarters staff and assistant medical officers	36(26)	97(69)	80(71)	86(75)	*299(241)
Dental officers	—	4(4)	3(3)	5(6)	12(13)
Matrons, nursing sisters, nursing superintendents, health sisters and sister tutors	10(7)	57(35)	41(41)	48(37)	156(120)
Superintendents and control officers—health, laboratory, malaria, sleeping sickness and medical field units	21(18)	42(34)	22(15)	28(25)	113(92)
Tsetse control, entomologists and control officers	—	14(15)	—	—	14(15)
Leprosy Service—secretaries and control officers	—	1(1)	11(8)	4(3)	16(12)
Pharmacy superintendents, inspecting pharmacists, medical storekeepers and principals pharmacy schools	5(5)	5(5)	8(6)	3(3)	21(19)
Medical auxiliaries—radiographers, physiotherapists, dental mechanics	11(8)	3(2)	2(1)	8(7)	24(18)
Administrative, accountants and secretarial	11(8)	7(4)	3(2)	6(6)	27(20)
Scientific	6(3)	—	—	—	6(3)
Junior Service Staff					
Pharmacists and masters	17(15)	56(51)	43(43)	67(48)	183(157)
Sanitary inspectors	1	98(63)	115(100)	130(92)	344(255)
Nurses and midwives	99(63)	†465(345)	622(577)	824(584)	2010(1569)
Medical auxiliaries—sleeping sickness and field units assistants, assistant physiotherapists, laboratory technicians, assistant radiographers, etc.	57(44)	379(300)	219(178)	192(148)	847(670)
Clerical	107(101)	211(145)	168(151)	119(108)	605(505)

* 299=authorized provision for 1952-53; the approved establishment was greater but full financial provision was not made.

† In the Northern Region there were also 295 Native Administration nurses and assistant nurses and 88 midwives and maternity attendants.

51. The population is now estimated at just over thirty-one million. Assuming that Central expenditure benefits the Regions evenly, the actual *expenditure per head* in pence is—

	North	*East*	*West*	*Nigeria*
Nigerian funds ...	9.31	13.77	24.81	16.34
Development	4.97	7.42	6.26	7.23
Total	14.28	21.19	31.07	23.57

52. As the Western Region benefits more than do other Regions from Central services the disparity in regional expenditure is even greater than these figures indicate. To the total Governmental expenditure of just under two shillings per head, there should be added the cost of Native Administration medical and health services averaging just over six pence per head, to give a total of approximately half-a-crown. Medical care, requiring costly methods of investigation and treatment and more highly specialized hospitals, becomes dearer year by year. *Ministers and officials have, therefore, a difficult task in planning for present and future needs on so restricted a health budget which, in fact, is one of the lowest in the world for territories in any way comparable.* The greatest care has to be taken to ensure that preventive work in general and rural health measures in particular, receive their due proportion and that laboratory and field investigations are directed to practical ends. It is also becoming increasingly clear that local governments (Native Administrations) must play a larger part in providing both curative and preventive services.

III.—PUBLIC HEALTH

A.—GENERAL HEALTH

53. Considered in terms of the absence of natural disasters such as famines and epidemics, 1952-53 was a better than average year. Rainfall was well distributed, crop yields were good, produce prices were well maintained and there were no major outbreaks of communicable disease. The general level of health cannot, however, be described as good so long as malaria and other endemic diseases remain a heavy burden; minor degrees of malnutrition are relatively common and epidemic afflictions persist and threaten to recur in serious form.

54. Notifications of smallpox fell markedly in all three Regions, only ten cases of yellow fever were diagnosed in the Eastern Region, and cerebrospinal fever, mainly a Northern affliction, abated considerably. Details concerning these and other communicable diseases are contained in a later section.

55. Returns from Government and Native Administration Hospitals (excluding Leprosy Settlements) and from all Government Dispensaries give the following totals of new patients treated.

Hospitals	*Central*	*Northern*	*Eastern*	*Western*	*Total*
Inpatients ...	492	53,791	44,130	39,332	137,745
Outpatients ...	1,041	295,903	386,915	328,206	1,012,065
Government Dispensaries					
Outpatients	—	132,945*	40,235†	149,810‡	322,990
Total, all outpatients		... 1,335,055			
Total, all patients		... 1,472,800			

* Sleeping sickness, minesfield and other dispensaries.
† Afikpo and Ikom dispensaries.
‡ Lagos dispensaries.

56. Comparable figures excluding the minesfield returns not available in previous years, are:—

	Inpatients	*Outpatients*
1950-51	143,280	1,380,222
1951-52	132,948	1,251,084
1952-53	137,745	1,256,817

57. The increase in 1952-53 arises wholly from the Eastern and Western Regions. The Northern Region reported a fall in number of both inpatients and outpatients at Government hospitals, believed to be mainly due to the operation of the new Hospital Fees Regulations. The six Native Administration hospitals in this Region, most of which do not charge fees, maintained and even improved on the numbers treated. In the Eastern Region, despite a decrease at Victoria probably due to the growing commercial medical facilities available in the area, inpatients and outpatients at Government hospitals increased by 6,377 and 30,036 respectively. Following the institution of free medical treatment for school children in the Western Region, outpatients increased and in some hospitals facilities were strained.

58. The Return of Diseases and Deaths (Appendix I at pages 87-88) relates to patients treated at hospitals and at those dispensaries which have medical officers, that is, to 137,745 inpatients, and to 1,161,875 outpatients. It is a return of *diseases,* more than one of which can, of course, be diagnosed in a given patient. The regional differences quoted are of interest:—

	Northern Region	*Eastern Region*	*Western Region*	*Total*
Inpatients treated ..	53,791	44,130	39,332	137,253
Inpatient diagnoses ..	72,137	46,961	46,757	165,855
Diagnoses per inpatient	1.34	1.06	1.19	1.21
Outpatients treated ..	295,903	386,915	478,016	1,160,834
Outpatient diagnoses ..	446,590	407,567	505,105	1,359,262
Diseases diagnosed per outpatient	1.51	1.05	1.06	1.17

Note .—The outpatient figures do not include the Government dispensary figures shown in paragraph 55 except at Lagos (Western Region), where the diagnoses are made entirely by medical officers. The in patient and out patient figures also do not include Central units. The figures in Appendix I are the total Nigerian figures.

59. It is known that the return of diseases and deaths is not always accurately rendered and is subject to errors ; similarly the return of new patients is liable to err. It is considered, however, that such errors will affect all Regions fairly equally, and that the marked regional differences in the number of diagnoses made per patient are of some significance. The higher figures recorded for diagnoses per patient in the Northern Region probably reflect the less adequate provision of medical facilities, the greater distance between hospitals, and a reluctance to seek treatment until illness is more advanced.

60. In Appendices II-VI (pages 89-93), the regional returns of diseases and deaths and the case mortality rate are classified in the seventeen groups recognized in the 1948 International Statistical Classification of Diseases, Injuries and Causes of Deaths. For the three Regions combined, hospitals record the highest number in the following eight groups:—

Group		*Inpatients*	*Outpatients*
I	Infective and parasitic diseases	40,818	334,076
VI	Diseases of the nervous system and sense organs	6,220	104,781
VIII	Diseases of the respiratory system	12,731	102,700
X	Diseases of the genito-urinary system	11,265	36,722
XI	Deliveries and complications of pregnancy, child-birth and puerperium	27,633	11,263

Group		*Inpatients*	*Outpatients*
XII	Diseases of the digestive system	20,105	194,499
XIII	Diseases of the bones and organs of movement ..	3,551	89,100
XVII	Diseases of the skin and cellular tissue	16,082	222,377

61. On a regional basis, the commoner inpatient conditions, with the percentage each forms of the total regional inpatients, are:—

Northern Region	*Eastern Region*	*Western Region*
Infective and parasitic diseases—35 *per cent*	Deliveries and complications of pregnancy, etc. —20 *per cent*	Deliveries and complications of pregnancy, etc. —27 *per cent*
Diseases of the skin, etc.—13 *per cent*	Diseases of the digestive system—18 *per cent*	Infective and parasitic diseases—16 *per cent*
Diseases of the digestive system—9 *per cent*	Infective and parasitic diseases—17 *per cent*	Diseases of the digestive system—11 *per cent*
Diseases of the respiratory system—8 *per cent*	Accidents, etc.—8 *per cent*	Accidents, etc.—9 *per cent*
Deliveries and complications of pregnancy, etc.—8 *per cent*	Diseases of the skin—8 *per cent*	Diseases of the respiratory system—7 *per cent*

62. The regional differences are more clearly shown if a few individual diseases, or smaller groups of related conditions, are analysed:—

63. *Respiratory Tuberculosis*

Inpatients	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
(*a*) Diagnoses	761	272	328	1,361
(*b*) Deaths	200	28	174	402
(*c*) Case Mortality percentage	26	10	53	30
(*a*) expressed as a percentage of all inpatient diagnoses ..	1.0	0.7	0.7	0.9
(*b*) expressed as a percentage of all inpatients	1.4	0.6	0.8	1.0

The Northern Region records the highest proportion of cases, and approximately half of all cases and deaths. The very high mortality rate in the West may reflect a more serious type of infection in crowded urban areas, although it has to be recognised that recorded hospital death rates depend to a great extent on local customs, which may result in many hopeless cases leaving hospital shortly before the end, the death therefore not appearing in the hospital returns.

64. *Dysentery*

Inpatients	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
(*a*) Diagnoses	2,167	1,194	886	4,247
(*b*) Deaths	150	46	45	241
(*c*) Case Mortality percentage	7	3.9	5	5.7
(*a*) expressed as a percentage of all inpatient diagnoses	3.0	2.5	1.9	2.7
(*b*) expressed as a percentage of all inpatients..	4.0	2.7	2.3	3.1

The Northern Region with half of all cases and almost two-thirds of all deaths, has a high death rate, and a higher proportion of patients recorded as having dysentery.

65. *Malaria*

Inpatients	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
(*a*) Diagnoses	6,062	3,455	3,241	12,758
(*b*) Deaths	130	91	126	347
(*c*) Case Mortality %	2.1	2.6	3.9	2.7
Outpatients				
Diagnoses	41,901	46,304	56,740	144,945

In the West the diagnosis of malaria is made more frequently among outpatients than in the other Regions, but less frequently among inpatients. The inpatients' mortality rate was much higher in the Western Region than elsewhere. It might be concluded that it pays to admit earlier into hospital as inpatients a higher proportion of those who are seriously ill with malaria. Although hospital returns cannot reflect the great amount of ill health caused by malaria, it is noteworthy that this disease was recorded in 9 *per cent* of all inpatient diagnoses, in almost 11 *per cent* of all outpatient diagnoses, and in 5.6 *per cent* of all inpatient deaths.

66. *Syphilis*

Inpatients	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
(*a*) Diagnoses	5,940	124	199	6,263
(*i*) expressed as a percentage of all inpatient diagnoses	8.7	0.3	0.4	4.0
(*ii*) expressed as a percentage of all inpatients..	11.0	0.3	0.5	4.6
Outpatients				
Diagnoses	19,075	765	671	20,511

This is obviously a disease of the Northern Region which returned 95 *per cent* of all inpatient records and 93 *per cent* of all outpatient records of the disease, and where it was diagnosed in eleven per cent of inpatients. Gonorrhoea and yaws, which are known to be very common in the Eastern and Western Regions, are not returned specifically. It would be of interest to have these diseases and syphilis compared, both as between Regions, and as between the different zones of the Northern Region.

67. *Smallpox*

Inpatients	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
(*a*) Diagnoses ...	546	248	9	803
(*b*) Deaths ...	78	11	—	89
(*c*) Case Mortality %	14.3	4.3	—	11.1

ALL NOTIFICATIONS 1952-53

	Northern Region	*Eastern Region*	*Western Region*	*Total*
(*a*) Cases	4,381	594	197	5,172
(*b*) Deaths	702	83	30	815
(*c*) Case Mortality Rate *per cent*	16.0	14.0	15.2	15.8
(*d*) Hospital in-patients as a percentage of notified cases..	12.5	41.8	4.6	15.5
(*e*) Mortality Rate in cases notified but not admitted to hospital	16.3	20.8	15.9	16.6

In the Eastern Region a high proportion (41.8 *per cent*) of all notified cases was admitted to infectious diseases hospitals and among them the remarkably low death rate of 4.3 *per cent* was recorded, whereas in those not so admitted the death rate was high (20.8 *per cent*). In contrast to what may happen in other diseases, anxious relatives cannot remove from hospital moribund cases of smallpox, so that the hospital death rate is exactly known. This contrast in the Eastern Region's mortality experience as between hospital cases, *i.e.*, mainly urban areas, and cases outside hospitals, *i.e.*, remoter rural areas, suggests that the disease may be of a milder nature in urban areas, where vaccination is more intensively carried out.

68. *Rheumatic Fever and Related Conditions.*—(Rheumatic fever ; pericarditis, chronic affection of valves and endocardium ; disease of the myocardium including aneurysm of the heart).

INPATIENTS	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
Diagnoses	430	155	166	751
Deaths	66	17	7	90
Mortality Rate % ...	15.3	10.7	4.2	12.0

OUTPATIENTS	*Northern Region*	*Eastern Region*	*Western Region*	*Total*
Diagnoses	480	485	704	1,669

The proportion of inpatients to outpatients and the case mortality rate in inpatients were highest in the Northern Region. The former may indicate a greater clinical interest in these conditions, which is known to be the case in one area, but may also indicate a greater severity of the lesions as seen in hospital patients. This appears to be confirmed by the higher mortality experience.

69. *Vitamin Deficiencies*

	Northern Region	*Eastern Region*	*Western Region*	*Total*
Inpatients, diagnoses ...	312	217	376	905
Outpatients, diagnoses ...	1,064	5,102	8,048	14,215
Inpatients deaths	25	21	31	77

As a rule only severe degrees of deficiency are noted in hospital records. The much larger numbers of outpatients recorded in the Eastern and Western Regions

are probably due to the larger numbers of children attending hospital in these areas. Although it has fewest hospital beds, the Western Region recorded the greatest number of inpatients, which may indicate that the deficiencies encountered are more severe there than elsewhere.

70. *Intracranial Vascular Lesions.*—These conditions are still apparently rare but it is perhaps worth noting that approximately half of the inpatient records (322) and more than half of the outpatients records (209) come from the West, the most highly urbanized Region.

71. *Cancer: Inpatients.*—Cancer is relatively uncommon since the population has a preponderance in the younger age groups. Of the 799 inpatients, 328 (41.0 *per cent*) were recorded in the Western Region. Of the cancers specified by site, those of the digestive tract form by far the largest group, and 130 of the 227 diagnoses made in this group were recorded from the Western Region. This may reflect the better medical facilities available at Lagos but may also indicate a true regional difference.

72. *Injuries*

	Northern Region	*Eastern Region*	*Western Region*	*Total*
Inpatients	5,499	3,998	4,171	13,688
Inpatient deaths ...	203	86	90	379
Case Mortality Rate	3.7	2.2	2.2	2.8
Outpatients ...	30,145	41,289	5,778	122,212

The North, with fewest outpatients, has most inpatients and a high mortality rate in inpatients, indicating that owing to the wider dispersal and relatively fewer number of hospitals in that Region only the more seriously injured attend hospital for treatment. Eighteen of the twenty-four hospital deaths due to motor accidents occurred in the Northern Region.

B.—HEALTH OF EXPATRIATE POPULATION

73. The population is now more accurately known and is estimated to be:—

Northern Region		*Eastern Region*		*Western Region*	
Adamawa	140	Bamenda ..	128	Abeokuta	193
Bauchi	158	Calabar	532	Benin	238
Benue	174	Cameroons ..	577	Delta	425
Bornu	211	Ogoja	148	Ibadan	1,151
Ilorin	128	Onitsha	1,040	Ijebu	34
Kabba	128	Owerri	553	Lagos and Colony	4,929
Kano	1,395	Rivers	488	Ondo	132
Katsina	84			Oyo	134
Niger	186				
Plateau	1,247				
Sokoto	225				
Zaria	871				
Total	4,897		3,465		7,242

Grand Total .. .. Nigeria 15,604

74. *Morbidity.*—General health was satisfactory and two Regions (North and East) reported reduction in hospital attendance and admissions despite growth in population. In all areas malaria remains the commonest single cause of admission to hospital. There is a growing impression that proguanil is losing its efficacy as a prophylactic, although observations made at Lagos in 1951-52 (B. M. Nicol: *British Medical Journal*, 25th July, 1953) suggested that, at that time, when newer compounds were little used, proguanil taken in doses of 200 mg. daily by persons of ten years of age and over was the most satisfactory prophylactic. Diseases of the digestive system, particularly gastro-intestinal upsets due to dietetic indiscretion or contaminated food, were frequent.

75. An outbreak of fifteen cases of relapsing fever among Europeans was reported from Maiduguri and clinically resembled louse-borne rather than tick-borne infection. At the same station one case of modified smallpox occurred in an European official. Five cases of enteric, five of tick typhus and a number of cases of dengue and infective hepatitis were also reported from the North.

76. In the Western Region five cases of poliomyelitis were recorded in expatriates. Measles and chickenpox in children were relatively common. Two European officers contracted sleeping sickness in the Ogoja Province of the Eastern Region.

77. *Invalidings and Deaths.*—Returns are:—

	Invalidings:		*Deaths:*	
Regions	*Total*	*Permanent*	*Total*	*Officials*
Northern	17	2	15	3
Eastern	12	5	12	—
Western	15	5	8	2
	44	12	35	5

78. *Expatriate Maternity Work.*—The deliveries registered in Government maternity homes were:—

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
Total—1952-53 ...	110	40	185	335
Total—1951-52 ...	110	68	174	352

79. Although many wives heeded the official advice to have their confinement in the United Kingdom there is urgent need to provide locally better facilities than exist in the nursing homes, which were not originally designed for this work. In the East the building of a modern annexe to one nursing home is being considered; in the North the sisters' messes attached to the homes are to be converted to maternity hospitals.

IV.—VITAL STATISTICS

80. Census-taking at the end of the year was almost complete and the population was then estimated at over 31 million. The provincial figures are given below:—

PROVINCIAL POPULATION IN THOUSANDS

Northern Region		*Eastern Region*		*Western Region*	
Adamawa	1,181	Bamenda	419	Abeokuta	630
Bauchi	1,424	Calabar	1,541	Benin	900
Benue	1,468	Cameroons	324	Delta	589
Bornu	1,595	Ogoja	1,078	Ibadan	1,660
Ilorin	531	Onitsha	1,767	Ijebu	348
Kabba	664	Owerri	2,003	Lagos and Colony	505
Kano	3,396	Rivers	860	Ondo	945
Katsina	1,481			Oyo	782
Niger	716				
Plateau	891				
Sokoto	2,681				
Zaria	805				
Total	16,833		7,992		6,359

Total Nigeria 31,184,000

Consideration of these figures and of those for previous censuses in 1921 and 1931 suggests that this total will be doubled before the end of the century. The annual rate of increase in population is 2.1 *per cent.*

81. *Registration of births and deaths.*—Figures (of a kind) relating either to 1952 or to 1952-53 are available from eleven areas and are given in Table II (page 31). Registration, on a compulsory or voluntary basis, has also been introduced or is approved for the following areas—

NORTHERN REGION—Shendam, Adamawa, Bauchi, Hadejia, Gumel, and some districts of Sokoto.

EASTERN REGION—Awgu, Eket and some districts of Onitsha.

WESTERN REGION—Oshogbo, Oyo Division, Ondo, Ijebu.

82. Registration is obviously very incomplete, even in areas where it has been in force for years, and has been compulsory in name only. Apart from the growing value to the individual of a birth certificate, and the value of improved statistical returns, it is well worth persevering with these attempts at registration in order to facilitate the work of health visiting staff.

83. In tropical populations little affected by social measures, birth rates of the order of 50 per 1,000 and death rates of about 40 are to be expected. If this is true of Nigeria, less than half of the births are being registered except in Katsina, Enugu and Lagos, and nowhere are even half of the deaths recorded. At Kano, 3,819 burials (as against 1,899 registered deaths) were counted; this gives a crude death rate of 35.8 (as against 17.8) which possibly approximates closely to the truth, and indicates that half of the deaths are registered.

84. The Katsina Province organization is unique in Nigeria in placing the duty of reporting on the village religious leader, the Imam, who is called in by moslem households to name a child or to preside at obsequies. He reports periodically to the village scribe, and village records are transmitted through a

District Registrar (Native Administration Sanitary Inspector) to a Provincial Registrar, a whole-time official trained locally and in Lagos. The cost of this organisation is one-tenth of a penny per head of population. Probably about 60 *per cent* of births and 30 *per cent* of deaths are in fact registered. This organization based on religion, like the Tudor system in England, is open to criticism in that it does not put the onus on the parent or householder, places an unfair burden on minor rural officials, does not educate the people, and records data mainly from those of one religion. The local authorities are aware of these faults, and intend gradually to correct them. Meantime the data are of great practical use to health workers.

85. In the Eastern Region the only rate that is regarded as reasonably accurate is the crude death rate (15.1) for Calabar, where death registration is more popular than birth registration, (the former removing as it does the name of the deceased from the tax register!)

86. In Lagos, the much better housing and living conditions on the mainland as compared with the island of Lagos are reflected in the lower death rate and infant mortality rate.

V.—HYGIENE AND SANITATION

A.—PREVENTIVE MEASURES

(*i*) Insect-borne disease

(*a*) *Malaria*

87. *Northern Region.*—Much of the Northern Region is believed to lie within a hyper-endemic or holo-endemic zone with a short malaria transmission period as a result of which the relative immunity develops more slowly in childhood and is incomplete even in adult life. There is a lower degree of tolerance, at least in the older children, than is observed in other Regions, and malaria is believed to account for about a third of the infant and child deaths. The proportion of in-patients and out-patients with malaria and the case mortality in malaria patients are above the Nigerian averages.

88. A variable amount of routine mosquito control work is done in townships and in the larger towns with sanitary staff but only in Katsina (population 31,885) do these measures constitute a planned control scheme. This is based on larvicidal treatment of all water surfaces with D.D.T. 5 *per cent* in gas oil supplemented by spraying of houses in the Government residential area.

89. *Eastern Region.*—Routine control measures were continued at all stations. At surveys in eleven well distributed centres in Kumba Division, all in high rain forest below 1,500 feet altitude, the Cameroons Medical Field Unit found parasite rates in children between the ages of one and ten years to vary between 47 and 74 *per cent.* By contrast, in the forest grassland border at altitudes between 3,000 and 5,000 feet, the crude parasite rate was 4.59 *per cent.* The prevailing parasite is *P. falciparum* but, locally, *P. malariae* is not uncommon ; the *P. malariae* rate in children at three areas in the lowland Cameroons varied between 17.3 and 25.9 *per cent.* On the shores of the creeks of Degema and Ahoada Divisions, where the water-table is high, especially during the rains, and numerous shallow wells breed myriads of anophelines, the Rivers Medical Field Unit found hyperendemic malaria.

TABLE II—RETURNS OF VITAL STATISTICS

	Population	*Registered Births*	*Registered Deaths*	*Registered Deaths 0-1*	*Crude Birth Rate*	*Crude Death Rate*	*Infant Mortality Rate*	*Registered Still-Births*
NORTHERN REGION								
Kano Township ..	23,573	423	179	52	17.9	7.6	122.9	
Jos	38,527	574	444	100	15.0	11.5	173.0	
Bukuru	8,450	108	58	26	12.7	6.8	240.8	
Kano City and Waje (voluntary) ..	106,600	1,757	1,899	—	16.6	17.8	—	
Katsina Province (voluntary) ..	1,480,293	49,251	20,803	4,773	33.2	14.0	97	
EASTERN REGION								
Enugu..	63,000	2,448	331	101	38.9	5.3	41.3	81
Port Harcourt ..	60,000	1,023	375	89	17.1	6.2	87.0	110
Calabar	40,000	784	603	—	19.6	15.1	—	68
Aba	63,000	1,310	135	—	20.8	2.1	—	—
WESTERN REGION								
Lagos Island	171,946	8,723	3,455	1,053	50.7	20.09	126.3	287
Lagos Mainland ..	99,854	3,520	792	166	35.2	7.9	45.7	12
Total, Lagos ..	271,800	12,243	4,247	1,219	45.04	15.6	103.9	299

90. *Western Region.*—General measures continued at all stations. At Lagos, in view of the expansion of the township, fourteen more mosquito inspectors were trained, to make a total of sixty. Much of their work would be unnecessary if members of the public took more interest in the sanitary control of their compounds and outhouses. Although mosquito breeding was found only in one of every 16,000 rooms, the corresponding figure for outhouses was one in 1,400 and, for compounds, as high as one in sixty. Soakaway pits were a fruitful source of breeding. There is a great need of health education not only to teach facts but to stimulate interest and direct attention to these dangers. Of nearly 19,000 wells stocked with fish which have now been identified as *Tilapia heudeloti* and *Eleotris lebretoni,* only four were breeding mosquitoes. Approximately 4,000 yards of new bund were constructed to replace damage done by tidal erosion, and much repair work was carried out. Two tide-gates at Apapa, rendered unnecessary by land reclamation, were dismantled, but the sand-filling in this area left many collections of stagnant water which had to be controlled. The control of mosquito breeding in crab-holes is still an unsolved problem though trials with gammexane pellets continue.

(*b*) *Yellow Fever*

91. Ten cases were confirmed in the *Eastern Region,* but none elsewhere. Routine urban anti-aedes measures continued and were reinforced in localities where the aedes index was reported to be above the safety level. Notifications, by calendar years, have been—

		Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
1951	Cases	—	12	1	13
	Deaths	—	7	1	8
1952	Cases	—	42	—	42
	Deaths	—	8	—	8
*1953	Cases	—	10	—	10
	Deaths	—	6	—	6

* January to March 1953 only.

92. *Northern Region.*—A re-survey of immunity in Plateau Province in June 1952 indicated that cases of yellow fever must have occurred since the original survey in 1951, which suggests that, in spite of negative findings at the time, some of the cases of "Jos Jaundice" reported in 1951-52 may have been yellow fever. Although the reporting of outbreaks of infectious disease is improving, it is not sufficiently complete to detect sporadic cases even when the outcome is fatal. Protection of the whole population by vaccination is not yet possible; the best hope for the future appears to lie in extending large-scale insecticidal measures against anopheline and aedes mosquitoes. The non-African is now almost 100 per cent protected, as also are the personnel of the armed forces and Nigeria police and, to a rapidly increasing extent, that of the medical department and Native Administration police. The new direct Kano-Jiddah pilgrim service increased the demand for vaccination, to help deal with which Bida and Katsina were added to the official list of vaccination centres.

93. *Eastern Region.*—At Kumba one case, in an uninoculated African male, was confirmed by post-mortem liver examination. A minor outbreak occurred at Ufuma, Awka Division, Onitsha Province, in January 1953. Intensive anti-aedes and case-finding measures were instituted within an eight-mile radius by staff from Enugu, Onitsha and a mobile unit. The Virus Research Mobile Laboratory was transferred to Ufuma. A 20-bedded field hospital operated under one medical officer for seventeen days and had thirty-seven in-patients of whom seven were suspected to have yellow fever. The area was ringed by two teams, each under a medical officer, which vaccinated 56,374 people in an estimated population of 60,000. The outbreak did not assume major proportions. Nine cases of yellow fever, all from Ufuma and all males, were proven, four by virus isolation and five by serology.

94. Surveys having shown a low incidence of immunity in Onitsha town, a campaign, using the 17D strain of virus, was undertaken and 54,978 of the 80,000 inhabitants were vaccinated. In the course of the year all departmental staff in the Region was protected.

95. In the Nsukka Division and in the neighbouring Udi Division, where an epidemic occurred last year (paragraphs 43-48 of the 1951-52 Annual Report), persuasive action having failed, an Order-in-Council was made in September to enforce control of the innumerable potential aedes-breeding water-pots. At the same time the Superintendent of the Medical Field Unit organized a pot-sealing campaign for the entire Nsukka Division and, by a judicious blending of cajoling and threatening prosecution, achieved the seemingly impossible so that an uncovered water-pot became the rare exception rather than the rule. In February 1953, systematic immunization with 17D virus began in Nsukka and by 31st March, 57,346 people had been vaccinated.

96. Immunity surveys confirmed the general distribution of infection in rural areas of three provinces and the high incidence of this disease; 28 *per cent* of the 1,072 tested had immunity.

(*c*) *Dengue*

97. In the Eastern Region thirty-three cases were treated at Government institutions, nineteen Europeans (eighteen in the Cameroons) and fourteen Africans; many more suffer in remote areas but do not seek hospital treatment.

A few European cases were reported in the Northern Region where the diagnosis appears to be rarely made in Africans.

(*d*) *Plague*

98. No cases were reported. At Lagos, 7,913 rats were caught in the seaport and 613 at the Ikeja airport ; a total of 9,111 rats were dissected at the Port Health Office and in none was evidence of plague found ; weekly flea-counts were done, giving a pulicine index of 4.8, and a cheopis index of 3.9. In the three Eastern Region ports of Calabar, Port Harcourt and Victoria, 13,538 rat spleen smears were examined with negative results. At Kano in the Northern Region routine precautionary measures continued in the city, where 1,103 rodents were trapped.

(*e*) *Filariasis*

99. Owing to its nocturnal periodicity *W. bancrofti* infection is not commonly diagnosed but it is probably widespread in the Northern Region, as are its sequelae, elephantiasis and hydrocele. The vectors are not known with certainty ; at Argungu 1.5 *per cent* of *A. gambiae* dissected in the course of a malaria survey were infected with larval forms of *W. bancrofti ;* possibly culicines of the *Mansonia* group are also vectors. In the Eastern Region the highest incidence of elephantiasis appears to be in Aba and Calabar.

100. *Loa loa* is rarely seen in the North except in patients coming from the Eastern Region. There, the Cameroons Field Unit continues to co-operate in field surveys with research staff ; new areas of high incidence were discovered in south-west Kumba.

101. *Onchocerciasis.*—Foci of onchocerciasis associated with blindness were noted in Adamawa in 1937, in Bussa (Ilorin) in 1949, and at Kudaru (Zaria) in 1951. In 1952 further foci were found, in the course of an ophthalmological survey, in Adamawa, Bornu, Bauchi, Plateau and Benue Provinces. The incidence of blindness varied from one *per cent* (Rukuba, Plateau Province) to eleven *per cent* (Bulki, Adamawa Province). Where onchocerciasis occurred, it replaced trachoma as the commonest single cause of blindness. The nature and speed of onset of eye lesions varies from the painless, insidious and slowly developing retinal lesions seen at Rukuba to the painful, rapidly developing iridocyclitis of Bulki. A section of the Plateau Field Unit mapped the incidence of infection and of impaired vision in the Rukuba District and along a 40-mile stretch of the Galma River in Zaria Province. Preliminary entomological investigations of *Simulium* breeding have begun in the latter area where, of several species found, only *S. damnosum* feeds on man, and is presumed to be the sole vector. In the Rukuba area, fifty cases with visual deterioration were carefully examined ophthalmologically and half of them treated with six weekly doses of 1 gramme of antrypol (suramin). Re-examination immediately after, and three months after, treatment failed to reveal any change in skin infestation or eye conditions.

102. In the Cameroons the Field Unit discovered areas of high incidence in the high forest of Kumba Division, along the Kumba-Mamfe road axis and the creeks about Ilo and Ndian ; the incidence of blindness in this hyperendemic area is not unduly high. In the south-west of Bamenda Division the onchocerciasis nodule rate in a large unselected sample of 3,287 people was as low as 0.51 *per cent.* At Oji River (Onitsha Province) preliminary plans were made for the survey and treatment, with insecticides, of *S. damnosum* breeding grounds.

(f) Trypanosomiasis

103. Figures are given in Tables III and IV (pages 34 and 35). Only two cases were reported from the Western Region. In the Eastern Region the best-known focus is the Obudu District of Ogoja Province, where chemotherapeutic control is exercised from four dispensaries. The incidence in Ogoja is nowhere above one *per cent*, but the local strain of trypanosome is very apt to invade the central nervous system and is resistant to therapy. The construction of a new road through the Obudu valley with the consequent influx of labour and population changes may upset the local balance and lead to changes in incidence and distribution. Surveys in three areas of 7,371 people revealed thirty-eight cases (0.5 *per cent*). Two Europeans were infected, possibly in the Obudu-Utanga valley. Satisfactory control in Ogoja requires compulsory powers which are being sought under the Native Administration Ordinance.

104. Three sleeping sickness attendants attached to the Cameroons Field Unit, in addition to routine duties at general surveys, examined labour forces in Kumba and Victoria Divisions (thirty-eight cases in 4,939 people examined; 0.7 *per cent*). A fourth attendant is permanently posted at Fontem, Mamfe Division, where there are pockets of infection.

TABLE III

DISTRIBUTION BY PROVINCES AND SOURCE OF ALL CASES OF HUMAN TRYPANOSOMIASIS, 1952-53

Province	*Surveys and re-surveys*	*Mines-fields*	*Dispen-saries*	*Hospitals*	*Missions*	*Total*
NORTHERN REGION						
Bauchi	160	—	126	70	—	356
Benue	823	—	1,094	149	346	2,412
Bornu	12	—	8	—	—	20
Kano	583	—	73	225	—	881
Katsina	38	—	73	—	—	111
Niger	30	—	60	71	—	161
Plateau	184	26	758	237	122	1,327
Zaria	198	—	520	—	31	749
Ilorin	37	—	—	—	—	37
Adamawa	—	—	—	—	6	6
Sokoto	—	—	—	—	—	—
Kabba	—	—	—	—	—	—
Total—Northern Region	2,065	26	2,712	752	505	6,060
EASTERN REGION						
Ogoja	88	—	170	20	—	278
Cameroons	60	—	89	10	—	159
Total—Eastern Region	148	—	259	30	—	437
WESTERN REGION	—	—	—	2	—	2
Total, NIGERIA	2,213	26	2,971	784	505	6,499

TABLE IV

II—DISTRIBUTION, BY PROVINCES, OF CASES OF HUMAN TRYPANOSOMIASIS, 1946-53

Province	1946	1947	1948	1949	1950*	1950-51	1951-52	1952-53	*Total*
NORTHERN REGION									
Bauchi	942	1,224	1,312	575	126	465	613	356	5,613
Benue	4,622	3,358	3,776	3,538	596	2,523	2,745	2,412	23,570
Bornu	9	105	66	74	15	42	50	20	381
Kano	1,891	1,254	991	1,060	201	529	742	881	7,549
Katsina	2,530	547	1,252	239	50	366	162	111	5,257
Niger	378	588	467	538	99	792	285	161	3,308
Plateau	3,331	4,606	3,311	1,838	519	1,537	1,443	1,327	17,912
Zaria	2,348	2,188	1,786	1,355	431	1,719	1,069	749	11,645
Adamawa	—	9	24	9	1	96	6	6	151
Sokoto	66	—	—	—	—	1	—	—	67
Kabba	44	113	20	25	—	—	1	—	248
Ilorin		3	2	2	—	—	1	37	
Total, Northern Region	16,161	13,995	13,007	9,253	2,038	8,070	7,117	6,060	75,701
EASTERN REGION									
Ogoja	415	347	491	525	132	282	266	278	2,736
Cameroons	69	118	58	440	83	134	97	159	1,158
Rivers (Owerri)	50	14	19	23	31	11	1	—	149
Other Provinces	28	—	—	—	—	—	—	—	28
Total, Eastern Region	562	479	568	988	246	427	364	437	4,071
WESTERN REGION	—	—	—	—	—	—	2	2	4
Total, NIGERIA	16,723	14,474	13,575	10,241	2,284	8,497	7,483	6,499	79,776

* Three months.

105. Two villages in Brass Division, Rivers Province, where fifteen cases were found in 1949, were revisited ; no cases were found in 351 people examined.

106. The total number of cases treated in the Eastern Region was 437.

107. *Northern Region.* The Sleeping Sickness Service now operates solely in this Region. Over one million people were examined either by teams or by assistants working from treatment centres. A large proportion of the central endemic area has been covered by mass examination in the last four years. Infection rates for districts have been low, generally well under one *per cent.* This does not, however, accurately reflect the epidemiological position in the smaller communities, many of which are at considerable risk although situated in areas where the overall incidence is negligible. The total number of cases treated was 6,060, a decrease of 1,057 from the previous year. Four more treatment centres were handed over to Native Administrations, leaving twenty-two under the control of the service, less than half the number there was in 1948. Sleeping sickness in minesfield labour is discussed in Section D of this chapter.

108. In Zaria Province, which is well covered by dispensaries, infection rates are low particularly in the north where the influence of tsetse eradication is greatest ; 198 cases (0.13 *per cent*) were found in 150,000 people examined at surveys and the total of cases treated in the province was 749. The south of Katsina Province, now largely freed of tsetse in the former hyperendemic areas, produced only 101 new cases and 10 relapses. Two teams did extensive surveys in Kano Province. In two districts where protective clearings were made in past years, transmission appears virtually to have ceased, *viz.*

Rano District, 96,633 examined, four cases found ;
Tudun Wada District, 15,395 examined, one case found.

109. In contrast, a serious outbreak was detected in Kano Province along the Gaya river, over 500 cases being found in riverine areas of Gaya and Sumaila districts. The old focus along the Hadejia and Katagum rivers, in neighbouring parts of Kano, Bauchi and Bornu, was quiescent ; only nineteen new cases were reported from Madachi dispensary. A medical officer did extensive re-surveys in south and south-west Bauchi, finding seventy-two cases (0.1 per cent) in 75,000 people. These surveys allayed fears that infection was being re-introduced from Kano and from Plateau Province ; the small minesfield in the Rishi area of the Lame district of Bauchi still provides the main source of indigenous transmission and a dressing station is maintained there.

110. Benue Province produced one-third of all cases in the Northern Region ; the main endemic areas are the Tiv and Wukari Divisions, infection having declined to a very low level in the Lafia and Nassarawa Emirates north of the Benue river. In the Shendam Division of Plateau Province the incidence in 33,000 people examined was under 0.1 *per cent.* A thorough survey was done in villages on the south bank of the Niger river in the Emirates of Lafiagi and Pategi (Ilorin Province). Thirty-seven cases were found in 22,000 people (0.17 *per cent*), contrasting with an incidence of four *per cent* found on the north bank of the river in Niger Province the previous year.

111. Tsetse control policy continued to aim at eradication of the riverine vectors in the main endemic areas, although secondment of half of the senior staff to emergency work against *G. morsitans* seriously hampered the main programme. Towards the end of the year a Regional Standing Committee was appointed to

facilitate inter-departmental collaboration, and preparations were made for expansion of the tsetse control section of the service.

112. Eradication of tsetse continued in the Kano-Katsina-Zaria area with the aid of funds from the Regional Production Development Board, the lengths of river bank cleared being—

Katsina	144 miles	... Heavy vegetation requiring almost
Kano	264 miles	
Zaria	115 miles	... Heavy vegetation requiring almost ruthless clearance.

In each province some of the cleared stretches offer useful land for farming, with or without irrigation. This is particularly the case in the Shika and Galma valleys which have a great potential value because of their proximity to Zaria city.

113. At the smaller eradication scheme, around Gboko in Benue Province, also financed by Production Development funds, thirty-two miles of stream were cleared and a system whereby blocks of tukuruwa palm (*Raphia* spp) are cut but allowed to regenerate is being tried, there being much local opposition to the complete destruction of this useful tree.

114. Tsetse surveys were carried out in connection with resettlement and farming schemes in four provinces and control measures were recommended in two cases.

115. At the Kudaru anti-morsitans scheme in north-eastern Zaria, surveys were done, over a hundred square miles of country mapped from aerial photographs, thirty-nine miles of new road opened, and camp accommodation for 3,500 labourers built. Control measures consisted of the felling of 7 square miles of woodland as a barrier, 88 miles of partial river clearance, 116 miles of ruthless river clearance, and tidying up of 54 miles previously cut but not piled. At strategic points insecticidal fogging was done with a T.I.F.A. machine. As onchocerciasis was found to be present in the areas where resettlement is contemplated, the entomologist is investigating *Simulium* distribution.

(*g*) *Other insect-borne diseases*

116. Five cases of tick typhus and six cases of relapsing fever were notified (although more cases of the latter disease were stated to have occurred at Maiduguri, Bornu Province).

(*ii*) Epidemic Diseases

(*a*) *Smallpox*

117. Returns for the year 1952-53 and for the calendar years 1947-53 are appended.

1952-53—Cases, Deaths and Vaccination

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
Estimated population in millions	16.84	7.99	6.37	31.20
Cases of Smallpox	4,381	594	197	5.172
Case incidence per 100,000 population	26	7	3	17
Deaths	702	83	30	815
Case Mortality rate *per cent* ..	16.0	14.0	15.2	15.8
Vaccinations done	1,460,014	787,582	846,251	3,093,847
Percentage of population vaccinated	8.7	9.9	13.3	& 9.9

1947-53 Cases and Deaths

		Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
1947	Cases	4,370	563	492	5,425
	Deaths	860	23	71	954
1948	Cases	3,519	1,868	357	5,744
	Deaths	516	287	27	830
1949	Cases	5,542	6,251	2,970*	14,863
	Deaths	771	981	494	2,246
1950	Cases	10,036	7,254	3,650	20,946
	Deaths	1,928	953	498	3,379
1951	Cases	8,101	2,498	1,280	11,879
	Deaths	1,632	432	212	2,276
1952	Cases	7,799	1,093	368	9,260
	Deaths	1,427	139	58	1,624
1953	Cases	2,845	301	112	3,258
	Deaths	393	26	8	427
Mean 1947-1953					
	Cases *per annum*	6,030	2,832	1,318	10,181
	Deaths *per annum*	1,075	406	196	1,677

* Erroneously given as 3,070 in the 1951-52 report.

1947-53 Incidence per 100,000 Population

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
1947	26.0	7.0	7.7	17.4
1948	20.9	23.4	5.6	18.4
1949	32.9	78.2	46.7	47.3
1950	59.6	90.7	57.4	67.2
1951	48.1	31.3	20.1	38.1
1952	46.3	13.7	5.8	29.7
1953	16.9	3.8	1.8	10.4

118. The mean figures for the seven years recorded are 10,181 cases and 1,677 deaths *per year, an annual loss through serious morbidity and mortality that no country can afford to sustain.* The figures for incidence per 100,000 population indicate roughly the endemic level and epidemic outbursts. The Eastern and Western Regions tend to have a lower endemic level, as indicated by years of lowest incidence, but are subject to epidemic extension for which the Eastern peak of 90.7 per 100,000 in 1950 surpasses that of other Regions. In contrast, the endemic level in the Northern Region is high. *For Nigeria as a whole the endemic index, as calculated by WHO and based on the five years of lowest incidence during the period* 1936-1950, *is the third highest in Africa and the sixth highest in the world for countries for which records are available. Nigeria's death-rate is the fifth highest and is much higher than that recorded for other African territories.* Smallpox in Nigeria therefore is a most serious challenge to meet which all our efforts must be bent.

119. The 1952-53 notifications show a welcome and marked decline and this continued throughout most of 1953. The provinces recording highest incidence in 1953 are—

	per 100,000
Northern Region	
Sokoto	46.3
Bauchi	20.6
Niger	22.2
Kano	18.1
Zaria	14.0
Eastern Region	
Calabar	9.7
Ogoja	4.2
Western Region	
Abeokuta	6.5
Lagos and Colony	3.4

These figures and the fact that notifications have declined substantially in almost all provinces are not regarded with complacency although rather fewer vaccinations were done in 1952-53 than in the previous year. It would be oversanguine to suppose that the recent reductions have been wholly due to the preventive measures taken or to forecast that this trend will continue. In the Northern Region, mobile teams have been of particular value in controlling epidemic outbreaks, but it is realized that real control lies in increasing the reliability and output of provincial and district staff, mostly Native Administration employees, who alone are in a position to vaccinate with sufficient frequency and regularity the population in their care. In the Eastern Region, mobile units reached remote areas in Bamenda beyond the normal ken of provincial sanitary staff, and special drives were made in Port Harcourt and in the Ahoada Division of Rivers Province. As in 1951-52, the Western Province recording the highest vaccination figures per unit population was Ondo.

(*b*) *Cerebrospinal fever*

120. There were 2,892 cases with 597 deaths in 1952-53, of which 2,675 cases occurred in the Northern Region, 205 in the East and 12 in the West. Notifications since 1947 have been corrected by going through the original reports and the definitive figures so obtained are tabulated below :—

		Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
1947	Cases	902	699	10	1,611
	Deaths	263	95	2	360
1948	Cases	8,427	576	20	9,023
	Deaths	1,682	88	3	1,773
1949	Cases	40,128	760	21	40,909
	Deaths	8,610	108	13	8,731
1950	Cases	57,083	452	14	57,549
	Deaths	7,237	79	7	7,323
1951	Cases	8,806	521	19	9,346
	Deaths	1,301	193	12	1,506

		Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
1952	Cases	5,159	373	11	5,543
	Deaths	790	94	4	888
1953	Cases	2,097	165	13	2,275
	Deaths	434	38	2	474

121. In 1952-53 cases were diagnosed in all twelve provinces of the Northern Region, although Kabba and Ilorin recorded only seven and four respectively. Incidence was highest in

Plateau Province ...	...	717 cases or 80 per 100,000 people
Niger Province ...	...	279 cases or 39 per 100,000 people
Adamawa Province...	...	386 cases or 33 per 100,000 people

122. Seasonal incidence was marked in the North, the bulk of the cases occurring in the winter and spring months, except in Plateau and Benue. Outbreaks are considered to be related less to overcrowding and poorly ventilated dwellings than to the effect of climate on the oral and nasal mucous membranes. In the Eastern Region infections were sporadic, the majority being found in the drier savannah areas of the Region, and there was no significant seasonal difference in incidence.

123. The 1947-53 figures suggest that the epidemic cycle is reaching the bottom of the trough, or may have already reached it, since it is known that the efficiency of notification is much improved since 1947. In the next few years careful watch will be kept on notifications from the Northern Region, from neighbouring French territories and from the Sudan, all of which are affected cyclically by this scourge.

(*iii*) Endemic Diseases

(*a*) *Enteric Fever*

124. The 1952-53 notifications were :—

Northern Region ...	...	42 cases with three deaths
Eastern Region ...	...	103 cases with eight deaths
Western Region ...	...	40 cases with one death
Total	...	185 cases with twelve deaths.

This represents a three-fold increase in cases over the fifty-nine notified in 1951-52. Fourteen of the cases and two deaths were in Europeans, facts indicating that regular immunization is still desirable. The relatively large numbers of cases recorded from the Eastern Region arose partly from a *Salmonella typhi* outbreak at Asaba in the Western Region from which forty-eight cases were treated at Onitsha ; another twelve sporadic cases were diagnosed in Onitsha during the year. *Salmonella typhi* was also isolated in a small outbreak affecting one Port Harcourt household, in which four people were affected and two died. In the North, the main concentration of cases was again in Benue Province where water supplies in fissured chalky subsoil are liable to contamination.

(*b*) *Leprosy*

125. The Central Leprosy Board, Regional Advisory Committees and fourteen Provincial Boards were active during the year. Administration is now a regional concern and Leprosy Headquarters are increasingly a centre for information, educa-

tion and training. Advances were made in organization, training and the wider application of approved control measures.

126. The Uzuakoli Research Unit, the work of which is more fully described in Chapter XV, maintained its therapeutic studies, established the value of thiacetine as a useful alternative to dapsone, and confirmed that B.C.G. vaccination may produce some degree of immunity to leprosy, though its effectiveness and duration are still unknown.

127. There is a developing eagerness for treatment, evidenced by the regularity of attendance at clinics and by the increase of new patients ; treatment is also sought at an earlier stage, thus reducing the sources of new infection. Old prejudices are disappearing, but dissemination of information and education are still much needed. The service, accordingly, took part in health weeks and arranged radio talks, conferences, meetings and the dissemination of pamphlets. Sulphone treatment has also permitted a more liberal attitude towards isolation measures, though these are still needed ; this improves patients' co-operation and strengthens the voluntary basis essential to humane yet effective isolation.

128. With an effective remedy and a more enlightened public attitude, prospects for a real measure of control are excellent. The great work of the voluntary agencies deserves emphasis, and the contributions of B.E.L.R.A., the Mission to Lepers, and the Red Cross Association are appreciable.

129. Settlements are now operating in twenty provinces and were under construction in three others. In the remaining four provinces, all in the Western Region, where the incidence of leprosy does not at present call for a leprosarium, clinics and segregation villages supervised from general hospitals may meet most needs.

130. Initial steps have been taken to expand treatment facilities at outpatient departments of general hospitals and training courses for medical officers have begun. The first formal course in 1952 was attended by four officers and individual tuition was given to others. A major development was the establishment in July 1952 of a central training school for junior staff, under a male tutor, where students receive a six-month basic indoctrination. Nine pupils attended the first course, and ten are enrolled for the second.

131. Extensive building programmes were complete or approaching completion at Oji River, Uzuakoli and Ossiomo, and good progress was made at Rivers Settlement. Water installations were complete at Ossiomo and Oji River, and almost complete at Uzuakoli. These four Government settlements, one in the Western and three in the Eastern Region controlling 154 treatment centres and 135 segregation villages, gave treatment during 1952 to 28,000 patients, of whom 10,000 were isolated and almost 6,000 discharged. Evidence of declining incidence in several localities is now accumulating, though it is confined to areas with long-established segregation villages.

132. Elsewhere, devoted and large scale work is undertaken by the Christian Missions, to whom £31,000 was distributed as grants-in-aid and £44,000 for capital grants for new settlements.

133. *Northern Region :—*

Adamawa Province.—Two new segregation villages and two outpatient clinics were established during the year.

Bauchi Province.—The new settlement, consisting of a 16-bed ward and theatre, administration and treatment blocks and patients' quarters was opened.

Benue Province.—Two new segregation villages were built.

Bornu Province.—A segregation village and a clinic were opened and the theatre and occupational therapy buildings begun last year, were completed.

Ilorin Province.—A survey revealed an incidence of 31 cases per 1,000 examined.

Kabba Province.—(eastern area). A 16-bed ward and operating theatre were completed.

Kano.—Two segregation villages were opened.

Katsina.—A segregation village was established. Three clinics were started in the neighbourhood of existing dispensaries under the supervision of the rural medical officer and proved very successful, particularly in attracting early cases and children.

Niger Province.—Work began on the new settlement and one new segregation village was opened.

Plateau Province.—The settlement at Mongu commenced work ; it has a ward, operating theatre, administration and treatment blocks and patients' quarters. In this province three segregation villages were established.

Sokoto Province.—Two new segregation villages were established.

Zaria Province.—A segregation village and three clinics were opened. The latter, as in Katsina, were supervised by a government medical officer and were very successful. At a survey 41 cases per 1,000 examined were found.

134. *General.*—Active Provincial Leprosy Boards function in all provinces. Surveys have not only revealed high incidence of leprosy but have shed light on the people's attitude to it. The general public is largely indifferent to the presence of lepers in its midst, but the dominant emotion of the sufferers themselves is fear, above all, of removal from their homes and families. Unless this fear is allayed there is little hope of reaching more than a minority of those infected, the less so since the majority of infective cases are children. For this and for other reasons, such as shortage of land, cost of segregation villages, and shortage of staff, the experiment of opening clinics near existing dispensaries has been tried, so that early cases could be treated near their homes and the necessity for segregation reduced. The possibility is also being explored of establishing *segregation compounds* in villages where, on the analogy of *night* sanatoria in the United Kingdom, highly infectious cases can be persuaded to sleep, until treatment has reduced their infectivity. The danger is irregularity of treatment, but experience shows that this is mainly a function of distance and may be expected to disappear as facilities are multiplied.

135. *Eastern Region.*—The Government Leprosy Service operates in three provinces, Onitsha, Owerri and Rivers, where missions however continue to have responsibility for social, educational and welfare work. In these provinces there is now definite evidence of a decline in incidence. During the year, although treatment facilities have been made available in several districts for the first time and six new segregation villages were opened, 605 fewer new cases were diagnosed, and 360 more symptom-free cases were discharged than in 1951-52. The total of discharges was 1,329 more than the new cases diagnosed in the previous year, and 1,934 more than the intake of new cases for the current year. Some resistance to leprosy control work is, however, still evident in Owerri Division. In Rivers

Province, work has been consolidated in Ogoni Division and parts of Ahoada and Degema Divisions, but in the absence of suitable river transport large parts of Brass Division remain inaccessible.

136. In other provinces of the Eastern Region work is undertaken by missions :—

Calabar Province.—The distinctive work has continued at Itu which had 3,065 patients in residence at the end of the year. The Qua Iboe Mission Settlement had 528 patients, 211 of whom were segregated.

Ogoja Province.—The Roman Catholic Mission had three settlements, each with resident medical staff, and eleven segregation villages. 3,475 patients were segregated and over 600 were discharged.

Bamenda Province.—The settlement at Bingo now has accommodation for 45 patients and is being developed. Until it is in full operation treatment continues at the old camp at Bamenda.

Cameroons Province.—Plans have been approved for, and work has commenced on, the settlement at Manyemen.

137. *Western Region.*—Government institutions are the Ossiomo Settlement in Benin Province and the outpatient clinic at Yaba, Lagos. From Ossiomo supervision is exercised over segregation villages and treatment centres in Benin and Warri Provinces. At the settlement the new hospital has been completed and progress continues with the construction of semi-permanent quarters for patients. There is increasing evidence of active spread of infection from the Benin-Warri area to Ondo and Oyo provinces, where facilities are inadequate.

138. At Yaba the introduction of dapsone treatment has induced a number of previously concealed lepromatous cases to attend. Leprosy is rare among true Lagosians, but immigrants from the North and East bring the infection with them ; for this potentially dangerous situation good facilities have now been provided at Yaba where 164 patients are registered.

139. Mission work is mainly based on Ogbomosho Settlement (American Baptist Mission) which accommodates 800 patients, and controls ten segregation villages (clan settlements) in Oyo and Ibadan provinces, which together have 500 patients. At Ogbomosho a preventorium was built during the year and the hospital buildings are nearing completion. Dapsone treatment was used with success at the settlement but, owing to lack of supervising staff, hydnocarpus oil continued in use at the villages.

140. The Roman Catholic Mission maintains a small camp accommodating 34 patients at Abeokuta, and at Ilesha the Wesley Guild Hospital runs a segregation village housing 16 patients for which a new site is being sought.

141. Figures for the year's work are appended :

LEPROSY—GENERAL STATISTICS

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*	
Settlements	13	10	2	25	(25)*
Segregation villages	31	134	37	202	(141)
Treatment Centres ...	68	160	41	269	(196)
Isolated patients ...	11,173	15,562	5,248	31,983	(28,975)
Outpatients ...	5,906	12,711	2,993	21,610	(23,272)

* 1951-52 figures in brackets for comparison.

LEPROSY—GENERAL STATISTICS—*continued*

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*	
New cases	4,234	7,708	1,675	13,617	(18,386)
Discharged symptom-free ...	486	6,600	643	7,729	(7,185)

(*c*) *Tuberculosis.*

142. As for venereal diseases, hospital records create a fallacious picture. Of the 1,361 inpatients with respiratory tuberculosis 402 (29.5 *per cent*) died, and there were 1,455 outpatients. Other forms of tuberculosis were recorded in 467 inpatients and 544 outpatients. Deaths from all forms of tuberculosis were 7.6 *per cent* of all inpatients deaths. A high proportion of patients seen at hospitals are late or moribund open cases. The advent of isoniazid and improved supplies of streptomycin now offer patients more hope, and building of special pavilions and verandahs eases the accommodation problem, but little progress can be made until patients seek treatment earlier and persevere with it. The work of the special tuberculosis survey unit is described in Chapter XV.

(*d*) *Venereal Diseases*

143. Available statistics give a deceptive idea of incidence. In the Eastern Region gonorrhoea is rife in most towns but many of those affected do not trouble to seek treatment either at hospitals which recorded only 848 inpatients and 5,367 outpatients, or from the ubiquitous quacks. Conditions are similar in the Western Region. Venereal infections, particularly syphillis, are probably the most serious, and certainly the most refractory problem confronting the Northern Region. Hospitals recorded over 25,000 cases of syphilis, dispensaries many more, but the treatment given was mainly palliative. Field surveys in Sokoto and Bornu again emphasized the high rural incidence of syphilis, a remote Bornu village having a rate of 47 *per cent*. The existing Northern social organization, characterized by polygamy, purdah and widespread prostitution, renders re-infection after successful treatment almost inevitable and makes prospects of control slight. A few Native Administrations have made valiant attempts to tackle the problem of prostitution but the results have been transient. It has been shown in some northern localities that much can be done by propaganda, combined with registration, regular examination and treatment of prostitutes. This procedure is supported by public opinion and not resented by prostitutes; it may be along such lines that progress will be made in the North when staff and funds are available.

(*e*) *Yaws*

144. This is one of the principal endemic diseases in rural areas of the Eastern Region, of the eastern parts of the Western Region, and of Benue and Kabba Provinces in the North. In the dry provinces of the far North, sporadic cases of non-venereal syphilis, resembling the *bejel* of Syria and the *njovera* of Rhodesia, are encountered, especially among Fulani children. Relatively few cases of yaws are recorded in hospital statistics; for example less than 6,000 were treated at hospitals in the Eastern Region. Field surveys revealed incidences of 12-16 *per cent* of active infections in the more humid areas of the East and in parts of Benue Province.

145. Discussions have been undertaken with WHO and UNICEF to inaugurate a mass treatment campaign in contiguous parts of all three regions, beginning at Auchi in Benin Province, Nsukka in Onitsha Province and in the Tiv Division of Benue Province. A fourth control area will be in Ijebu Province. The staff of

four or more field units will be seconded to this work and the aim is to treat about 450,000 active and latent cases in two years. WHO will provide two medical officers and UNICEF will supply penicillin, transport and equipment to the value of over £50,000. After the initial mass treatment campaign designed to reduce incidence to a very low level, local and mobile staff will continue re-surveys and treat infectious relapses and re-infections in the same way as is done for sleeping sickness. Effort will be directed to raising the general standards of dispensary and health work in the affected areas.

(*f*) *Endemic Goitre*

146. Foci exist, especially in the Northern Region, in Benue Province, in parts of Plateau and Sokoto Provinces and in pockets elsewhere. Dr Dagmar Wilson, of the Oxford University Department of Human Nutrition, has visited the Region and considers that the distribution of goitrous areas is determined solely by the presence of water of low iodine content derived from the pre-Cambrian granites which form the surface rocks of large parts of the area. During the year Tiv Native Administration sought authority to prohibit the sale of non-iodised salt in certain areas.

(*g*) *Rabies*

147. Twenty-two human cases were recorded in hospital statistics, though fewer than this were notified. Increasing use is being made of avianized rabies vaccine for dogs and, in the Northern Region, legislation to make vaccination a condition of licensing became effective.

(*h*) *Eye Diseases*

148. At surveys in the Bornu, Bauchi, Adamawa, Plateau and Benue Provinces of the Northern Region, trachoma was found to be the commonest eye disease and, except in areas with onchocerciasis, the commonest cause of blindness. The number of blind persons was estimated at not less than 3 per 1,000 and at least two-thirds of the cases were curable or preventable. There is a reasonable possibility that onchocerciasis can be controlled in some areas by an attack on the vector but the control of trachoma will call for an improvement in standards of housing and personal hygiene supplemented by a wide extension of treatment facilities. During the year plans were prepared for a Northern Regional Ophthalmic Centre, consisting of an outpatients clinic and a 40-bed hospital, which is to be built at Kaduna.

(*iv*) Helminthic Diseases

149. Hospital statistics record the treatment of 75,400 outpatients, and 5,775 inpatients among whom 47 deaths occurred. The majority of the inpatients (4,456) and inpatients deaths (38) were in the Northern Region.

150. Numerous surveys of school children in the North showed an average incidence of hookworm infection of 30 per cent, but with negligible worm-load, and although multiple infections (ascaris, trichuris, strongyloides, enterobius) are common, most appear to cause little disability. At two neighbouring villages in Bornu the possession of even a primitive latrine was shown markedly to diminish the hookworm infection rate. In those parts of the North where cattle are common, taeniasis (*T. saginata*) is the commonest helminthic infestation for which treatment is sought ; a propaganda film has been made and will be shown to rural audiences by the Public Relations Office's travelling cinema.

151. Guineaworm infestation is so localized that hospital and field survey returns may not throw much light on distribution. The sinking of protected wells, especially in the drier Northern provinces and in other endemic areas such as Ogoja Province in the Eastern Region, is doing much to reduce local incidence. That so easily eradicable a disease should remain rife is a measure of failure of rural preventive services. The rural medical officer at Kankiya, Katsina Province, has shown that much can be achieved by the people themselves, given inspiration and guidance.

152. Incidence of urinary schistosomiasis in the Northern Region varies from 5 to 100 *per cent* in the child population, which is the most highly infected. It is especially high in the swampy districts along the courses of the great rivers and the associated seasonal swamps, but may be equally high in villages or parts of towns in uplands where the only bathing place is an infected borrow-pit. The peak infection rates are usually found in children and adolescents except where the principal adult occupation is fishing or irrigated farming. The degree of infestation is usually not serious and sequelae such as hepatic cirrhosis and carcinoma of the bladder are rarely seen. This comparative mildness is undoubtedly due to the absence of large-scale perennial irrigation, most irrigated farming being seasonal. Rectal schistosomiasis is focal in distribution. The prospects of control vary, being remote in most swampy areas, but reasonable where infection is from borrow-pits and seasonal streams. Preliminary experiments in Bornu with the molluscicide *sodium pentachlorophenate* showed that a single application cleared snail hosts from a stream and some borrow-pits for two months at the height of the rains.

153. In the Eastern Region only 42 cases of schistosomiasis were treated at hospitals, and Field Unit surveys in widely dispersed localities in Rivers, Onitsha, Cameroons and Bamenda Provinces revealed not one case of the disease. In the Western Region, this infection is a problem in the Epe Division of the Colony and in parts of the Egbado Division of Abeokuta.

154. Further data on paragonimiasis accumulated by the Cameroons Field Unit have been mainly negative. A careful survey of some villages on the upper reaches of the Mungo River in Bassose in north-east Kumba revealed no cases, and it seems likely that the only important foci in the Cameroons are the streams draining the western slopes of Kupe mountain in the Bakossi area.

B.—GENERAL MEASURES OF SANITATION

(*i*) Urban and Rural Water Supplies

(a) Urban Water Supplies

155. The Northern Region has thirteen schemes in operation in towns with a total population of about 260,000. Nine of these supplies are chlorinated and four are untreated. Four schemes are in various stages of completion and two more are planned. A principal difficulty is the financing of recurrent costs. Schemes must be self-supporting and the urban population is not yet prepared to pay an economic rate for this amenity. The untreated and intermittent Makurdi supply is highly polluted, and is a menace in an area where typhoid is prevalent. The new Sokoto supply had teething troubles and was not always potable. The regional Assistant Government Chemist, with his mobile laboratory, has made

frequent bacteriological and chemical analyses of all urban supplies, occasional checks on some semi-urban and rural supplies, and some tests on domestically filtered water.

156. Of the seven schemes operating in the Eastern Region, four gave reasonable or satisfactory analyses, although one of them is unchlorinated and is becoming brackish due to over-pumping, but three are unsatisfactory. Extensions or improvements are in hand or planned for six of these existing schemes. As elsewhere, the major difficulties are financial, mainly in persuading town councils to set aside the capital sums involved, but also in covering recurrent costs. For instance, at Abakaliki the town is not being supplied as the citizens refuse to pay for the service. The opening of the new hospital at Bamenda is still postponed pending the arrival of materials for its piped water supply. Umuahia remains one of the worst-served towns in the Region ; there is little prospect of its having a piped supply and wells are being sunk on the site of the new Mission Hospital.

157. Six large towns in the Western Region have satisfactory or reasonable supplies, but three of these require extension or new plant. At four others, work was proceeding well in three, but had been suspended at Iwo because of lack of engineering staff. Several other schemes were held up for the same reason. The Akure supply, to the Government station only, is giving anxiety and investigation has been made regarding a supply to the whole town.

(*b*) *Rural Water Supplies*

158. The provision of rural water supplies increases annually in scope and variety. Although shallow wells form the commonest source, increasing use was made of bore-holes and impounded supplies.

159. In the Northern Region 850 new shallow wells were completed. Half of them were in the three provinces of Kano (190), Sokoto (146) and Katsina (129), but all provinces benefitted except Kabba where geological conditions are unfavourable. Native Administrations are responsible for maintenance, which is not always satisfactory. It is hoped to attach artisans to Rural Health Centres to assist in this respect. Sample analyses show that these shallow wells are invariably heavily polluted with organic matter since they are uncovered ; nevertheless, they are a great improvement on the sources previously used. Experiments are being made with simple pumps for use in covered wells.

160. Bore-hole drilling was in progress in five of the Northern provinces, one supply being completed in Kano Province. Many schemes to impound surface water are in hand in the southern parts of the Northern Region, and four were completed.

161. A number of wells were reconditioned in the Eastern Region and 152 new ones sunk, all but two of them in Owerri, Ogoja, Calabar and Rivers Provinces. The potential benefit to health is partly lost by the continued use of contaminated supplies less distant than the new wells. Funds for the continuation of this programme are nearly exhausted.

162. Good progress is also recorded from the Western Region where 189 wells were sunk in Ondo, Oyo and Ibadan Provinces but, as elsewhere, many people show aversion to the labour involved in their use and continue to use contaminated surface water. In Benin Province, a piped supply is to be provided at Igarra from an impounding reservoir, and a bore-hole was brought in at Fugar, supply being from a small reservoir and selling station. Artificial catchment areas and tanks are being considered in other towns.

(*ii*) Sewage and Refuse Disposal

(*a*) *Sewage disposal*

163. Wherever water supply permits, new Government quarters and commercial dwellings of equivalent standard are provided with individual septic tanks of approved design. This example is followed by some private citizens in the larger towns but the quality of construction often leaves something to be desired and careful supervision is required if nuisance is to be avoided. For public use the aquaprivy is being tried in all Regions but is not always a success; it requires good workmanship, intelligent use and regular inspection. In towns generally the conservancy system is used, disposal of nightsoil being by composting, Otway pits, or trenching. Conservancy labour is hard to find, and becomes yearly more capricious and arbitrary in its demands. As the larger towns expand, the conservancy system requires an increasingly large and elaborate system which is too easily disorganized, particularly by labour disputes, and consideration must be given to installing a water-carriage system at least in residential and commercial areas.

164. Rural areas may or may not have the household pit-latrine. Where there is no such provision neither local government bodies nor private citizens appear to be disturbed or to have any inclination towards betterment, but sanitary staff in some areas have effected improvement. The bore-hole latrine is considered satisfactory, though too seldom installed, in the Eastern Region, but it is not satisfactory in the Northern Region.

(*b*) *Refuse disposal*

165. Individual dustbins are provided in residential and commercial areas and public dustbins in townships. The use of motor transport is being encouraged but it is often inadequate. Disposal is by composting, controlled tipping, or incineration. After a short trial, house-to-house collection had to be abandoned in Port Harcourt, but the use of individual bins is being tried in the new township layout at Jos.

(*iii*) Inspection of Nuisances

166. Regular inspection continued in all stations to which trained Government or Native Administration sanitary staff are posted. The volume of work done is indicated in the figures given below.

	Northern Region	*Eastern Region*	*Western* Region*
Households inspected ...	725,483	335,104	
Dirty Houses	206,023	104,332	
Houses with mosquito breeding	13,971	9,562	
General mosquito index ...	1.98	2.7	
Abatement notices issued ...	24,128	7,313	6,398
Prosecutions	6,745	2,861	1,830
Fines	£1,457	£2,322	£1,310

* Oyo and Ibadan Provinces only.

167. Common grounds for prosecution in both urban and rural areas are—collections of filth, fouled drains and soak-aways, and uncovered wells or latrines. The Destruction of Mosquitoes Ordinance is still not utilized as frequently as compound conditions require. In the North, four stations returned a general mosquito index above 5 *per cent*, but Kano and Sokoto had indices of 0.2 *per cent* and 0.1 *per cent* respectively, though such low figures must be accepted with reserve in moslem towns where the fundamental right of entry exists in name only. At Kano Airport, the aedes index was maintained at zero throughout the year. The Eastern Region reported only three stations with a general mosquito index of over

3 *per cent* and aedes indices for all stations except four were returned as below 1 *per cent*. Onitsha had the highest aedes index at 2.9 *per cent* in spite of intensive anti-mosquito measures; this more than justified the mass yellow fever immunization campaign carried out in the township as an emergency preventive measure.

(*iv*) Mosquito Control

168. Routine control work, which continued at all stations, is regarded as a local responsibility to be carried out with local funds, and the small sums for anti-malaria measures in Regional estimates are intended mainly for Government residential areas. Permanent anti-mosquito works in townships or elsewhere are usually left to local initiative, inspired and directed by medical officers. With limited funds and an over-burdened staff, it is understandable that little has been accomplished, but there are a few exceptions.

169. At Bida a noisome swamp in the middle of the town has been converted into a grassy pleasance by canalisation of the river and consequent reduction of mosquitoes and bilharzia-carrying snails. The Katsina Town malaria control scheme is based on larvicidal measures supplemented by spraying of houses in the residential area. In the rains the number of water surfaces treated rises to over a thousand, shrinking to a few score in the dry season. In 1952-53, 893 gallons of larvicide were used. Almost 52,000 water surfaces were checked and 1.43 per cent found to be breeding anopheline mosquitoes. In 10,000 rooms sprayed, 4,052 female anophelines were caught. The scheme has not succeeded in eradicating either mosquitoes or malaria. Breeding is believed to continue during the rains in untreated puddles inside compounds. *Pistia* prevents the spread of larvicidal oil in borrow-pits, and labour is insufficient to counteract its rapid growth. The cost of further control by a single spraying of all houses in the town would be almost two shillings per head of population, which is unlikely to be acceptable.

170. The obliteration of a vast anopheline breeding ground at Onitsha by the conversion of the Otumoye swamp into a lake is regarded as an unqualified success, since limited marginal breeding is easily controlled by oiling. The *Mansonioides* nuisance in Onitsha, arising from near and distant reaches of the Niger River and its tributaries, seems insoluble at present. In Nsukka Division, exposed to yellow fever, the 1,800,000 rainwater storage-pots counted by Field Unit staff could not be destroyed since there is no alternative water-supply; the water table is 400 feet deep and some villages may be 12 miles distant from the nearest water point. As systematic treatment of the pots with insecticide was not feasible, recourse was had to sealing of pots with mud covers. Success was achieved by means of talks and demonstrations to chiefs, councils and court members; briefing senior scholars at schools; demonstrations in public places; intensive touring by mobile staff; and, above all, by gazetting the Field Unit Superintendent as Sanitary Authority under the Destruction of Mosquitoes Ordinance. Intensive measures began in October and the measures of success reached by December is illustrated by a summary of the results of unselected compound inspection in one district.

	October 1952	*December 1952*
Compounds inspected	2,030	1,619
Compounds with larvae of—		
Anopheles	588	6
Culex	1,144	34
Aedes	390	12
Receptacles inspected	58,264	85,727

Receptacles with larvae of —

	October 1952	*December 1952*
Anopheles	3,081	10
Culex	16,253	66
Aedes	3,957	14

171. Some of the work undertaken at Lagos is mentioned under *malaria* above (paragraph 90). Of over 3,000 mosquito larvae classified exactly one-third were aedes and the aedes index was 0.5 *per cent*. At 281 adult catching stations, 55,087 mosquitoes were captured ; 26,353 were anophelines, 28,278 culex and 456 aedes.

C.—SCHOOL HYGIENE

172. Although there is no formal school medical service in most areas, medical officers and sisters devote an increasing proportion of their time to inspections, and many routine examinations are becoming a much more complete clinico-pathological investigation.

173. In the Northern Region surveys were made by medical officers in ten areas and at Kaduna a temporary lady medical officer was engaged by the Education Department to make similar surveys with a view to starting a school clinic. All these investigations, affecting parts of nine provinces, showed a high endemicity of malaria, schistosomiasis and helminths.

174. Field surveys showed a similar endemicity in the general child population. The sources of infection lie in and around the homes beyond the immediate reach of a school medical service, though more emphasis on the teaching of hygiene in schools will no doubt in time be reflected in improved home conditions. Of even greater importance are conditions due to remediable causes such as general lack of cleanliness, vermin, ringworm infections, discharging ears, conjunctivitis, scabies, cuts, bruises and boils. The prevention or treatment of many of these conditions should be within the scope of a teacher trained in first aid and simple nursing and armed with a few simple medicaments. Improvements in the water supply and sanitary arrangements and greater health consciousness among teachers are considered, in the Northern Region, to be more essential requirements than an elaborate and expensive school medical service.

175. In the Eastern Region, with the enthusiastic support of a Minister of Health who had been a school teacher, views were obtained from Mission and Government medical officers on the development of a school service. All are agreed on its importance but the difficulties confronting an already over-burdened staff were stressed. The question was considered by the Regional Medical Advisory Board and by the Board of Education, which suggested the initiation of a service, primarily preventive, for secondary boarding schools and teachers' training colleges, to be run by Government medical officers when possible, or, alternatively, by private practitioners or Mission staff. Medical examination would be done three times during a pupil's school career.

176. Of the two local services previously started, that for four Calabar schools continued but could not be expanded ; vitamin B deficiency was much less than in the previous year and no case of tuberculosis was found. A pilot scheme for four Port Harcourt schools ended when the officer in charge went on leave ; vitamin B deficiency was common in primary schools ; tuberculin tests were positive in 22.4 *per cent* aged 5-9, 29.8 *per cent* aged 10-14 and 45.5 *per cent* aged 15-19.

177. The introduction of a school service is also regarded as a priority in the Western Region, its inauguration depending on improved recruitment. Lagos has a school medical officer assisted by temporary lady medical officers. 3,910 pupils had routine examinations, there were over 70,000 attendances at school clinics, 423 cases were referred to the consultant in eye diseases, and 65 to the dental surgeon. At Abeokuta and Forcados teachers are being instructed in simple treatment and provided with simple medicaments. The rural medical officer in Ijebu Province gave regular lectures on hygiene and nutrition. Field Unit staff and the Department of Preventive and Social Medicine at University College, Ibadan, did surveys of schools in Ilaro, Auchi and Oyo.

D.—LABOUR CONDITIONS

178. Most satisfactory progress was made by the Cameroons Development Corporation in expanding their medical facilities, which now include ten hospitals and auxiliary hospitals, with a total of 412 beds, and in developing labourers' housing estates. The older labour camps are being steadily replaced by permanent buildings, and aquaprivies installed in some of the main centres are reported to be working satisfactorily. All houses in Tiko and Bota are sprayed quarterly with gammexane and this service has been extended to neighbouring villages. The United Africa Company also has two hospitals, with 46 beds, in the Cameroons. Elsewhere in the Eastern Region, there is a United Africa Company hospital of 37 beds at Odukpani in Calabar Province and a well-equipped Shell D'Arcy Corporation dispensary at Owerri. Examination of labourers going to Fernando Po and French Gabon is undertaken by a private practitioner, who passed 4,360 as fit. The Anglo-Spanish labour lines at Calabar, used for labour in transit to or from Fernando Po, were satisfactory. A labour force several hundred strong was engaged in building a power house at Oji River; some initial sanitary difficulties have gradually been resolved and control of *simulium* breeding in the river is being investigated.

179. In the Western Region working and living conditions at United Africa Company installations at Burutu continued to improve. Food was supplied at reasonable cost and rations of stored rainwater were issued during periods of drought; there are also cinema and recreation facilities and free medical attention. At Warri, Messrs John Holt and Company were building a dispensary. In Benin Division, conditions were returning to normal following a slump in the rubber market. Three labour forces employed by contractors and the Production Development Board had either a dispensary or an attendant with an adequate stock of drugs and dressings.

180. The largest labour forces in the Northern Region are employed in tin mining. The main minesfield (Plateau Province, Bauchi Division of Bauchi Province, part of Zaria Province, Nassarawa and Lafia Divisions in Benue Province, and Tudun Wada District of Kano Province) is a scheduled Labour Health Area for which, however, there is no single health authority as it is divided between nine Medical Areas. In practice this causes no great difficulty as the regulations are clear and explicit, and labour officers are available to effect co-ordination. The condition of the camps was generally satisfactory. On the other hand, the sanitary control of the settlements which have grown on and between mining leases does create difficulty, since they are not subject to the same regulations but come under the local Native Administrations which are usually reluctant to accept responsibility for them.

181. In certain mining areas sleeping sickness is a hazard, and the detection of a 3.0 *per cent* infection rate in some Jema'a villages was a sharp reminder of the potential danger still provided by the mining industry in the Southern and Jema'a Division of Plateau Province. In these two divisions over one hundred camps with an annual turnover of 10,000 men are scattered throughout 300 square miles of territory. The force is protected by a system of regular examination and, in some cases, the twice yearly administration of pentamidine. No patent or cryptic infections were recorded in those given this drug. Road and timber labour gangs were also examined regularly in these areas; incidence among them remained constant at about one *per cent* but their numbers were insufficient to constitute a health menace or to warrant drug prophylaxis.

182. From September onwards a labour force maintained at around 3,000 by frequent short-service drafts was employed in clearance against *Glossina morsitans* in Zaria Province. They were housed in six camps, and given medical care by the Sleeping Sickness Service, cases of serious illness being evacuated to Zaria by railway. Smallpox occurred in February, but was limited to two cases by prompt isolation of cases and immediate re-vaccination of the 2,700 labourers then employed.

183. An outbreak of guineaworm infestation in railway workers led to arrangements being made for regular supply of water by tanks from Ilorin and to treatment of the infected pools with chloride of lime. Of forty-one paint-scrapers employed on Makurdi bridge, seven were admitted to hospital with symptoms of lead poisoning, and one died. At work they lie on their backs on the underside of the bridge and cannot avoid swallowing or inhaling contaminated particles of dust. Gauze masks were provided as an immediate measure pending the arrival of respirators, and the provision of overalls, ablution facilities and regular medical examination was made.

184. Most commercial firms in the Northern Region avail themselves of Government or Native Administration facilities, but the Niger Agricultural Project at Mokwa has its own doctor, and at Kano the United Africa Company operates a dispensary, with a qualified sister in charge, and is supervised by a Government medical officer.

E.—FOOD IN RELATION TO HEALTH AND DISEASE

185. The last report noted the conclusions of various studies made in previous years which indicated, briefly, high and low urban standards of nutrition, directly related to economic status; fairly reasonable standards in rural areas but with no reserve against emergencies such as infection or temporary shortages; the possibility of any marked increase in rural population upsetting the present precarious nutritional balance and consequently the *immediate* importance of augmenting village food supplies. The need to form nutrition committees at regional and local level was indicated and the appointment of an Adviser on Nutrition was contemplated*. Little progress was made with committees but the Adviser's post was being provided in 1953-54 and an officer was granted study leave to pursue his studies on nutrition.

186. Discussions were started locally and with representatives of UNICEF regarding the possible erection at Vom of a drying plant to process buttermilk. The butter factory there produces annually about 250,000 lbs of butter from cream

* This appointment has now been made.

collected at sixty stations throughout Plateau Province. From the waste buttermilk it would be possible to produce about forty tons of dried product annually for distribution to hospitals, schools and welfare clinics. It remains to be seen whether such production is feasible and economic.

187. The Eastern Region notes the possibility or existence of local food shortage in villages in Ogoja and parts of Cameroons due to change from subsistence to cash crops ; in Ogoja rice is being grown increasingly as a cash crop sold before harvest to middlemen by the field. At Calabar many cases of kwashiorkor were seen and their response to treatment was poor. Field surveys continued to reveal many of the minor stigmata of protein and vitamin deficiency, the one exception being in a fishing community.

188. With a population of over thirty-one million which is expanding rapidly, a careful watch must be kept on its rate of expansion, on the trends in both urban and rural areas, and on the nutritional status of representative samples. Major schemes of rural disease control should, where possible, be those which have the combined object of improving health and increasing population, for example, eradication of tsetse and of anopheles. Major agricultural schemes must not be such as to increase incidence of malaria and bilharzia or encourage wholesale cash-crop production to the detriment of local nutrition ; the latter is a very real and growing danger.

189. Inspection is made regularly in townships and main villages of markets, slaughter slabs, bakeries, premises for preparing or selling food, licensed premises and aerated water factories, and some noticeable improvements have been effected. Hawkers of bread and other comestibles are increasingly protecting their wares in covered boxes. At Nguru, Bornu Province, the main centre for drying meat, some improvement was made by limiting slaughtering to 200 animals a day, and there and at a subsidiary centre the Native Administrations have obtained loans to improve slaughtering facilities. The meat-drying premises are licensed, inspected and well maintained. A small canning factory established at Kano by the Department of Local Industries was inspected and found satisfactory, as was a new ice cream factory in the same town, samples of whose products are regularly analysed.

F.—HOUSING AND TOWN PLANNING

190. Medical officers, health superintendents and sanitary inspectors do much, in a quiet and unspectacular way, to promote good housing and planning by the discharge of their duties under the Public Health Ordinance and a multitude of Local Building Rules and Regulations. This time-consuming work has increased with the expansion of local government and the creation of many elected bodies, some of which have inexperienced members. There is a regrettable but understandable reluctance on the part of junior health staff to proffer unwelcome but necessary advice to the Councils which employ them and this lies at the root of the housing and environmental deterioration noted in many local government areas. The drift of population to the cities continues and leads to overcrowding and the creation of slums. A further great difficulty is to ensure that houses are in fact built according to the approved plans, that unauthorized additions are not made, and that individual rooms are not subdivided to accommodate extra lodgers. Control is made no easier by the slowness of the public to realize that the rules are intended for their protection and to prevent exploitation by landlords.

191. In townships, even in the Northern Region, the design of houses is tending towards the European pattern, and concrete or laterite-cement blocks are increasingly used. Adobe construction is however, still commonest, particularly in Northern cities whose water-retaining borrow-pits are a major menace to health.

192. New lay-outs were in the process of preparation or occupation in the sabongari areas of all four Northern townships, Jos, Kaduna, Kano, and Zaria, and a second new layout, to accommodate 3,500 persons at Gusau, should do much to relieve congestion in the old town.

193. The Eastern Region reports intense building activity at Onitsha, where at Fegge, but not elsewhere, buildings are limited to a forty *per cent* coverage and living rooms must have a minimum floor area of 144 square feet. The burned-out Onitsha market had been half rebuilt, congestion having been enormously decreased by realignment, standardization of stall size, and the generous width of lanes and main roadways ; all stalls have permanent corrugated roofs. Building was proceeding rapidly at Enugu's new suburb of Uwani where, as recorded last year, tarred roads and concrete drains were completed before building began. Umuahia was added to the list of townships.

194. Continued deterioration is recorded from Ibadan, where the Native Authority regrettably suspended the application of building rules, but elsewhere in the Western Region improvement occurred. More comprehensive and precise rules and better standards in their enforcement were obtained at Abeokuta and it is planned to introduce similar and modified rules to other towns and large villages under the same Native Authority. In Ondo Province four large towns have Town Planning Committees which meet regularly and enforce building rules. New rules were introduced at Asaba, and were being drafted for Benin City. In Ijebu Province, a Town Planning Authority was being introduced for Ijebu Ode and Native Authority Building Rules are applicable in all the larger towns.

195. In Lagos, which now has a population of 271,800, the Slum Clearance Scheme which was approved by the Governor-in-Council in 1951 is still awaiting implementation because it has not yet been possible to finance the mortgage scheme which is required to operate concurrently. The scheme is also meeting with some local opposition.

196. At the end of the year, there were 52,149 houses in the Township. Of 8,768 premises found to be overcrowded, the overcrowding was reduced in 7,568 cases either by reducing the number of occupants or by increasing the size of the rooms by knocking down walls and internal partitions.

197. There was a gradual improvement in the standard of new houses particularly in the Yaba area. Owners and their architects have co-operated very well in such innovations as insisting on the provision of sanitary conveniences on each floor of a residential building, providing a set for a maximum of four bedrooms, and providing water closets in houses and outhouses where a water supply is available. This latter step is very important and it is hoped that the bye-laws will be amended accordingly in the near future.

G.—HEALTH PROPAGANDA AND EDUCATION

198. A "Radio Doctor" programme was a regular weekly feature at Lagos, Enugu and Kaduna and, from time to time, health sisters gave broadcast talks. Health news, as well as criticism, is prominent in the country's newspapers. Film shows by the Public Relations Department are much appreciated and Katsina

Native Administration has its own film unit. These are the highlights. Many formal and informal lectures, talks and demonstrations, given by individual officers of all ranks in the medical and education departments, form the background. It is regretted that, with the broadcasting and other facilities for dissemination now available, this work cannot be organized and greatly expanded under a full-time health education officer. Without rapid and country-wide increase of knowledge regarding the transmission and prevention of common diseases, much of the work of hospitals, clinics, special services and health staff is rendered fruitless.

199. Health Weeks were held at twenty-two centres, and three Baby Shows were organized. Eighteen of the Health Weeks were in the Eastern Region; all were ambitious undertakings involving hard work and long preparation; they attracted much public interest and attention. During the year World Health Day was celebrated for the first time.

VI.—PORT HEALTH ADMINISTRATION

200. No seaport or airport was declared infected during the year, although one case of imported smallpox was notified at Lagos.

201. The introduction of the new International Sanitary Regulations led to a simplification of procedure through the abolition of the passenger's declaration of origin and health and the reduction in number of planes requiring disinfecting.

202. At the seaports of Lagos, Sapele, Burutu, Warri, Port Harcourt, Calabar, Victoria and Abonnema, the arrival of almost 1,600 ships was recorded. No plague infection was reported in rodents. Weekly flea counts at Lagos gave a pulicine index of 4.8 and a cheopis index of 3.9. The corresponding figures from Port Harcourt were 1.07 and 0.8.

203. Thirteen thousand passengers arrived at, and 13,000 left Ikeja Airport. Traffic at Kano was less intense with about 1,850 arrivals and departures on international flights as compared with about 2,300 in the previous year. Health work at Kano is now supervised by a full-time health superintendent and mosquito control was greatly improved by extensive weekly larviciding combined with the spraying three times a year of buildings within and just outside the perimeter of the airport. Adult catches were negligible except for two isolated occasions and the *aedes* index was maintained at zero throughout the year. A feature of the year was the large number of pilgrims to Mecca who travelled by air from Kano.

VII.—HOSPITALS, DISPENSARIES AND OTHER UNITS

A.—EXISTING MEDICAL FACILITIES

204. With so much building in hand it is difficult to arrive at a stable figure for the total of beds available, and some returns include substandard accommodation. The figures given in Table V (page 56) do not include leprosy institutions. Because of better reporting, the increases recorded since last year—from 9,438 to 11,194 hospital beds, and from 1,384 to 1,651 beds at maternity centres—are not wholly actual increases. There is no doubt, however, that this year saw substantial real increase in available accommodation although the fullest use could not be made of it everywhere because of staffing difficulties.

205. Regional figures are given for the first time. They show the more favourable position as regards general hospital and midwifery facilities enjoyed by the Eastern Region, largely due to mission and commercial activities.

*Table V

Existing Medical Facilities, 1952-53

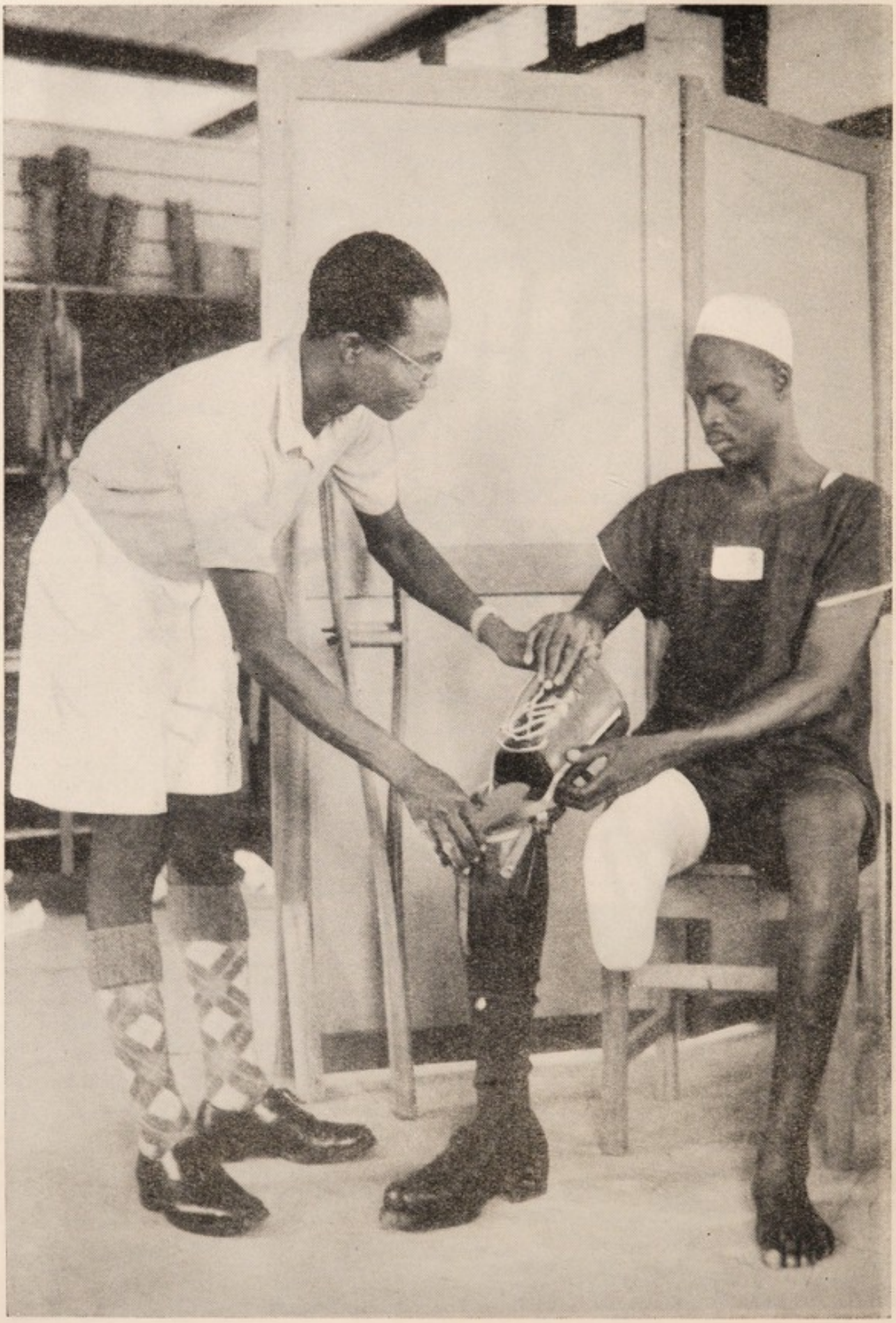
	Government	*Native Administration*	*Mission*	*Private and Commercial*	*Total*
General Hospitals and Nursing Homes					
Central	—	—	—	—	—
Northern Region	22	6	10	—	38
Eastern Region	†24	—	16	15	55
Western Region	14	1	8	15	38
Total	60	7	34	30	131
Special Hospitals (eye ; orthopaedic ; mental ; maternity)					
Central	1	—	—	—	1
Northern Region	—	2	2	—	4
Eastern Region	2	—	—	—	2
Western Region	3	—	—	—	3
Total	6	2	2	—	10
nfectious Diseases Hospitals					
Central	—	—	—	—	—
Northern Region	5	2	—	—	7
Eastern Region	5	—	—	—	5
Western Region	5	—	—	—	5
Total	15	2	—	—	17
Hospital Beds and Cots					
Central	158	—	—	—	158
Northern Region	2,183	1,111	596	—	3,890
Eastern Region	2,179	—	1,788	546	4,513
Western Region	1,604	232	566	231	2,633
Total	6,124	1,343	2,950	777	11,194
Maternity Centres, Clinics, and Rural Centres					
Central	—	—	—	—	—
Northern Region	2	8	7	—	17
Eastern Region	—	90	55	19	164
Western Region	2	85	26	17	130
Total	4	183	88	36	311
Beds in Maternity Centres, etc.					
Central	—	—	—	—	—
Northern Region	4	37	25	—	66
Eastern Region	—	447	421	105	973
Western Region	5	320	225	62	612
Total	9	804	671	167	1,651
Dispensaries					
Central	—	—	—	—	—
Northern Region	35	303	140	—	478
Eastern Region	2	265	3	46	316
Western Region	7	211	3	5	226
Total	44	779	146	51	1,020

* This Table does not include leprosy institutions.

† Includes two sick bays.

Note.—Two maps at the end of this Report give, in graphic form, medical facilities as they existed in 1952-53 compared with 1927.

PHYSIOTHERAPY, ORTHOPAEDIC HOSPITAL, IGBOBI, LAGOS



LIMB FITTING, ORTHOPAEDIC HOSPITAL, IGBOBI, LAGOS

B.—ADDITIONS TO HOSPITALS AND OTHER UNITS

206. Almost all hospital construction is financed from Colonial Development and Welfare Funds but regional funds were utilized for the following construction: —

207. *Northern Region.*—The regional stores were substantially completed, extensions made to Kaduna dental centre, work commenced on converting the Kano sisters quarters into a maternity home, and power-house installation was started at nine hospitals.

208. *Eastern Region.*—The new medical stores at Port Harcourt and a new dental centre at Enugu were completed and opened. The work done under Development schemes is outlined below: —

209. *Central.*—Igbobi Orthopaedic Hospital. Funds were provided to replace four temporary wards with permanent wards. Two were completed and occupied and work on the others was started. Air-conditioning and alterations of the theatre were also completed.

210. *Northern Region.*—Sixteen hospitals were added to or improved, by the building of wards, theatres, X-ray blocks, ancillary blocks, pavilions or quarters. Two health centres were completed or almost completed, and additions made to four training schools. Voluntary agencies began work at two combined hospitals and almost completed a third. They received capital grants of £20,000 for additions to their existing hospitals.

211. *Eastern Region.*—One new Government hospital was opened and three others were added to by the provision of new general and maternity wards, theatre blocks, and other ancillary buildings. The foundations of the outpatient department, kitchen and laundry of another were started and hostels for probationer nurses were completed at five stations. Voluntary agencies completed one hospital built with the assistance of a capital grant, and work was progressing at two others. A grant was also given towards the erection of a rural health centre.

212. *Western Region.*—One new hospital was brought into use during the year. Three others were nearing completion, one of them being partially opened. Plans for another new hospital have been drawn up and work started on the staff quarters. Extensions by the building of maternity blocks, pavilions, operating theatres, X-ray departments, etc., were made at six others and additional accommodation provided at the Nurses' Preliminary Training School. Work was also about to start on two rural health centres. Voluntary agencies with the assistance of grants-in-aid made rapid building progress at five hospitals and two will open in whole or in part at an early date. Full details of all this work are given in the Annual Report on Development and Welfare Schemes.

C.—RURAL HEALTH CENTRES

213. This name is normally reserved for units which have provision for a rural medical officer and health sister. There are four such government centres. Although in neither case were the buildings complete, the two new centres in the Northern Region, at Argungu and Kankiya, commenced operations during the year. At Argungu the rural medical officer took over the supervision of the dispensaries in the Emirate, and made preliminary surveys of Argungu town and of schools, markets and other public institutions in the district. Regular compound

inspection was organized in Argungu and a vaccination campaign started. At Kankiya the medical officer inherited a rural service that was already comparatively well organized and set himself to raise the standards of achievement, concentrating primarily on environmental improvement, maternal and child welfare, and leprosy control. At four leprosy outpatient clinics established in buildings erected by voluntary effort near existing dispensaries, 596 patients were under regular dapsone treatment by the end of March.

214. Two other centres, both in the Western Region, at Auchi and Ilaro and under the supervision of Field Unit medical officers, have each a health sister, health visitors, and midwives, with a male nurse in charge of the dispensary. Their work is concentrated on maternal and child welfare at the centre and at subsidiary Native Administration maternity units in the neighbourhood. Two new rural health centres are planned in the Western Region.

215. *Ilora Health Centre.*—The Department of Preventive and Social Medicine at the University College began work at Ilora in the local court, but a permanent centre was constructed during the year, mainly by communal effort inspired by the Bale and Professor Ajose and with some assistance from Native Authority funds. Over 1,000 new cases attended the dispensary, 257 new ante-natal cases were seen, and 587 new infants and children. Deficiency of the vitamin B complex was common in pregnant women.

D.—MEDICAL FIELD UNITS

216. The formation, late in the year, of the Katsina unit based on Kankiya Rural Health Centre brought the number of operative Northern Region units up to five; there are three in each of the other two Regions. Three of the eleven were without a medical officer for part or the whole of the year.

217. In four provinces, medical officers combine the functions of supervising both a rural health centre and a mobile unit. Theoretically, the two tasks are incompatible but, in the absence of major epidemics, excellent work has been accomplished by the more experienced officers. A lesson that is being learned, or re-learned, is that really efficient rural work requires *both* experience and enthusiasm. The junior staff of the mobile units provides a welcome addition to health centres and local authority personnel, and with their aid a wider variety of work can be undertaken.

218. The role of various organisations in rural work is becoming clearer. The field units have passed the teething stage. In epidemics their relatively small staff can be only a spearhead. Their value lies in their accumulated experience of a wide variety of rural emergencies, in their mobility, and in their ability to concentrate trained and well-equipped staff in under-served or hard-hit areas. As their "endemic" functions increase, total mobilization for temporary duties becomes less easy and local staff must be trained to accept their full responsibilities in dealing with epidemics. For planning action against endemic afflictions the need for deliberately planned fact-finding surveys is now widely recognized; these require a high degree of public co-operation, well-trained staff and careful statistical analysis. With their present staff, the field units are too small to attempt, by themselves, the control or eradication of one or more of the major community diseases. Their functions are to help bring available knowledge to bear on rural problems, to focus attention on the more urgent needs, to indicate to local

authorities and local staff the higher levels of training and service that are attainable, and to organise and participate in remedial experiments and preventive efforts.

219. A brief survey of each unit's work follows.

220. *Northern Region*

Benue Province: Based first on Makurdi, later on Gboko, the unit operated mostly in two sections, one for yaws and sleeping sickness surveys, one for vaccination. Staff was posted to four dispensaries for yaws work and a section was temporarily in Kabba Province to assist in the control of a smallpox outbreak.

Bornu Province: Morbidity surveys were done in four widely separated parts of the province, and school children were examined at Maiduguri. Snail surveys and experiments on snail control were done in Biu Division, where also drug trials indicated that intravenous *sodium antimony gluconate,* although not highly efficacious, was more useful than *stibophen* or *lucanthone hydrochloride.*

Sokoto Province: The unit's headquarters was moved from Sokoto to Argungu. At a morbidity survey at Gulma the main findings were high incidence of subnutrition (15 *per cent*), anaemia (84 *per cent*), bilharziasis (67 *per cent*) and hookworm (26 *per cent*). Two foci of endemic goitre were discovered in the district. Of the 87 boys in the senior primary school at Argungu 90 *per cent* were found to have *urinary bilharziasis,* 54 *per cent* hookworm and 50 *per cent* scabies. During the last three months of the year detachments of the unit dealt with outbreaks of scabies, cerebrospinal fever, smallpox and measles in various districts, while others assisted at morbidity surveys and in the pre-control surveys done by the Malaria Service around Birnin Kebbi.

Plateau Province: Onchocerciasis surveys were done in co-operation with the ophthalmologist in various areas in Plateau and Zaria Provinces, over 5,000 people being examined for nodules and visual acuity, and microscopically for microfilaria in the skin. Of these 1.7 *per cent* had nodules, 22 *per cent* had positive skinsnips, 0.5 *per cent* were totally blind and 1.7 *per cent* had unilateral blindness. An interesting finding was the lack of correlation between the presence of nodules and of microfilariae in the skin. Detachments also did vaccinations, control of a dysentery outbreak, snail surveys, drug-trials in bilharziasis, and assisted in a sleeping sickness survey of mining camps.

Katsina Province: A nucleus of six assistants was posted to Kankiya in January 1953 and carried out vaccinations and microscopic work at various centres.

221. *Eastern Region*

Cameroons and Bamenda Provinces: Several comprehensive surveys were conducted in widely separated localities, special attention being given to filariasis and trypanosomiasis in co-operation with the Loaiasis Research Centre, Kumba, and the West African Institute for Trypanosomiasis Research. No new foci of bilharziasis or paragonimiasis were located. Malignant tertian malaria was hyperendemic throughout the area and there are areas of high incidence of quartan malaria ; the medical officer stressed the importance of malaria as a factor in the high infant mortality rate.

Rivers Province: Activities were limited mainly to vaccinations, of which 68,000 were done, as there was no medical officer for the greater part of the year.

Onitsha Province: Incidence of infectious yaws is estimated at 16 *per cent* in the north of Nsukka Division. There was no medical officer after September 1952. From that date, under the vigorous direction of the health superintendent, measures were taken to abate *Aedes aegypti* breeding in the Nsukka Division which was involved in the 1951-52 outbreak of yellow fever. A mosquito survey was done simultaneously in collaboration with the Senior Malariologist; two species new to science were discovered. In February, immunization with 17D vaccine was started and by March 57,346 people had been vaccinated.

222. *Western Region*

Abeokuta Province: Assistants were posted to eleven dispensaries to do case-finding, health propaganda and assist in general work. Despite this, only 2,884 cases of yaws, 43 of syphilis and 190 of gonorrhoea were found and treated. Vaccinations were done along the frontier with French Dahomey, and two morbidity surveys were undertaken. In the Eggua-Igan district of Egbado, bilharziasis, ascariasis, ankylostomiasis and malnutrition were prevalent. At one village 100 *per cent* of the school children had urinary bilharzia.

Benin Province: Almost 11,000 cases of yaws were treated. A section of the unit went to Asaba in May to assist in the control of an outbreak of typhoid. In June an outbreak of epidemic jaundice was investigated. Surveys of school children and intensive vaccination work were undertaken in various places.

Oyo and Ondo Provinces: There being no medical officer or superintendent, the assistants worked under other officers. They were mainly employed on vaccination duty but also assisted in nutrition and tuberculosis surveys.

E.—NATIVE ADMINISTRATION DISPENSARIES

223. Figures were as follows:—

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
Number of dispensaries ...	303	265	211	779
Number per million population	18	33	33	52
Number per 1,000 square miles	1.1	5.8	4.7	2.1
Staff, male	541	403	319	1,263
Number of patients, in thousands	1,827	1,026	648	3,502
Number of attendances, in thousands	5,905	2,424	2,531	10,861

224. There are wide variations between the extremes of less than 7 dispensaries per million people in Kano Province and 66 per million people in Ijebu Province; and between less than one dispensary per 1,000 square miles in Adamawa and almost 16 per 1,000 square miles in Owerri. Regional reports refer unanimously to the inadequacy of supervision of the growing number of dispensaries, for which the demand continues. Quality is undoubtedly being sacrificed for quantity. In some areas the opening of a dispensary is determined more by ideas of prestige than by consideration of real need, and little attention is paid by local authorities to adequate training of staff, the possibility of regular supervision, or the availability of adequate funds for maintenance. In too many cases both the standard of the dispensary attendants' knowledge and the stock of drugs and dressings supplied are much too low. Apart from a number of Northern Region dispensaries which

treat yaws and sleeping sickness, only simple ailments are treated with a limited armamentarium. With reduced supervision the returns of patients and attendances are, in many cases, not very reliable.

225. What little can be done to improve these conditions is being attempted. In the Northern Region both capital and maintenance grants from Government are given but only if certain standards of construction, training and supply are observed. The employment of more rural medical officers is an obvious solution but these are as yet few and in most areas have other heavy commitments. To assist in training and re-training of staff, places have been apportioned in the Makurdi Field Units School to Native Administration attendants from the Eastern and Western Regions. The Northern Region has two schools for these attendants, at Kano and Zaria. The quality of recruits is however, poor. Marked improvement can probably only come through a combination of more prolonged training, regular refresher courses, better conditions of service, adequate inspection (by administrative officers no less than by rural medical officers), and increased provision of drugs and dressings. In the larger provinces there can be little hope for many years of providing rural medical care except at these dispensaries, the contrast between which and the high quality of hospital facilities is now becoming extreme.

VIII.—MATERNITY AND CHILD WELFARE

226. A summary of the work done in 1952-53 by Government and Local Authority hospitals, nursing homes and maternity centres is appended hereunder and is shown in Chart II. (page 95).

Hospitals and Nursing Homes	*Northern Region*	*Eastern Region*	*Western Region*	*Nigeria*
Beds	172	261	253	686
Deliveries	5,349	7,557	8,315	21,221
Maternal deaths	47	135	146	328
Infant deaths	180	314	536	1,030
Maternal mortality ...	0.9%	1.8%	1.8%	1.5%
Neonatal mortality (app.)	3.4%	4.2%	6.4%	4.9%
Maternity and Rural Health Centres				
Beds	37	447	325	809
Deliveries	833	11,767	11,437	24,037
Maternal deaths	2	3	53	58
Infant deaths	1	157	461	619
Total beds, all Government and N.A. units	209	708	578	1,495
Total deliveries, all Government and N.A. units ...	6,182	19,324	19,752	45,258

227. To these figures has to be added the accommodation provided by Missions, *viz* :—

	Northern Region	*Eastern Region*	*Western Region*	*Nigeria*
Beds	43	510	298	851
Deliveries	770	17,807	9,618	28,195

228. This gives a total of 2,346 beds for maternity work, in addition to which there are, in the Eastern and Western Regions, numbers of private maternity homes.

229. In the Northern Region, Ilorin Province has about one quarter of the few beds available for maternity work. Prejudice against institutional midwifery weakens only very slowly in the more northerly moslem provinces. Organized domiciliary midwifery is clearly the answer but the difficulty of finding staff remains formidable. The Midwives' Board has approved a scheme to train illiterates in the North as maternity attendants (Grade III midwives). A school and hostel were completed for this purpose at Kano but did not function owing to the absence of pupils and shortage of teaching staff. A group of women is having preliminary training at Katsina hospital to judge their suitability for this new Kano school.

230. Every Government hospital in the Eastern Region reserves beds for maternity work. The three main centres, Aba, Calabar, and Ikot Ekpene have fifty-eight, thirty-three and twenty-two beds respectively. The Aba Maternity Hospital dealt with 2,707 deliveries and 389 major operations were performed; over a quarter of the thirty-eight maternal deaths resulted from previous outside interference.

231. More welfare clinics are being established by Native Authorities in rural areas of the Western Region, while Mission and Government general and special hospitals provide facilities in the towns. Despite increased work in grossly overcrowded wards the Massey Street Maternity Hospital at Lagos had its lowest recorded maternal mortality rate of 7.76 per thousand live and still-births. The 1951-52 rate was 10.98.

232. Figures for Massey Street Hospital for the year were: —

INPATIENTS	*Booked*	*Not booked*	*Total*
Adult patients admitted	7,069	1,443	8,512
Patients delivered in hospital:			
Primiparae	1,397	171	4,784
Multiparae	2,888	328	
Patients admitted after delivery:			
Primiparae	10	11	71
Multiparae	33	17	
Abortions	221	307	528
Patients transferred	13	4	17
Maternal deaths	26	13	39
Maternal mortality rate (deaths per 1,000 live and still-births)	5.8	27.0	7.8
Infants born in hospital	4,402	521	4,923
Total live births	4,268	518	4,786
Infants born before admission	68	34	102
Infants transferred	—	—	—
Still-births	202	37	239
Still-birth rate, per 1,000 live and still-births	45.2	66.7	47.6
Neonatal deaths	152	33	185
Neonatal death rate (per 1,000 live and still-births)	34.00	59.45	36.82
Total live and still-births	4,470	555	5,025
OUTPATIENTS			
No. of cases			12,447
Total No. of attendances			51,818

INFANT WELFARE CLINIC (1), NORTHERN REGION

INFANT WELFARE CLINIC (2), NORTHERN REGION

233. Of the 1,199 abnormal obstetrical cases, the conditions responsible in order of frequency were—abortions and moles, pre-eclamptic toxaemia, hypertension, multiple pregnancies, retained placenta and post-partum haemorrhage. A total of 554 obstetrical operations were performed.

234. Of the thirty-nine maternal deaths recorded, approximately half were due to causes unconnected with pregnancy. Anaemia and heart failure was the most frequent cause of death, and thereafter post-partum haemorrhage. Half of the patients with the last condition were delivered in the district and not at Massey Street. The establishment of a blood bank would probably save many of these cases of haemorrhage*.

235. As regards infants, in eighty-six of the two hundred and thirty-nine recorded cases of still-births, no known cause was traceable ; maceration of the foetus was responsible in thirty cases, and breech delivery and twin delivery in twenty-two and nineteen cases respectively.

236. Of deaths occurring in the neonatal period, ninety-six were due to prematurity, forty-nine to asphyxia neonatorum, seventeen to broncho-pneumonia and fifteen to atelectasis.

237. The ante-natal work done by sisters and midwives at all hospitals and at rural health centres is being extended, as is the related child welfare activity, by the increased establishment of health sisters. In the North, the posting of a health sister to every province stimulated work at the established maternity and child welfare centres in six of the larger towns and at dispensaries within reach of provincial headquarters. At Kano, Bauchi and Azare, evening clinics held for purdah women were increasingly patronized, and elsewhere purdah mothers were visited in their homes. In some areas, the demand by district and village heads for the holding of child welfare clinics was greater than could be met. Where work had been longest established, a tendency was noticed towards improved continuity of attendance, and towards the seeking of advice rather than of medicine.

238. The Eastern Region had health sisters at Victoria, Aba and Port Harcourt. Nine rural clinics are now functioning in the Cameroons near Victoria, where the chief problem of the Bakweri women is infertility. The British Red Cross opened a successful infant welfare clinic at Enugu. The Coal Corporation's lady welfare officer, recording 1,393 new ante-natal cases, 1,333 new cases at the infants' clinics and over 5,000 district visits, notes that conservatism is disappearing even in the more remote villages.

239. At Lagos, 16,000 babies attended the two clinics and 46,000 home visits were made. A high proportion of the babies referred to the physician at the General Hospital had severe malnutrition. A sewing class for mothers was started by the Y.W.C.A.

IX.—MENTAL HEALTH

240. Certified patients are in the care of a number of authorities—the Medical and Prisons Departments, and various Native Administrations. Though little can be done to prevent mental illness, as much as is at present possible is being done and planned to improve the care of the chronically ill patient and to provide modern treatment in a properly equipped mental hospital for early cases of mental disorder.

* A well organised Blood Bank is now in operation, with the active co-operation of the Red Cross Organisation.

241. There are, in the Northern Region, eleven gazetted lunatic asylums, one being a government and the remainder native administration institutions, with accommodation for a total of 152 patients. They admitted ninety-one patients during the year. With the exception of those at Kano and Bida, they consist of annexes to the local prison. Legally, the statutory superintendent is the medical officer, but little more than the simplest medical care can be given.

242. The two principal prison asylums in the Eastern Region, at Port Harcourt and Enugu, had a daily average of 400 patients. The Calabar Mental Hospital with the completion of two association wards, has accommodation for seventy-eight but shortage of staff restricted the daily occupancy to an average of forty-one. Two occupational therapy halls and a kitchen were completed, and an electro-convulsive therapy apparatus was expected.

243. The Western Region also has two main institutions for criminal and civil lunatics at Lantoro, Abeokuta, with accommodation for seventy and at Yaba, Lagos, with accommodation for two hundred and fifty-six. At the former a new block of cells and a new shelter were being built. The Yaba premises are antiquated. Here, as at Lantoro and Calabar, the return of Nigerian nurses from training in Britain has brought great improvement in occupational therapy and in the comfort of the patients.

244. Progress at the new mental hospital at Aro, Abeokuta, was exasperatingly slow but improved latterly and, in the treatment block, four wards and the dining room were approaching completion. Work started on additional staff quarters and one house was completed*.

X.—DENTAL HEALTH

245. There are now three dental centres in each Region, one having been opened at Benin during the year, and a staff of thirteen dentists, some of whom were able to do considerable touring.

246. The three Northern Region centres were in continuous operation throughout the year, work was expanded in scope, and visits paid to eight out-stations. Almoners were appointed at Kaduna and Kano, the Kaduna centre was enlarged, and the water-supply to the Jos centre was improved. A new centre was built at Enugu and is to be provided with further modern equipment to increase the variety of work undertaken. Equipment was also improved at Ibadan and an X-ray plant installed. Work began at Benin in the mobile unit until accommodation in the hospital was prepared.

247. At all centres the proportion of African patients is increasing rapidly. Among them, paradontal disease is extremely common, and the comparative rarity of dental caries may in some areas, at least, be due to the relatively high fluorine content of waters derived from the Nigerian granites. At Kaduna, the dental officer found that, patient for patient, filling were required seven times more frequently in Europeans than in Africans, while extractions, almost all for paradontal disease, were three times more frequent in Africans.

248. The mobile unit used in the Western Region required extensive repairs and is considered not to have justified its high cost. It has not yet been possible to begin the move of the Lagos centre from the medical headquarters building nor to obtain funds for the training of dental hygienists.

* Arrangements are being made for a Consultant from the United Kingdom to visit Nigeria to advise on the mental health service.

XI.—X-RAY SERVICES

249. Again delay has to be reported in the installation of electricity supplies to hospitals provided with X-ray machines. Thus, the Northern Region had seventeen sets at twelve stations, only nine of which had power. Five new portable sets were supplied in the Eastern Region, providing a total of ten stations with sets, but five have no power yet. In the Western Region X-ray facilities were available at seven stations. There is a mass miniature unit in Lagos, and a mobile unit is in service with the Tuberculosis Survey. Two officers spent part of the year undergoing training in Britain as radiologists.

XII.—PRISONS

250. Some buildings are obsolescent, but new blocks and extensions were being built, and sanitary annexes improved. Overcrowding and infestation with bed-bugs are still too common, but quarterly sanitary reports are serving a useful purpose in bringing defects to notice and in speeding up remedial action. The larger prisons, *e.g.*, Lagos, had a medical officer in daily attendance and others were inspected weekly by medical officers. Diets are good and loss of weight was only infrequently recorded. In fact, despite the defects noted above, prisoners have much better than average environmental conditions and medical care and enjoy, on the whole, excellent health. Apart from a few cases of chickenpox, no epidemic disease was reported.

251. New regulations applicable to Native Authority Prisons in the Northern Region prescribe minimum standards for food, clothing, maintenance of cleanliness and provision of sanitary facilities. A new standard diet, capable of local adaptation, was prepared.

XIII.—LABORATORY SERVICE

252. During the year regional laboratories came under the administration of Regional Directors except as regards the supply of equipment. The Yaba Headquarters, under an Assistant Director, remains in the control of the Inspector-General of Medical Services. The Northern and Western Regions had two pathologists and two superintendents each, but the Eastern Region had only one superintendent. The Western Region had in addition a senior superintendent who devoted his whole time to training technical assistants.

253. A Senior Pathologist (Forensic Science) was appointed, one pathologist left on transfer and one resigned. A technical assistant was promoted to laboratory superintendent. Thirteen technical assistants left the service and eighteen students began training. Of three members of the staff training in the United Kingdom one completed his course, gaining the Associateship of the Institute of Medical Laboratory Technology. Vacancies at the end of the year were for two pathologists, one superintendent, one maintenance engineer, and twenty-six technical assistants.

Laboratory Service Headquarters

254. This comprises the central medical library and laboratories for bacteriology, serology, rabies vaccine, smallpox vaccine, yellow fever vaccine and forensic science. Work continued on the construction of the yellow fever vaccine laboratory, production of vaccine having to be stopped in December 1952 to allow of installation of new refrigeration and air-conditioning plant. The work of the central and regional laboratories is summarized in Appendix III (pages 90-92).

255. *Bacteriology.*—Blood cultures increased to 111 from 74 last year, the percentage of sterile cultures being constant at approximately 80 *per cent.* Stool cultures have doubled in number in the last two years, to a total of 1,021, the proportion of positive findings remaining about ten *per cent* and the commonest organism isolated being *Shigella flexneri.* The number of urine cultures has also risen, from 98 in 1950-51 to 323.

256. The total incidence of the Salmonella group over the last three years by blood culture, faeces culture or serology, was approximately nine per year, *viz:*

	Salm. typhi	*Salm. para A*	*Salm. para B*	*Salm. para C*	*Salm. group*	*Total*
1950-51	5	—	—	—	3	8
1951-52	4	1	—	—	6	11
1952-53	3	—	3	—	—	7

257. Preliminary work began on modern methods of culturing the tubercle bacillus and of determining its sensitivity to streptomycin. For pregnancy tests, the male toad test is replacing the Aschheim-Zondek.

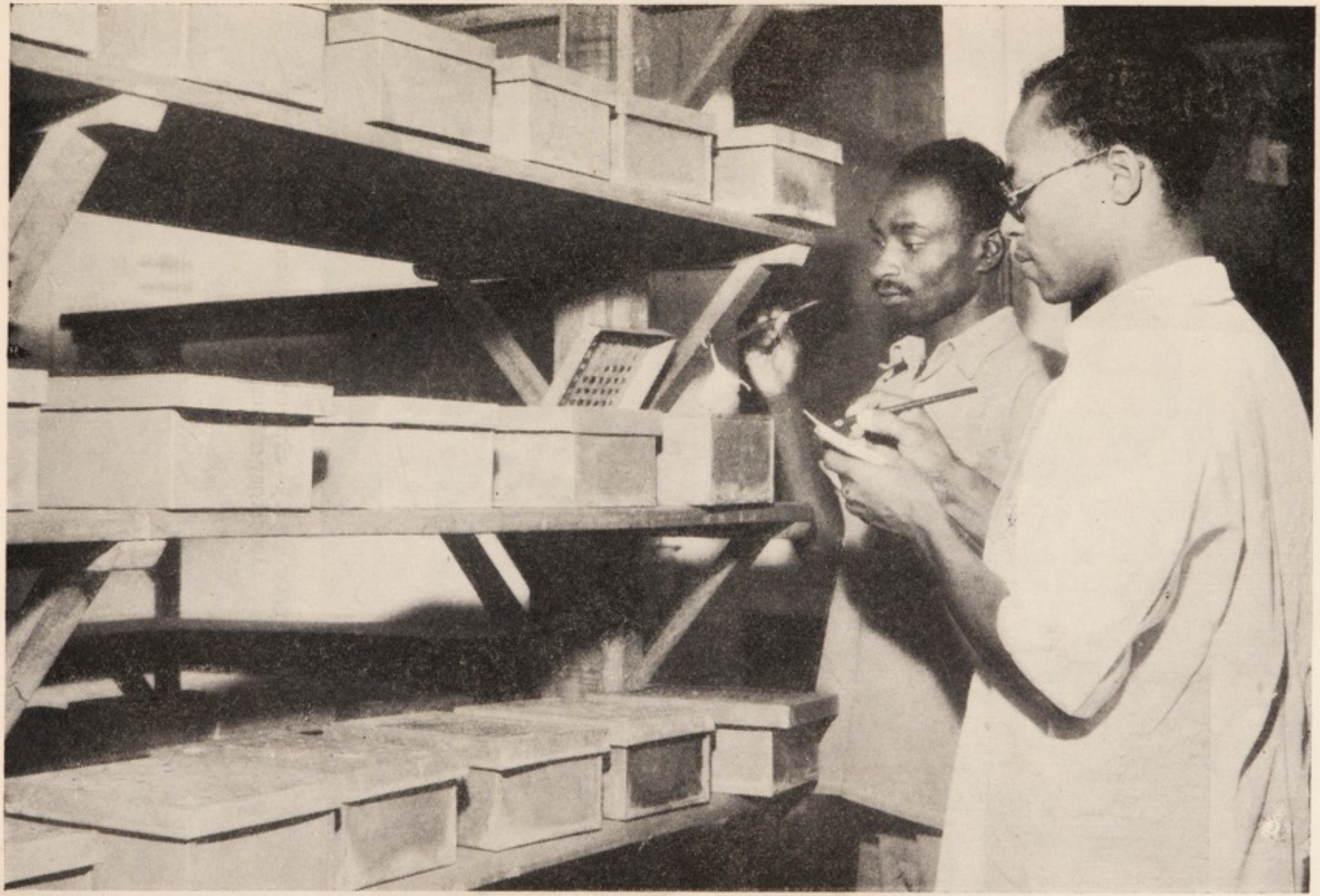
258. *Serology.*—The modified Harrison-Wyler Wassermann test was introduced and compared with the Kahn test in 1,777 sera before being used as a routine, and it is proposed to make a more comprehensive comparison, including the use of sera from the V.D. Reference Laboratories in England. Richardson's modification of the standard technique was employed in verification of doubtful reactions. The use of a complement fixation test is being extended to other diseases, including gonorrhoea. Work also began on comparing the relative value of the Ide and V.D.R.L. (Harris) slide tests for use in field work, and they are being performed in parallel with the Kahn and Wassermann tests on all sera examined.

259. *Rabies.*—The brains of all animals suspected of having died of rabies are submitted to the Laboratory Headquarters for examination. During the last three years the proportion positive fell from 53 *per cent* in 1950-51 to 32 *per cent* in 1951-52 and rose slightly to 38 *per cent* in 1952-53, when forty-six brains (one human, forty-four dogs, one cat) were positive among the 121 submitted. A quarter of the cases were proven by intracerebral inoculation of mice after negative direct histological examination.

260. *Rabies vaccine.*—Minor modifications were made in bottling and labelling and 263,925 ml. of Semple-type phenolized vaccine were produced.

261. *Smallpox vaccine.*—During the year 6,125,000 doses of lanolinated vaccine were made. Investigations continued into the causation of illness in the sheep sent from the North, 437 (31.6 *per cent*) out of 1,387 having died before they could be used. Minor changes were made in the routine method of vaccine production, and about one-third of the pulp was stored in preparation for freeze-drying. The lanolinated product gives 97 *per cent* to 100 *per cent* "takes", each batch being tested on about thirty babies within three months prior to its issue.

262. *Yellow Fever vaccine.*—Refrigerating and air-conditioning plants, the latter including ultraviolet lamps in certain inlet ducts, were being installed, and seed-virus is now stored in a deep-freeze cabinet at *minus* 65-70 degrees centigrade. Despite interruptions in work and staff difficulties, seventy-five batches of vaccine were prepared and samples submitted to the National Physics Laboratory for tests



RABIES VACCINE PRODUCTION (1)—TAKING RECORDS IN MOUSE COLONY, LABORATORY SERVICE, LAGOS

FORENSIC SCIENCE LABORATORY, OSHODI, LAGOS

for residual moisture. The vaccine's keeping properties, under Laboratory conditions at 4 degrees centigrade for fifteen months, are very satisfactory.

263. *Forensic Science Laboratory.*—A new building was completed at the end of the year at Oshodi. The Senior Pathologist in charge toured the Regions to explain to Regional Directors and Police Commissioners the type and scope of work which would be undertaken.

264. *Central Medical Library.*—The main expansion was in filling gaps in sets of various journals. This was facilitated by exchange arrangements with UNESCO, WHO, the American Library Association, and libraries in London, Ibadan and Kampala. The library assistant, now appointed Medical Librarian, qualified as an Associate of the Library Association, and thereafter spent six months in medical libraries in London. There were 371 accessions to the library during the year, and about 160 journals are received regularly. Compilation of a catalogue took up much of the staff's time.

Regional Laboratories

265. The general clinicopathological work of the laboratories is recorded in Appendix III, Section A.

266. The Northern Region has ten small laboratories and, at Kano, a regional laboratory which does histopathology, serology and biochemistry for the Region as well as clinicopathological examinations for the Kano area. Losses of junior staff affected mainly the regional unit but the laboratory at Lokoja had to be closed. No technical assistants were appointed, concentration being made on training existing staff. In addition to the work tabulated in Appendix III, 105 post-mortems, 380 histopathological reports, and 603 cultures were done. Points of note in the general work in the Region are :—

Malaria—apparent rarity of *P. malariae* and *P. ovale.*

Trypanosomes—none seen in over 21,000 blood films though the North is the main endemic area.

Intestinal helminths—fewer than in other Regions, except for taenia infestations.

Schistosomiasis—relatively common, 0.9 *per cent* of stools and 7.2 *per cent* of urines examined.

267. A site has been chosen at Enugu for the Eastern Regional Laboratory. No pathologist was available and, at the end of the year, there was only one superintendent. There are eleven small laboratories attached to general hospitals, including that at Enugu, and three attached to leprosy settlements. Section A of Appendix III shows some of the regional peculiarities, a high incidence of microfilariae in blood films (6.7 *per cent*) high incidence of hookworm (28 *per cent*), roundworm (26 *per cent*) and *E. histolytica* (6.1 *per cent*), relatively little schistosomiasis, and large volume of work on leprosy.

268. The Western Regional Laboratory at Lagos is in charge of a Senior Pathologist and usually has one other pathologist, two superintendents for general duties and one for teaching. Its junior staff fluctuates greatly but averages about twenty-five technical assistants apart from students. The Region has also six small laboratories attached to general hospitals and one at a leprosy settlement. Their work is tabulated in Sections A and B of Appendix III. There was a large increase in biochemical investigations, from 7,598 last year to 10,892, and moderate

increases in post-mortem examinations, haematology and photography. From Section A, points noted are:—

Malaria	Incidence of *P. falciparum* lower, but that of *P. malariae* and *P. ovale* higher, than in other Regions.
Trypanosomiasis ...	Seven positive in 1,320 blood films. Some of these were films sent from the Eastern Region.
Intestinal and urinary parasites	Roundworm (32 *per cent*) and hookworm (21 *per cent*) common; moderate incidence of schistosomes and entamoebae.
Tuberculosis	More suspects (5,069) and a higher proportion positive (29 *per cent*) than in other Regions.
Gonorrhoea	As above, more suspects (4,399) and a higher proportion positive (49.9 *per cent*).
Leprosy	A very high proportion of positive nasal smears (44.2 *per cent*).

269. Specimens for histological examination are sent to Lagos from stations in the Regions, including the North when there is no pathologist there. Rather less work of this nature was done during 1952-53 than in 1951-52. The commonest tumours were:—

Benign	Haemangioma (12), fibroma (11), nasal polyp (10), colloid goitre (8), common wart (7), lipoma (7).
Malignant	Squamous epithelioma of skin (23), breast carcinoma (13), epithelioma of cervix (11), lymphosarcoma (10), carcinoma metastases (7), melanoma (7).

270. Post-mortem examinations done at Lagos are of three kinds, those ordered by the coroner (557), those requested by the public health authorities (195) to exclude acute infectious diseases such as plague and yellow fever in cases where no certificate is available, and those from the Lagos hospitals (135). Some of the commoner causes of death found are listed below:—

	Coroner's Post-mortems	*Public Health Post-mortems*	*Hospital Post-mortems*
Drowning	36	—	—
Fractured skull	27	—	—
Injuries and shock	24	—	—
Malnutrition	17	6	4
Infantile gastro-enteritis	15	4	—
Prematurity and still-birth	23	25	1
Bronchopneumonia	77	51	13
Lobar pneumonia	22	10	3
Tuberculosis of lungs	41	22	10
Miliary tuberculosis	7	9	10
Syphilitic aortic disease	11	—	1
Hypertensive heart failure	5	3	1
Cerebral haemorrhage	5	—	2
Subarachnoid haemorrhage	7	1	2

	Coroner's Post-mortems	*Public Health Post-mortems*	*Hospital Post-mortems*
Myocardial degeneration	7	1	2
Malaria	23	10	1
Cerebral malaria	13	3	1
Meningitis, tubercular	2	1	6
Meningitis, pneumococcal	7	1	3
Meningitis, meningococcal	6	2	2
Meningitis, staphylococcal	1	—	1
Sickle cell disease	3	1	2

XIV.—TRAINING OF PERSONNEL

271. *Medical Officers.*—Study leave was granted to twenty-seven officers, fourteen from the Northern, six from the Eastern and seven from the Western Region. The most favoured course was for the Diploma in Public Health, but individuals studied surgery, obstetrics, ophthalmology, anaesthetics, radiology, thoracic surgery and diseases of the ear, nose and throat. Two officers from the Eastern Region took higher qualifications (D.R.C.O.G.; F.R.C.S.) without extra study leave. Locally, a number of medical officers attended the World Health Organisation and other training courses run by the Malaria Service, and a short course in leprosy.

272. *Medical Students.*—Courses in Anatomy, Physiology and Pharmacology were given in the pre-clinical departments on the permanent site of the University College, Ibadan, during the academic year. Of the four clinical students under instruction, two transferred to the Medical School of the University of Sheffield in the third term.

273. Twenty-five students read the course leading to the Intermediate Science examination of the University of London with the intention, if successful, of proceeding to a medical course. Twenty-five students read the pre-clinical course and sat the Second Examination for Medical Degrees of the University of London in Special Relationship.

274. It is confidently expected that at least for the next four years students who pass the Second Examination for Medical Degrees of the University of London will be found places in medical schools overseas to continue their course of study with a view to obtaining medical qualifications registrable with the General Medical Council.

275. Records of medical students are as follows:—

	April to June 1952	*October to Dec. 1952*
First Year Intermediate students (Pre-medical) ...	23	14
Second Year Intermediate students (for Intermediate Science and exemption First M.B.) ...	25	32
First Year Pre-clinical students	21	15
Second Year Pre-clinical students (for Second M.B. examination)	25	29
First Year Clinical	2	6

276. *Medical Assistants.*—Final approval was received from the Secretary of State for this Northern regional project and work started on staff quarters, but efforts to recruit lecturers proved unsuccessful. The aim is to train a cadre of

auxiliaries capable of being entrusted with the routine medical care of rural communities. The course of instruction will last five years*.

277. *General.*—One scholarship to study nursing in the United Kingdom was awarded to a departmental employee. A number of health superintendents, sanitary inspectors and field units assistants attended local courses on malaria.

278. *Nursing.*—There are three Regional Government preliminary training schools, Kano, Aba and Ibadan, each with accommodation for a minimum of fifty pupils. The Lagos school was closed during the year. The Victoria Hospital, Cameroons, has been temporarily recognized as a preliminary training school. The numbers who passed out were:—Kano, tewnty-four; Aba, forty-six; Lagos, twenty-six ; Ibadan, forty-seven ; a total of 143.

279. The Kano school gives two courses, one of six months for those with Middle IV education, and one of twelve months for those with Middle II or III education. Six of the twenty-four pupils who passed were natives of the Northern Region. The Aba school also gives a year's course to Middle II candidates from the Cameroons, three of whom completed the course satisfactorily. There was no difficulty in obtaining new entrants at Kano and Ibadan, but for the second course of the year at Aba, only half of the places for girls were taken up. The preliminary course is followed by three years' training at designated training hospitals, of which there are six in the North, five in the East, and eight in the West. The numbers who completed training and qualified were:—

	Northern Region	*Eastern Region*	*Western Region*
Government and Native Administrations ...	17	18	20
Missions and Corporations	—	17	1

280. The Cameroons Development Corporation Hospital at Tiko, the University College Hospital, Ibadan, and fifteen Mission Hospitals are recognised for preliminary and general training.

281. *Midwives Grade I.*—The new Kaduna school had six pupils in training, all registered nurses in Government service. The Eastern Region has schools at Aba and Calabar Maternity Hospitals; of their thirty-eight pupils, twenty qualified, six obtaining distinction. At Lagos (Massey Street Hospital) there were thirty pupils of whom fourteen completed the course and qualified. Seven girls also qualified after training at missions in the Eastern Region.

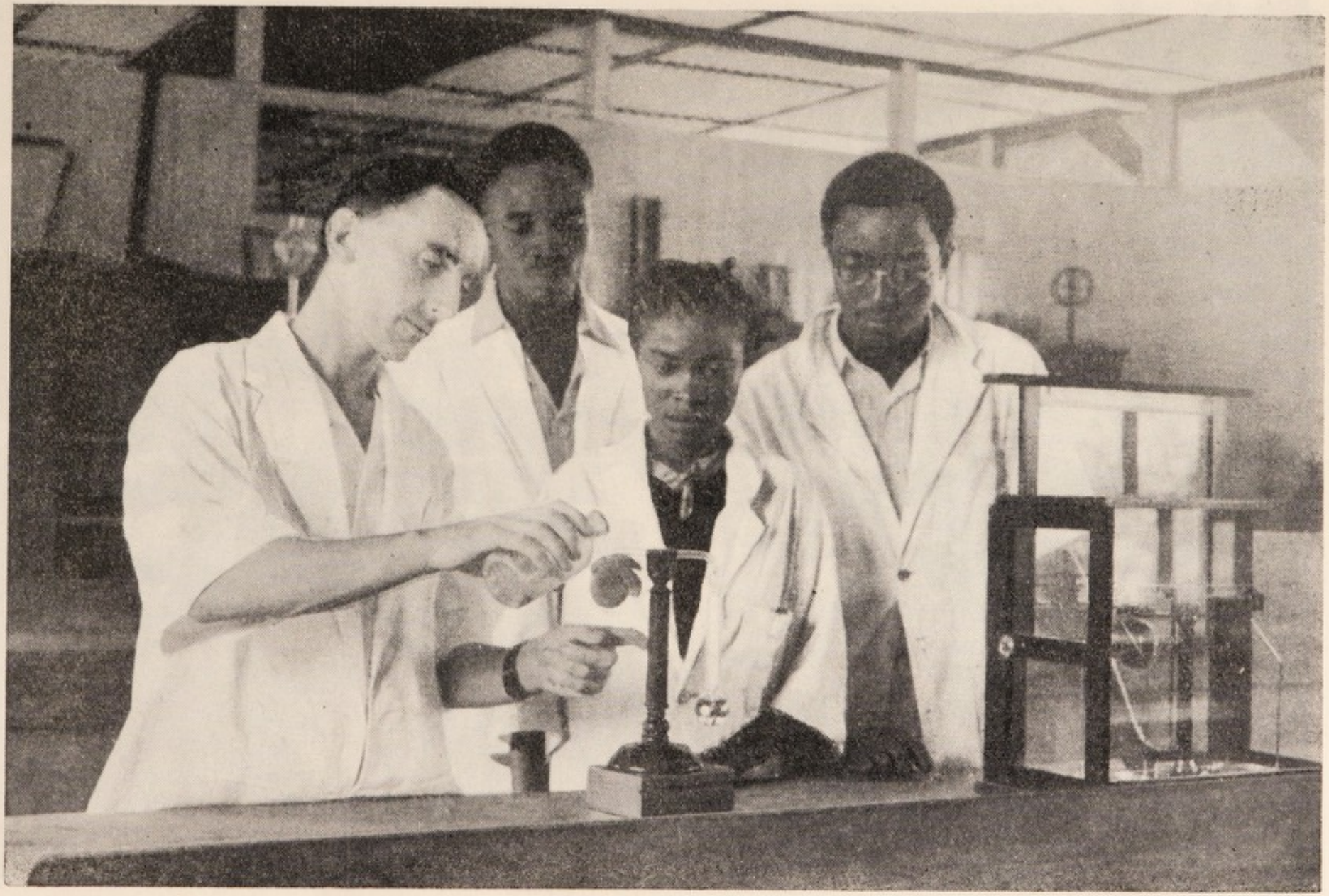
282. *Midwives Grade II.*—These are trained and employed mainly by native administrations and missions, the number qualifying being—Northern Region, 6; Eastern Region, 69; Western Region, 106: total 181.

283. *Health Visitors.*—The school started at Ibadan in 1951-52 was closed in 1953 owing to a dearth of suitable candidates, but the Lagos Town Council continues to run a school, and the training of health visitors is under review by the Nursing Council. Three of the five pupils from Ibadan passed the unofficial examination, and three qualified at Lagos.

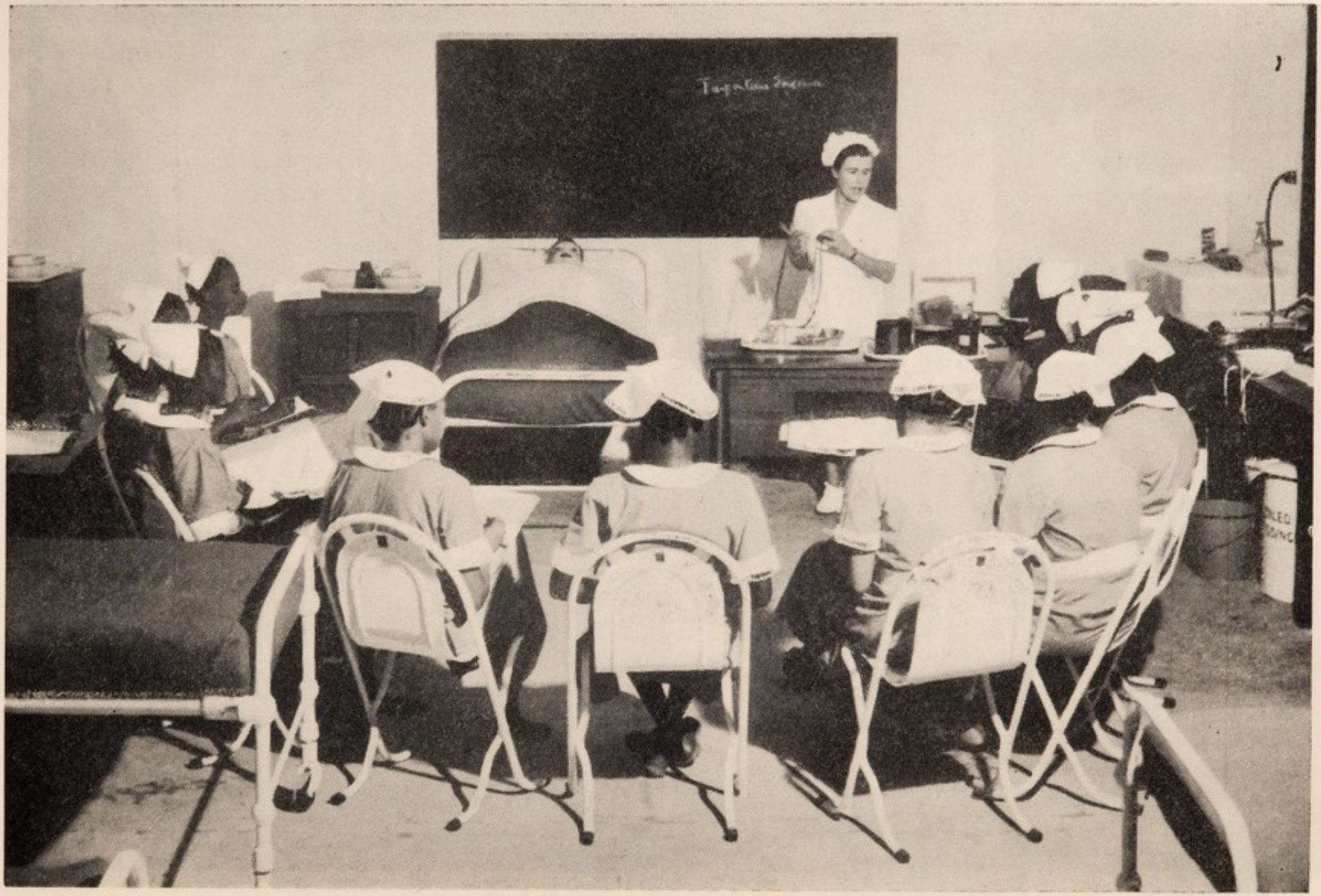
284. *Sanitary Inspectors.*—The school returns are:—

	In training 31st March, 1953	*Qualified during year*
Northern Region (Kano)	20	7
Eastern Region (Aba)	19	—
Western Region (Ibadan)	43	—
Lagos Town Council	—	18

* The graduates of the Kano Medical School will now be called Assistant Medical Officers.



PHARMACY SCHOOL, YABA, LAGOS



STUDENT NURSES AT LECTURE DEMONSTRATION, UNIVERSITY COLLEGE HOSPITAL SCHOOL OF NURSING, IBADAN

LIBRARY, UNIVERSITY COLLEGE HOSPITAL SCHOOL OF NURSING, IBADAN

STUDENT NURSES, GOVERNMENT PRELIMINARY TRAINING SCHOOL, IBADAN

285. Fifteen candidates passed the Royal Sanitary Institute (West Africa) Examination.

286. *Sanitary Overseers.*—The Aba and Ibadan Schools of Hygiene give a nine months' qualifying course and shorter refresher courses for Native Administration Sanitary Overseers. The number qualifying was thirty-eight and fifty-four took the refresher courses, which are considered to do much to raise the standard of sanitary practice in the area.

287. *Dispensary Attendants, Sleeping Sickness and Medical Field Units.*—There are schools for Native Administration Dispensary Attendants, at Kano and Zaria, both in the Northern Region. The Makurdi Field Units School also trains candidates for the Sleeping Sickness Service and Native Administration staff from the Eastern and Western Regions. A school at Kaduna gives advanced and refresher training to Sleeping Sickness and Field Units staff. The numbers trained were:—

	Commenced Training	*Completed Training*	*Qualified*	*Refresher Courses*
Kano	21	18	11	—
Zaria	22	22	14	—
Makurdi ...	26	11	10	17
Kaduna	19	19	12	25

288. *Leprosy Inspectors.*—At the newly opened Preliminary Training School at Oji River six inspectors passed after the first six months' course.

289. Pharmacists.—There are two schools. That at Yaba* is still housed in wooden buildings, but funds are available for rebuilding the school and a hostel. The three-year course is approximately that given up to 1948 for the British M.P.S. The number of students receiving instruction was 125, of whom twenty-three qualified as Chemists and Druggists. The Zaria school trains certificated dispensers for government or native administration employment in the Northern Region only. There were 38 pupils of whom seven qualified during the year.

290. *Laboratory Technical Assistants.*—Eighteen students entered the Preliminary Training School in the Pathology Department at Lagos Hospital, five of the first batch of seven passing the suitability test at the end of six months' training. Nineteen other assistants at various stages of training or service sat for progress, confirmation or promotion tests. No recruits began training this year at Kano.

291. *Radiography.*—Three students, one government and two army, took the preliminary training course. The government trainee qualified as an X-ray operator. A refresher course was held for five trainees who had completed three years' training and for three operators who had originally been trained in the army. Seven out of the eight qualified as X-ray technicians, two of them with credit. For the new primary course, a higher educational standard has been fixed; this made recruitment more difficult, but seven pupils were enrolled.

292. *Dental Technical Assistants.*—The four trainees who continued to receive instruction are now in the last year of their training.

293. *Assistant Physiotherapists.*—Seven first-year, two second-year and four third-year students were in training, and four others did refresher courses.

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* Plans are now being made to transfer the Yaba Pharmacy School to the Nigerian College of Arts, Science and Technology, Ibadan.

XV.—RESEARCH AND SURVEYS

1.—LEPROSY SERVICE

294. The unit at Uzuakoli was concerned mainly with studies on treatment and on immunology. Studies of sulphones in general, and of dapsone in particular, were completed for the time being. They showed that dapsone in small doses given orally is an effective, very simple and safe form of chemotherapy capable of wide adoption. It is now being used extensively in many countries. Observations continued on relapse after sulphone treatment. In lepromatous cases, clinical relapse has not been seen but bacteriological relapse has occurred in a small number of cases. Unexpectedly, relapse has been more common in tuberculoid cases, but there is no indication that it will constitute a serious problem.

295. Intensive studies continued in 160 patients of treatment with *paracetamidobenzaldehyde thiosemicarbazone* (TBI). Tentative conclusions are that it is at least as effective as sulphone, and may be superior in some ways. It is well tolerated in most cases but may, in a few, cause acute agranulocytosis. Clinical and bacteriological response has been good in almost every case. Its higher cost, the possibility of agranulocytosis, and the fact that treatment has to be given daily, make treatment with TBI less widely applicable than with dapsone, but it is extremely useful in those who are allergic, or respond badly, to the latter drug. The combined use of sulphone and TBI gave no better results than with either drug alone, while toxic effects were greater.

296. With isoniazid there was no clear-cut evidence of beneficial action in leprosy. A study of the action of A.C.T.H. and cortisone on the acute manifestations of leprosy showed that these can be readily controlled by hormone treatment but that there was a grave danger of aggravating the disease. Nevertheless, striking results with small doses are usually obtained in two serious complications, namely, sulphone sensitivity and (by local use of cortisone) acute or subacute leprous eye inflammation. Apart from these two conditions hormone treatment is usually contraindicated.

297. *Immunology.*—Tuberculin and lepromin tests have been done on 359 healthy persons. There is strong evidence that a positive tuberculin test, produced by a tuberculous infection, is usually accompanied by a positive lepromin test presumably due to the same cause. Administration of B.C.G. vaccine to healthy people with both reactions negative usually makes them both lepromin and tuberculin-positive. The possibility that B.C.G. may be of value in the prophylaxis of leprosy as well as of tuberculosis may have important practical application. This work is being continued and an attempt is to be made to try oral B.C.G. as used in Brazil, which removes the need for preliminary tuberculin testing. All healthy children of leprous parents at Uzuakoli are being given B.C.G. and an attempt will be made to assess the value of this measure in prophylaxis.

2.—MALARIA SERVICE

298. During the fourth year of existence the Malaria Service expanded its research and training activities. The Ilaro Scheme is in its last follow-up stage (*see* paragraph 305) and plans for a larger project in the Northern Region have been drawn up. New buildings for laboratories and stores were completed, or were under construction, and indents for additional senior staff were submitted.

299. *Epidemiology of malaria.*—Further work was done at Ilaro on the influence of malaria infection on growth and development of African infants. Preliminary results showed a striking similarity to those obtained previously in Lagos.

300. Two new investigations began on epidemiology. The first aims at the elucidation of the results of the continued suppression of malaria on the growth and development of a group of African infants and school-children. *Pyrimethamine* (daraprim) is the suppressive drug given at a weekly dose of 25 mgm, and monthly malariometric and other records are being obtained from two groups of school children. This investigation will not be completed before 1955. A second investigation, designed to compare spleen sizes as recorded in autopsies and surveys, commenced recently. Work is also being done on the possible transmission of immunity from the mother to her progeny, using female rats infected with *P. berghei.*

301. *Chemotherapy.*—Therapeutic trials in 120 naturally infected children showed that *amodiaquin* (camoquin), *pyrimethamine* (daraprim), *chloroquine sulphate* (nivaquine), and a new acridine derivative (azacrin) were all good schizonticides, but that none showed any direct gametocidal action.

302. *Entomology.*—A survey of Jos and Pankshin filled gaps in knowledge of the anopheline fauna of the Plateau Province. Ten species were indentified including *A. domicolus,* a description of the larva of which, hitherto undescribed, is being prepared for publication.

303. The larvae of the two *Eretmapodites* found at Nsukka are of an entirely new species and attempts are being made to obtain specimens of the adult mosquitoes.

304. A dry season survey of Birnin-Kebbi revealed the importance of *A. rufipes* as a presumptive malaria vector in addition to *A. gambiae* and *A. funestus;* this survey is now concentrated on the investigation of the zoophilic habits of *A. gambiae* and of the house-haunting habits of this and other malaria vectors.

305. *Investigations on insecticides and herbicides.*—A series of biological assay using *A. aegypti* and *A. gambiae* as test insects were carried out on walls of Ilaro houses treated with BHC wettable powder. The initial 100 *per cent* rate of mortality continued for three weeks, after which a rapid fall took place. By the end of the sixth or seventh week the mortality of exposed *Aedes* had fallen to 50 *per cent* and, by the end of 14 weeks, mortalities were below 20 *per cent.* Laboratory tests gave similar results. Toxicity began to decline earlier with the lower dosages of BHC but in all cases proceeded at the same rate resulting in a lowering of the percentage mortality of the order of 10 *per cent* per week. In contradistinction, higher mortalities for a time up to sixteen weeks were found with good formulations of DDT. Dieldrin at a relatively low dose of 15 mgm per square foot was giving a near 100 *per cent* mortality after fourteen weeks.

306. Trials of five aerosol formulations used for disinsectization of aircraft, carried out on caged *A. aegypti,* showed comparatively little difference in the knockdown effect of the three currently used formulations. The presence of piperonyl butoxide at 1.6 *per cent* or 2.0 *per cent* has a definite irritant effect on the human nose and throat and the "Standard BOAC Formula" was recommended for use at Nigerian airports.

307. Investigations carried out by Dr Busvine during his visit show that:

(1) There is no intrinsic difference between the susceptibility to insecticides such as BHC and DDT of strains of *A. aegypti* from Lagos, Karachi, Delhi, or Kuala Lumpur;

(2) No BHC resistant strain of *A. aegypti* was produced in Ilaro after three years of residual treatment of houses;

(3) A strain of *Musca vicina* from Ilaro has shown a pronounced resistance to BHC as compared with the Lagos strain of the same house fly.

308. Trials were carried out to determine which is the best herbicide for control of *Pistia stratiotes,* the ubiquitous water lettuce which grows profusely in borrow-pits and interferes with control of mosquito breeding by larvicidal methods.

309. The results of field trials of six herbicides were disappointing compared with those obtained in the laboratory, where some were very active in high dilutions. It appears that *Pistia* in natural conditions is susceptible to Agroxone and YF 2618 in dilutions of not more than 1 : 100, the latter substance giving more uniform degeneration of the plant. Even at this concentration new buds of young plants began to appear, particularly after rain. The problem of easy and economical control of *Pistia* by the use of known herbicides is still far from being solved.

310. *Insecticides Dispersing Equipment.*—A new type of portable fog generator (Swingfog) was tried out in the laboratory and in the field. Investigation was made of an easy and cheap control method that could be substituted for the laborious though effective sealing of pots enforced by the health authorities of the Eastern Region. Preliminary trials with a 10 *per cent* DDT alcoholic solution showed that 2 cc of this solution added to a water pot containing 4 gallons of water would prevent breeding of *A. aegypti* for only 2 weeks. Greater quantities give the water a milky appearance without considerably increasing the duration of larvicidal action. After numerous trials a type of larvicidal pellet was developed that appeared to show promise. A 1 : 6 mixture of cement and sand is used. To this mixture a sufficient amount of insecticide is slowly added and again thoroughly mixed. The best results were obtained by adding 1 part gammexane water dispersible powder P.520 to 4 parts of the sand and cement mixture. Sufficient water is added until a medium stiff dough is obtained. The mixture is then spread out on iron sheeting in the form of a slab, cut into cubes approximately 2 inches by 2 inches by $\frac{1}{2}$ inch and allowed to set in the sun. After two months of exposure in domestic water pots, averaging 4 gallons capacity, the pellets did not lose their effectiveness and gave satisfactory control of mosquito larvae. For the first few days the water has a faint taste of chlorine. The pellets are inexpensive, easy to prepare, store well, handle easily, and have a number of advantages over other carriers of insecticides. Further trials are in progress in an attempt to improve the duration of the larvicidal effect.

311. *Field Surveys.*—A malaria survey of Jos township was carried out in November 1952. Malaria in Jos is probably of an intermittent, near hyperendemic character; holoendemic malaria is seen in outlying purely rural areas. The importance of malaria and of mosquito nuisance in Jos has been underestimated and the attitude of most of the population is complacent, although shortage of funds, combined with rapid growth of the township makes the application of mosquito control measures more difficult. In October and November *A. funestus* is a more important vector than *A. gambiae.* It is possible

however that at the peak of the rainy season this situation is reversed and that *A. gambiae* is then the main vector. Recommendations were made for small-scale residual spraying, larvicidal measures, canalization of one stream and improved environmental sanitation generally.

312. Surveys were made of several small purely rural localities of the Plateau, at altitudes around 4,000 feet. Although these areas differ as far as the level of hyper- or holo-endemicity is concerned, the general pattern is that of high malariometrical indices in infants and children. In the adult population the spleen rates are generally low but the parasite rates are more variable. Classification of malaria endemicity in these areas is difficult and more survey data are needed.

313. In the mixed, immigrant African population of mining camps malaria may cause considerable morbidity not only in the young but also in the older age groups. There is a case for giving the immigrant labour in mining areas a chemoprophylactic drug of the *pyrimethamine* (daraprim) type. The investigation of anopheline breeding connected with mining operations has shown that in the usual deep, clean-cut pools in mining paddocks little or no mosquito breeding occurs. Heavy breeding of *A. gambiae* is frequent however, in any area where the water is not properly impounded and where seepages occur.

314. *Experimental and Pilot Schemes.*—As a result of the survey at Kano airport an inter-departmental meeting was convened which recommended a re-organization of health services at this airport.

315. *Ilaro Experimental Malaria Control Scheme.*—This scheme is in its fifth and last year. It had one year of pre-control survey followed by three years of residual spraying with BHC wettable powder at the rate of 15 mgm of gamma isomer per square foot of spraying surface at 4 cycles a year. The last, the twelfth, spraying cycle was concluded in January 1953. During the remainder of the follow-up, surveys will be carried out as also a very limited amount of residual spraying of the rural health centre, dispensary and a few private houses. The consolidated results of the Ilaro scheme are summarised below.

(*i*) The average number of cases diagnosed as malaria at the Ilaro dispensary fell from 6.2 per cent of total attendances in 1949 to 0.8 per cent in 1952.

(*ii*) The crude birth rate, which in 1949 was 34.8 per 1,000 was 36.2 per 1,000 in 1952 passing through a peak figure of 42.5 per 1,000 in 1951. The crude death rate fell from 15.6 per 1,000 in 1949 to 10.0 in 1951 and 12.3 in 1952. The infant mortality rate fell from 137 per 1,000 in 1949 to 66.7 in 1952 though this striking difference might be due to other contributing causes.

(*iii*) The spleen rate decreased in the age-group 1-2 years to about half of its precontrol figure of 60.3 per cent in 1949. A decrease of spleen rate was also observed in other young age-groups but this decrease was less obvious in older children. There was no decrease of the spleen rate in adolescents or adults.

(*iv*) The crude parasite rate was most affected in infants and very young children. In the 1-2 age group it decreased from 84.1 *per cent* in 1949 to 29.6 *per cent* in 1952. A decrease was also noticed in all childhood age-groups though it was much less pronounced in older children and adolescents. There was no decrease in adults.

(*v*) The average anopheline densities of *A. gambiae* (females per room/day) decreased from 1.9 during the pre-control period to 0.17, 0.32 and 0.57 during 1950, 1951, 1952 respectively. The average anopheline density of *A. funestus* decreased from 2.2 in 1949 to 0.05, 0.004 and nil in 1950, 1951, 1952 respectively. The infectivity of *A. gambiae* decreased from 5.0 *per cent* in 1949 to 0.6 *per cent* in 1952. Corresponding figures for *A. funestus* are 4.1 *per cent* in 1949 and nil in 1952.

(*vi*) The anopheles larval indices decreased for *A. gambiae* from peak seasonal figures of 180-380 per 100 dips in 1949 to the peak seasonal figure of 20 in 1952. *A. funestus* breeding decreased from a peak seasonal figure of 51.62 per 100 dips in 1949 to nil during most of 1952.

(*vii*) Bio-assays and chemical estimation of the residual toxicity of house walls at Ilaro suggest that the amount of BHC present in the surface layer is subject to a relatively rapid decline and that within 3 months after spraying with the BHC wettable powder at the dose of 15 mgm per square foot the loss of the initially high toxicity of the wall surface decreases by 80 *per cent*.

(*viii*) It is realised that the Ilaro scheme covering a relatively small area of about 10 square miles is subjected to an influx of Anopheles from outside the controlled area and that many human infections with malaria found in Ilaro during the control period are also of the same "extramural" origin.

(*ix*) The average cost of the Ilaro scheme over the period 1950-52 amounted to 4*s*-9*d per capita per annum*.

316. *Malaria Control Pilot Scheme in Western Sokoto.*—This project is a logical sequence to the Ilaro Scheme, the results of which, though encouraging, were inconclusive mainly on account of the relatively small area involved. The Sokoto scheme aims at eliminating this drawback by dealing with some 600 square miles inhabited by 100,000 people. DDT and dieldrin at 200 mgm and 25 mgm per square foot respectively will be used at two cycles per annum. BHC will also be used in one area. The first dry-season pre-control survey of the area concerned is now in progress.

317. *Training and Teaching.*—The First International Malaria Training Course in Tropical Africa sponsored by the World Health Organisation was run by the Malaria Service from 2nd June to 27th July, 1952. It was attended by three officers from Nigeria, three officers from the Gold Coast, one from Sierra Leone, one from French West Africa and one from Liberia (staff member of the U.S. Public Health Service). In addition to the senior staff of the Malaria Service three lecturers sponsored by the World Health Organization took part in this course. Four courses of instruction were also arranged for medical officers of health, health superintendents, sanitary inspectors and field units assistants.

318. *Malaria Service Information Bulletin.*—The first Information Bulletin published by the Malaria Service appeared in April 1952 under the title "Insecticides in Public Health Practice in West Africa".

3.—HELMINTHIASIS RESEARCH

319. At Kumba, the chalets and central mess, complete except for electricity and pumped water supply, are occupied by the two permanent members of the team, and the new laboratory and dissecting room are in use. Work, mainly restricted to entomology in the absence of a pathologist, revealed new species of

Chrysops, unlikely, however, to be concerned in the transmission of loaiasis. Studies continued on the development of *L. loa* in *C. silacea*, on the biting mechanism of *Chrysops*, on the penetration of filarial larvae into the final host, on the taxonomy of the tabanids identified, on the transmission of *A. perstans* by *Culicoides austeni*, and on the role of other species of culicoides. In man, surveys were made of populations in different vegetational zones and the findings correlated with vector surveys. Extended work, on chemoprophylaxis, chemotherapy and the medical aspects of filariasis, should be possible next year.

4.—HOT CLIMATE PHYSIOLOGY RESEARCH

320. The metabolism ward at the Unit can now take six subjects and a supervising technician for continuous studies of twenty-four hours or longer. A wind tunnel was being constructed, automatic control of heat and humidity of the climatic chamber was being installed, and valuable equipment, including an acetylene generator, were received. Two visiting scientists were with the Unit during part of the year, and members of the staff attended a number of conferences. The Medical Statistician spends one morning weekly at the Unit. Close liaison is maintained with various local units and departments, including the Army, and with scientific bodies in Africa and overseas.

321. A memorandum was prepared on air-conditioning requirements in coastal Nigeria and observations were made on conditions in the House of Representatives. Chiefly because of the special interests of visiting scientists a considerable amount of laboratory work was done. In the six months that the Unit was at full strength it undertook over 3,000 quantitative and nearly 1,000 qualitative urine analyses, 1,000 blood analyses, 500 blood counts, complete analysis of 30 food samples and measurement of 190 metabolic rates. The results of much of this work are still being analysed. Investigations were made on renal functions and related problems, on the response of African subjects to ACTH, and on the metabolic costs of different activities. Preliminary work started on tilt table responses, on the effect of long-continued sweating and on other subjects.

322. Basic studies on the heat tolerance of Africans were completed except for those on wind movement. On the practical side, these observations on heat tolerance can now be applied to various industrial and domestic situations, and a return to field work is planned. Preparations have already begun for a field expedition with the Army. In studying a variety of working conditions the Unit is inevitably becoming concerned with the associated nutritional problems. Staff limitations and leave absences made it difficult to prosecute the many new studies that are complementary to the Unit's basic work and to undertake all that might be done in the field of industrial hygiene.

5.—WEST AFRICAN INSTITUTE OF VIRUS RESEARCH

323. The main objects of research were (*i*) the epidemiology of yellow fever, (*ii*) the behaviour of the yellow fever virus in human cases and the production of yellow fever immune bodies, (*iii*) the methods of administration of different types of yellow fever vaccine and their application to the control of yellow fever, (*iv*) the aetiology of pyrexias of unknown origin believed to be viral, (*v*) the arthropod vectors of virus diseases. Sera were received from Sierra Leone, the Gold Coast and Nigeria for routine testing by the yellow fever mouse protection test.

324. The Institute is now as well equipped as most of the leading virus research laboratories in the world. The possible re-organization of the Institute under a West African Medical Research Council with interests other than virology resulted in some degree of temporary uncertainty and curtailment of capital expenditure on buildings and equipment which are of service in virology only.

325. *Staff.*—One new laboratory superintendent arrived. The pathologist resigned and one laboratory superintendent was invalided. At the end of the year only one professional member of the staff remained.

326. *Training.*—A laboratory superintendent undertook a course on virus techniques at the School of Tropical Medicine and Hygiene, London, before his arrival in Nigeria. The Acting Director was able to take advantage of the kindness of Sir Frank Macfarlane Burnet to study at the Walter and Eliza Hall Institute, Melbourne, for a period during his leave.

327. *Building and maintenance.*—One block of six flats has been built. The house for the emergency electric generator has been completed and the plant installed. The interior of the main laboratory has been remodelled. A separate sterilisation room, an egg inoculation cubicle, a clearing sluice and animal cages are new items included in the layout.

328. *Equipment and supplies.*—Supplies of laboratory equipment have been adequate and have caused no delays in the research programme. A "Spinco" preparative ultracentrifuge was acquired.

329. *Field Mobile Laboratory.*—In rural areas of Nigeria and indeed in many towns, facilities such as running water, mosquito or flyproof rooms, electricity or even cooking stoves and ovens for sterilising equipment are not available. In order to facilitate field work a mobile laboratory has been equipped. A Berkeley "Messenger" caravan trailer was purchased, and fitted by the Institute workshop with work benches, a refrigerator, and mouse racks with a capacity for 70 boxes, or 420 mice. Lighting is provided by battery or by extension from a mains supply. Calor gas is carried and operates lights, bunsen burners and the kitchen unit. The entire unit is fly and mosquito proof.

330. The caravan, pulled by a Land Rover, has travelled several thousands of miles, and is a vast improvement over the previous bush laboratories. Although double-walled and insulated with aluminium foil it is inclined to get hot when travelling and some mortality in baby mice was encountered from this cause. Travel by night would eliminate this drawback.

331. *Low Temperature Storage Chambers.*—The existing deep freeze models having given some trouble in maintenance, the Senior Laboratory Superintendent and Maintenance Engineer constructed a unit of about 40 gallon capacity running at a temperature of about *minus* 50 degrees Centigrade. The cost of this unit was a little over £200, which compares favourably with the commercial price of approximately ten times that amount.

Animal Colonies

332. *Mouse Colony.*—There have been no epidemics and 56,207 mice were used for experimental purposes. Since mice were being employed in the attempted isolation of unknown viruses from human cases, it was necessary to ascertain the

presence of commensal viruses within the mouse colony which might cause confusion and be mistaken for isolation from humans. The results of this investigation were :—

i. No viruses were discovered in the brain preparations.

ii. No viruses were discovered in the bloods.

iii. Theiler's virus was present in the intestine preparations.

iv. A virus has been isolated from the lung preparations and this is undergoing further investigation to determine its identity. At this stage it would appear to be a virus belonging to the mouse pneumonia group.

Research Work

333. Much of the work of the pathologist and entomologist consisted of consolidating and correlating their previous work prior to their leave. An extensive survey of yellow fever immunity among inhabitants of Onitsha Province was initiated. Later in the year field trials of yellow fever vaccine were conducted in areas shown by the surveys to have had little previous connection with yellow fever. Two epidemics of jaundice were investigated, one of which was shown to be due to yellow fever.

334. The possible viral aetiology of pyrexias of unknown origin has been sought. In this work a virus believed to be Zika virus has been isolated for the first time from a human patient and for the first time in West Africa. Two strains of poliomyelitis and a strain of herpes simplex have been isolated.

335. Entomological studies have been directed towards the role of culicoides as vectors of viral diseases, and the biting habits of *Aedes simpsoni* and *Aedes aegypti*.

336. *Yellow Fever.*—Two epidemics of jaundice suspected of being yellow fever were investigated in detail. The first proved not to be due to yellow fever, but the second was shown to be yellow fever and was investigated in detail.

337. The first epidemic occurred in Afikpo Division, Ogoja Province, during the months of November and December. The cases were widely dispersed in villages separated by 10 to 20 miles. The mobile laboratory was used. No virus was isolated from the serum of any of the patients except case No. 10. The virus isolated from this patient was shown by specificity tests not to be yellow fever and has since been identified as Zika.

338. Acute and convalescent phase sera were collected from patients and tested for the presence of yellow fever antibodies. Unpaired samples of sera taken at random from patients in the acute and convalescent phase were similarly tested. From these observations and from the histological report of the liver of a fatal case it was concluded that the outbreak was not due to yellow fever.

339. The second epidemic, at Ufuma in Awka Division, Onitsha Province, was shown to be due to yellow fever. During the first week in January 1953, a number of cases of severe jaundice with several deaths were reported from Ufuma. Of four sick persons seen on 13th January, three were suspected of having yellow fever. The mobile laboratory was established three miles away. Considerable difficulty was experienced in finding cases and there was evidence that the epidemic was on the wane. Nevertheless a field hospital under a medical officer was established. Such a hospital has considerable advantages, one being that patients are attracted to it, thus facilitating the delineation of the infected area.

340. The health authorities instigated anti-mosquito measures first against the adult mosquito in infected compounds and subsequently against the breeding places.

341. *Research work at Ufuma.*—The programme of research undertaken included comparative titrations of circulating virus made in adult and baby mice, estimations of the prothrombin time of patients, and the epidemiology of the outbreak. Infection with yellow fever resulted in a definite lowering of the prothrombin estimation. The return to normal probably runs parallel with the recovery of liver function, and is a more accurate estimate of recovery than the observation of jaundice. The wide variation in the clinical picture was again noted, some cases remaining jaundiced for several weeks.

342. A survey of serological immunity to yellow fever had been made in June 1952 of the inhabitants of Aguata, a town similarly situated to Ufuma, but 10 miles further west. No survey had been made at Ufuma prior to the epidemic, but one was done when the epidemic had virtually subsided. There was no conclusive evidence of the spread of the epidemic beyond Ufuma. If it is assumed that the previous experience of yellow fever at Ufuma was similar to that at Aguata, a study of the results indicates that about 35 *per cent* or more of those who were susceptible in Ufuma at the beginning of the epidemic contracted the disease. It also follows that there must have been between 1,000 and 1,500 cases. The mortality and morbidity figures indicate that the disease in this epidemic was relatively mild.

343. *Entomology.*—When a suspected case of yellow fever was reported, teams under the Health Department sprayed the rooms in the infected compound with aerosol. On 11 occasions sheets were laid on the floors of the rooms and the killed mosquitoes collected. Nine rooms gave a total of 32 mosquitoes, no one room supplying more than 6. One further room supplied 85 mosquitoes. All the mosquitoes were anophelines.

344. Mosquito larvae from four water pots were identified as follows :—

Pot No. 1	*Culex perfidiosus*
	Megarhinus brevipalpis
Pot No. 2	*Culex fatigans*
	Culex univittatus
	C. Lutzia tigripes
Pot No. 3	*Culex musarum*
Pot No. 4	*Aedes aegypti*

345. *Animals.*—Monkeys are scarce in the neighbourhood of Ufuma. Nevertheless there are large numbers living amongst the almost inaccessible swamps on either side of the Mamu river in and on the borders of the Mamu forest reserve. Only one monkey was shot in this area, a juvenile female. The serum was negative to protection test.

346. *Vaccination.*—On 2nd February a campaign for vaccination against yellow fever of the whole population of Ufuma and surrounding villages was commenced.

347. *Epidemiology of Yellow Fever*

(*a*) *Man.*—Surveys of humoral immunity to yellow fever in man, made in the course of investigating the epidemic in Onitsha Province last year, indicated that there were areas which had had very little experience of yellow fever for many years, although there was ample opportunity for the breeding of *Aedes aegypti* in

the numerous water pots which are used for the long term storage of water. Surveys of humoral immunity were, therefore, extended to include a wider area. The areas which had been relatively free from yellow fever are characterised by the absence of forest except those densely populated groves in which the villages are situated.

(*b*) *Monkeys.*—One is tempted to speculate that yellow fever in the areas under consideration is being spread by monkeys from a focus in the forests of the Anambra. Contact between man and monkeys, however, is slight, except in the few cases where the monkeys are used as a source of food and shot at on every possible occasion. This results in their dwelling in the more inaccessible and less frequented areas of the forest. Five monkeys were shot in December 1952 and January 1953. The sera were collected and tested for yellow fever neutralising bodies and two were positive.

348. *Yellow Fever in Plateau Province.*—An epidemic in the Jos area in November 1951 was reported in the last annual report. No satisfactory evidence of the aetiology of the disease or diseases was produced although at least one autopsy specimen of liver clearly indicated that the disease was not due to yellow fever. Nevertheless there were grounds for considering that the presence of an epidemic of yellow fever had not been definitely excluded.

349. Large numbers of specimens of sera had, however, in the earlier part of the year been collected from school children in the area subsequently visited by the epidemic. In June 1952 sera were collected from eighty-seven of these same children and tested for yellow fever antibodies. It was found that the sera of fifteen children had developed antibodies for yellow fever since January 1951. These findings indicate that yellow fever had been present on the Plateau between the dates of the two surveys. It does not of course prove that the epidemic in November 1951 was yellow fever, but the suspicion is increased. The occurrence of yellow fever in Plateau Province has been shown by immunity surveys to be rare.

350. *Yellow Fever Vaccine.*—The data accumulated during observations on reactions following the administration of *neurotropic* mouse brain vaccine have been correlated and studied. Reactions to neurotropic yellow fever vaccine can be classified as "mild", "viscerotropic" and "neurotropic". The mild reactions were characterised by fever and headache. Circulating virus was demonstrated in the blood stream at a low titre on the fifth to seventh day after vaccination. Viscerotropic reactions were very rare but exhibited evidence of lesions to the liver and kidneys in the transient appearance of jaundice and albuminuria. In the one case examined by laboratory methods the titre of the circulating virus was higher than in mild cases and a higher degree of humoral immunity was produced. Neurotropic reactions were observed mostly in children. Neurotropic yellow fever virus was isolated from three out of four children dying with an encephalitis from the fourteenth to the nineteenth day after vaccination. Sections of brain material exhibited maximum lesions in the mid- and hind-brain. The lesions were typified by discrete areas of focal necrosis. Slight infiltration with small round cells and perivascular cuffing was occasionally observed.

351. *Storage Properties of Yellow Fever Vaccine.*—All batches of vaccine received were titrated on receipt and at intervals thereafter. The different procedures employed are according to what is believed to be those of the manufacturers of the different products.

352. *Laboratory Service Yellow Fever Vaccine.*—The Institute co-operated with the Laboratory Service in testing their vaccine and sera from field trials (*see* paragraph 262). Safety tests on seed lots of vaccine have been performed, employing monkeys. Advice and assistance is being given to the Laboratory Service so that they may conduct their own protection tests. The acute convalescent phase sera of six patients proven to have had yellow fever have been tested for neutralisation against Uganda S virus. There is a marked rise in the neutralisation index in the convalescent phase sera. A marked rise was noted in cases which showed an initial low neutralisation and in one which showed no initial neutralisation. Attempts will be made to see how long the enhanced neutralisation persists.

353. *Influenza.*—No clinical cases of influenza were notified to the Institute. Unsuccessful attempts were made to isolate the virus from cases of mild pyrexia, headache and cough, or sore throat. A strain of F.M.I., received from the World Health Organisation Influenza Centre, was successfully cultivated and a stock desiccate prepared. Strains of Lee and B/London received from the same source could not be cultivated on their arrival. Strains of Lee, Cam, and Md.B were obtained from the Walter & Eliza Hall Institute, Melbourne, and successfully cultivated.

354. *Poliomyelitis.*—Specimens of stool were collected from a European adult male suffering from poliomyelitis. A strain of poliomyelitis virus was isolated by the intranasal inoculation of a rhesus monkey with a preparation of this material. Unsuccessful attempts were made to adapt the strain to Swiss mice. The conclusion is reached that this strain is not of the Lansing type. Another strain of poliomyelitis was later isolated from the stools of another European adult male also suffering from the disease.

355. *Dengue.*—Specimens of sera were sent to Dr R. W. Schlesinger at the Public Health Research Institute of the City of New York, U.S.A., who tested them for neutralisation against the New Guinea B strain of dengue. Of twenty specimens collected in Ilaro, Abeokuta Province, five definitely neutralised 50-64 L.D. 50 in mice, five were equivocal and ten were negative. Specimens of sera collected from a European adult male in the acute and convalescent phase of a disease clinically resembling dengue showed no neutralisation.

Entomology

356. *Colonies.*—Four colonies of *Aedes aegypti* are being maintained. These originated from Poona, Karachi, Delhi, and a local source, Ikeja. Eggs were received from Malaya but attempts at hatching these proved fruitless, probably owing to the fact that they were inadvertently refrigerated on arrival. No outstanding difference was shown between the four strains. Dr Busvine of the London School of Tropical Medicine and Hygiene conducted experiments on the four strains for their susceptibility to insecticides. No significant difference was demonstrated.

357. *Biting Habits of A. aegypti.*—Surveys of immunity to yellow fever made after the passages of epidemics at Ogbomosho, 1946, Iwollo, 1952, and less conclusively at Ufuma, 1953, have indicated that young children are less exposed to infection than their elders. The habit of children playing in and around the house does not indicate that their behaviour and customs are likely to influence

their being bitten by mosquitoes but rather that the mosquitoes themselves bite the older age groups more than the younger. Experiments are being conducted to elucidate the situation.

358. *Culicoides.*—A number of catches of culicoides have been made, but attempts at isolation of any viruses for which they may be carriers have, so far, proved negative. This work continues and good catches are being made in the village of Ogwudu near Yaba.

6.—TUBERCULOSIS SURVEY UNIT

359. The Unit, founded last year, has as its primary task a survey of the whole country to establish more factual knowledge of the incidence and severity of this disease, and of the factors influencing its dissemination, so that preventive and curative measures can be rationally planned. Subsidiary tasks include the supervision of departmental staff highly exposed to or suffering from tuberculosis, the screening of the majority of the chest X-rays required for students proceeding overseas, supervision of the Lagos Chest Clinic and fixed Mass Miniature Radiography unit, and general advisory functions. With only one doctor for the general work of the Unit (the other being in charge of the Lagos Chest Clinic), one radiographer, a small junior staff, and the inevitable absences on leave, it is as yet difficult to integrate all the tasks that have to be done and to maintain a steady turnover in fact-finding survey work.

360. During the year a further 33,000 tuberculin tests were done, using the Heaf multiple puncture method and Weybridge Old Tuberculin. Mantoux tests with 5 units and 100 units of the same tuberculin were also done. By the end of the year it was evident that either there was much non-specific tuberculin sensitivity or that modification was required in interpretation of the tests. The incidence of disease disclosed in miniature radiographic surveys was too low to accord with the proportion of tuberculin positive persons in the population. Because of sampling difficulties, failure of many to attend when recalled for detailed examination, lack of doctors for double reading of all films and failure, through non-attendance or lack of facilities, to obtain laboratory proof of the disease, figures from surveys are not yet sufficiently complete or reliable to be quoted extensively. Only a crude indication of incidence may be derived from the following two sets of figures :—

(*i*) *Western Region towns.*—Among 3,046 adults of both sexes, thirty-four were suspected to have tuberculosis on miniature films. Among the ninety-six large films taken for various reasons from this group of 3,046 persons twenty-three were suspected, but only ten were proven (six by direct smear, four by culture) to be tuberculosis.

(*ii*) *Lagos Ante-natal Clinic.*—2,600 women were examined at the Lagos Mass Miniature Radiography Unit, and thirteen were suspects. Only a quarter of the total recalled for large films attended and only two of the original thirteen suspects were shown to have tuberculosis.

Only when much larger samples have been examined and various errors eliminated will it be possible to analyse the results and draw valid conclusions.

361. The two specially built vans, costing £19,000, which constitute the Mobile Mass Miniature Radiography Unit were delivered in June 1952, but could not be used fully until late in the year when the radiographer resumed duty. In the dry season they proved satisfactory in use and travelled well on main roads,

mostly tarred, in the Western Region. In Lagos the Chest Clinic moved to a more spacious building and was equipped with a shock-proof Thorascope screening set. Approximately ten new patients attended the Chest Clinic daily and tuberculosis was found in ten *per cent*.

362. The Specialist prepared a Memorandum on Tuberculosis which was endorsed by the Council of Ministers and forwarded to Regional Executive Councils. He also represented Nigeria at the 1952 N.A.P.T. Commonwealth and Empire Conference. During 1952-53 he visited all three Regions and examined and X-rayed many nurses and other departmental staff. An improved system of reporting cases of tuberculosis in departmental staff was introduced; seven nurses and midwives were found to have tuberculosis but none died and only two were invalided. Regulations have been in force since 1949 limiting nurses' periods of duty in tuberculosis wards and requiring that they be tuberculin tested and X-rayed before and after such duty. B.C.G. vaccine was given to some. During the year a special duty allowance was introduced for staff employed in tuberculosis wards.

363. Treatment with streptomycin and PAS was extended and many encouraging results were obtained. Professor Brown of University College, Ibadan, treated a selected group several of whom are back in gainful occupation within two years of the onset of symptoms. The attempted control, through a committee, of the use of streptomycin was abandoned after six months. During this period tuberculous meningitis was made specially notifiable but only four cases were reported, one of whom, an African girl aged six, was successfully treated and is now in normal health. Nine cases were, however, diagnosed by post mortem examination in Lagos. The suggestion that tuberculous meningitis may be rare in Nigeria is due to be investigated. If its incidence is, in fact, low, it may be speculated either that the incidence of open pulmonary infections is low, or that infants exposed to massive infection from such cases have a degree of natural resistance. Some explanation of the apparent rarity of meningeal infection is required in Nigerian towns like Lagos where there are many cases of tuberculosis and much overcrowding. For example, in Lagos, over 400 *new* cases attended the Chest Clinic in twelve months and it is estimated that over half of the houses in the town are overcrowded.

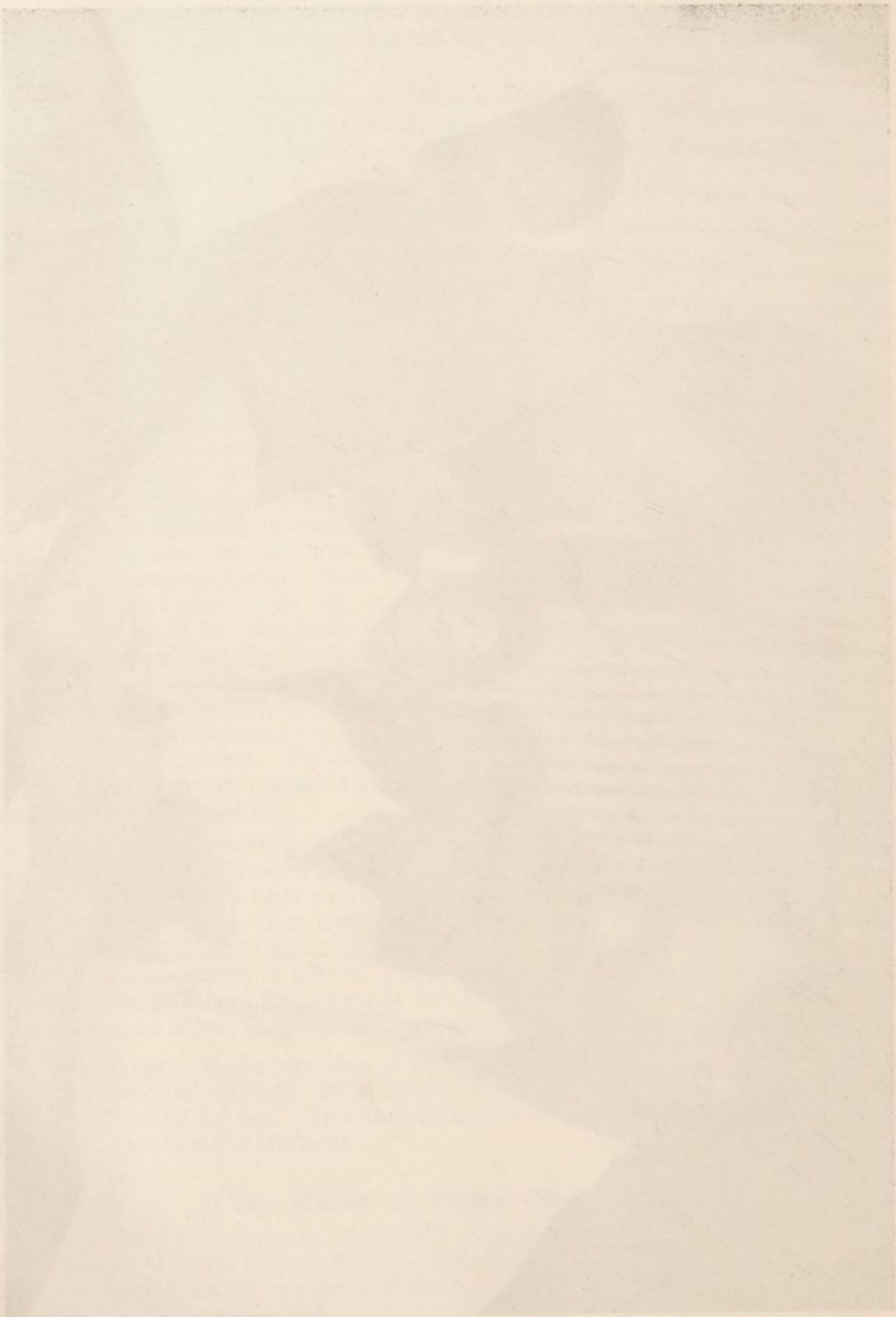
364. Treatment with isoniazid has produced results similar to those reported elsewhere. The best results generally come from the Western Region, which at the moment has more beds available for tuberculosis patients and more doctors specially interested in their treatment than any other Region. There is a very largely attended clinic at Ibadan. In contrast to the Eastern and Western Regions, where a fair proportion of patients are prepared for a lengthy stay in the hospital, patients in the Northern Region rarely stay long enough to obtain much benefit and, from this factor alone, the prognosis is probably worse in the North than elsewhere.

365. Progress in the provision of 16-bed tuberculosis pavilions in each province has been slow and difficult, but in Lagos an extension to the tuberculosis ward at Yaba was opened for use. This allowed nearly all tuberculosis cases to be cleared from the Lagos General Hospital.

XVI.—MEDICAL WORK OF MISSIONS

366. Details are given in Chapters V, VII and VIII of the contributions made by Christian Missions in their three main fields of effort—leprosy control, hospital care and the welfare of mothers and children. These services are being extended,

TUBERCULIN TESTING IN INDUSTRY, TUBERCULOSIS SURVEY UNIT LAGOS



in many cases with the aid of Government grants. Staff of missions serve on statutory and advisory boards which regulate the training and registration of junior personnel and advise on policy.

367. In the *Northern Region* thirteen missions are responsible for twelve general and special hospitals with almost 600 beds, which treated 15,000 in-patients and 70,000 out-patients, for fourteen leprosy settlements, which have 250 beds, for sixty-two leprosy segregation villages or clinics and for seven maternity homes and 140 dispensaries.

368. Eight missions have hospitals in the *Eastern Region* which provide 1,788 beds. In their programme of expansion the need for trained staff is kept in view and facilities for training nurses and midwives are being continually improved. Maternity work is a feature and there are fifty-five maternity centres with over 400 beds. The contribution to leprosy control is notable, with six settlements in being and one building.

369. The six missions operating in the *Western Region* provide facilities mainly in the smaller towns and villages. There are eight hospitals with 566 beds, twenty-six maternity homes with 225 beds, three dispensaries, one leprosy settlement and twelve segregation villages or camps.

XVII.—LIAISON WITH PRIVATE MEDICAL PRACTITIONERS

370. There are no private medical institutions in the Northern Region and only two private practitioners, in addition to whom the Colonial Development Corporation employs one medical officer at Mokwa. The Eastern Region has about twenty private practitioners, most of whom prefer urban to rural practice. The success of the Onitsha Health Week owed much to their co-operation. There are now also a number of doctors employed by firms and corporations. The Western Region has rather more private practitioners but fewer medical officers employed by firms. Hopes that private practitioners would accept part-time employment with Government or Local Governments have not yet been fulfilled.

XVIII.—MEDICAL INTERNATIONAL LIAISON

371. The Inspector-General attended the four conferences described below.

372. The third Conference of Directors of West African Medical Services was held at Ibadan in March 1952. Questions discussed, *inter alia*, were recruitment and training, international co-operation, notification of epidemics, rural health policy and health insurance.

373. The first meeting of the West African Advisory Committee on Medical Research followed at Ibadan in early April and recommended the establishment of a West African Council of Medical Research as the most efficient means of reorganizing and administering research.

374. At the Conference of Heads of Colonial Medical Departments, held at Oxford in July 1952, the agenda included discussions on recruitment and other personnel matters, the health aspects of development schemes, rural health services, health education, research, nutrition, tuberculosis, leprosy, industrial and mental diseases, and international health organizations.

375. The Inspector-General led the United Kingdom Delegation to the second session of the Regional Committee for Africa of the World Health Organization, held at Monrovia in August 1952. He outlined Nigeria's needs and discussed schemes for the control or investigation of yaws, malaria, leprosy, tuberculosis, and onchocerciasis, for the production of vaccine and dried buttermilk, for assistance to educational institutes and for fellowships. Funds have been tentatively allocated for certain of these pending local investigation by WHO experts.

376. Officers from Ibadan, Abeokuta, Kano, Katsina, Yola, Kumba, Mamfe and Victoria continued to foster liaison with French medical staff through visits and conferences. Weekly bulletins of infectious diseases were exchanged between Regional headquarters and Porto Novo and Niamey, and between Central headquarters and all neighbouring territories.

XIX.—DISTINGUISHED VISITORS

377. The visit of Dr J. R. C. Buchanan, C.M.G., M.D., F.R.C.P., Principal Medical Officer, Colonial Office extended into April 1952.

378. Four members of the Nuffield Panel of Consultants were in Nigeria during the year, *viz.*

Paediatrics	... ...	Professor R. W. B. Ellis, O.B.E., M.A., M.D., F.R.C.P., Professor of Child Health, Edinburgh University.
Orthopaedic Surgery	...	Professor H. J. Seddon, C.M.G., M.A., D.M., F.R.C.S., Director, National Orthopaedic Hospital, London.
Radiology	... ...	Dr J. H. Middlemiss, M.D., D.M.R.D., F.F.R., Director of Radiology, United Bristol Hospitals.
Venereal Diseases	...	Dr R. Lees, M.D., F.R.C.P., Director, St. Luke's Hospital, Manchester.

379. In addition to Dr Brock Chisholm, Director-General, Lieutenant-General Daubenton, Regional Director, both of the World Health Organization, and Dr C. Egger, Regional Director of the United Nations' Children's Fund, six other WHO or UNICEF officers visited Nigeria. Among numerous other visitors were Major-General T. Young, Director of Army Health, Brigadier C. E. Eccles (D.D.M.S., W. Africa Command), Professor B. G. Maegraith (Liverpool School of Tropical Medicine), Dr J. N. Togba (Liberia), Dr W. A. McIntosh (Rockfeller Foundation), and Dr R. Cochrane (B.E.L.R.A.).

S. L. A. MANUWA,
Inspector-General of Medical Services

Medical Headquarters,
Lagos, 10th July, 1954

APPENDIX I

Return of Diseases and Deaths for the year 1952-53
Government and Native Administration Hospitals

No.	Diseases	In-patients	Deaths	Out-patients	Deaths
1	Typhoid and paratyphoid fever	204	24	9	—
2	Plague	—	—	—	—
3	Scarlet fever	—	—	21	—
4	Whooping cough	415	31	3,987	—
5	Diphtheria	9	3	6	—
6	Tuberculosis of the respiratory system	1,361	402	1,455	—
7	All other forms of tuberculosis	467	68	544	3
8	Purulent infection and septicaemia (non-puerperal)	213	27	106	—
9	Dysentery	4,247	241	24,153	—
10	Malaria	12,758	347	144,963	1
11	Syphilis	6,263	48	20,511	—
12	Yellow fever	1	1	1	—
13	Smallpox	803	89	236	—
14	Rabies	26	18	33	—
15	Typhus fever	6	—	6	—
16	Diseases due to helminths	5,775	47	75,400	—
17	Other infective or parasitic diseases	8,300	391	62,711	10
18	Cancer and other malignant tumours of the buccal cavity and pharynx	11	2	41	—
19	Cancer and other malignant tumours of the digestive organs and peritoneum	227	55	3,289	—
20	Cancer and other malignant tumours of the respiratory system	15	4	1	—
21	Cancer and other malignant tumours of the uterus	60	13	23	—
22	Cancer and other malignant tumours of the breast	41	4	51	—
23	Cancer and other malignant tumours of other or unspecified organs	445	34	605	—
24	Non-malignant tumours or tumours of undetermined nature	964	22	3,736	—
25	Rheumatic fever	203	3	982	—
26	Chronic rheumatism and gout	1,730	11	64,963	—
27	Diabetes	299	19	320	—
28	Diseases of the thyroid and parathyroid glands	190	10	603	—
29	Other general diseases	174	6	4,687	—
30	Vitamin deficiency diseases	905	77	14,224	—
31	Pernicious and other anaemias	2,032	171	16,472	—
32	Leukaemias and other diseases of the blood and blood-forming organs	532	54	5,532	—
33	Chronic or acute alcoholism	17	—	12	—
34	Other chronic poisonings	57	14	142	—
35	Diseases of the medulla and spinal cord, other than locomotor ataxia	212	69	21	—
36	Non-meningococcal meningitis	35	4	10	—
37	Intra-cranial lesions of vascular origin	336	71	231	—
38	Mental disorders and deficiency	729	47	180	—
39	Epilepsy	261	11	597	—
40	Other diseases of the nervous system	871	72	10,966	—
41	Diseases of the eye, ear and their annexa	4,519	14	92,982	—
42	Pericarditis (including chronic rheumatic pericarditis)	35	4	30	—
43	Chronic affections of the valves and endocardium	46	9	81	—
44	Diseases of the myocardium, including aneurysm of the heart	467	74	576	—
45	Diseases of the coronary arteries and angina pectoris	29	1	16	—
46	Other diseases of the heart	700	190	1,442	2
47	Arteriosclerosis and gangrene	131	18	62	—
48	Other diseases of the circulatory system	1,541	22	11,409	—
49	Bronchitis	3,701	66	77,411	—
50	Pneumonia and broncho-pneumonia	7,479	651	5,995	—

APPENDIX I—continued

RETURN OF DISEASES AND DEATHS FOR THE YEAR 1952-53
GOVERNMENT AND NATIVE ADMINISTRATION HOSPITALS

No.	*Diseases*	*In-patients*	*Deaths*	*Out-patients*	*Deaths*
51	Pleurisy (non-tuberculous)	343	23	2,221	—
52	Other diseases of the respiratory system except tuberculosis	1,210	38	17,078	—
53	Ulcer of the stomach or duodenum	764	37	3,137	1
54	Diarrhoea and enteritis (under two years of age)	1,322	190	18,082	—
55	Diarrhoea, enteritis and ulceration of the intestine (two years of age and over)	1,992	87	30,636	—
56	Appendicitis	259	13	236	—
57	Hernia and intestinal obstruction	9,537	235	7,281	—
58	Cirrhosis of the liver	431	75	533	—
59	Other diseases of the liver and biliary passages, including biliary calculi	1,983	109	70,967	—
60	Other diseases of the digestive system	3,817	191	60,868	—
61	Other diseases of the kidneys and ureters	295	21	831	—
62	Nephritis	792	113	1,332	2
63	Calculi of the urinary passages	109	8	142	—
64	Diseases of the bladder, except tumours	506	27	3,324	—
65	Diseases of the urethra, urinary abscess, etc.	1,260	34	3,481	—
66	Diseases of the prostate	88	3	176	—
67	Other diseases of the genital organs, not specified as venereal or connected with pregnancy or the puerperal state	8,215	87	30,031	—
68	Diseases and accidents of pregnancy	2,282	125	6,451	—
69	Abortion without mention of septic conditions	3,067	31	2,945	—
70	Post-abortive infection	114	10	170	—
71	Infection during child-birth and the puerperium	335	21	309	—
72	Other accidents and diseases of child-birth and the puerperium	21,915	207	888	—
73	Diseases of the skin and cellular tissues	16,090	125	222,406	—
74	Diseases of the bones and organs of movement, except tuberculosis and rheumatism	2,019	24	24,470	—
75	Congenital malformations (still-births excepted)	189	23	660	1
76	Congenital debility	179	22	4,440	—
77	Premature births (still-births excluded)	307	102	73	—
78	Injury at birth (still-births excluded)	79	14	25	—
79	Other diseases peculiar to the first year of life	311	56	1,007	—
80	Senility, old age	175	28	648	—
81	Suicide	7	1	—	—
82	Homicide	112	5	5	—
83	Automobile accidents (all motor-driven road vehicles)	698	24	811	2
84	Other violent or accidental injuries (automobile accidents excepted)	13,032	348	121,602	—
85	Injuries of persons in military service during, and of civilians due to, operations of war	42	—	250	—
86	Causes of illness unstated or ill-defined	1,910	87	26,351	—
87	Other diseases	799	108	46,767	—
88	Normal delivery	7,772	12	455	—
	Totals	174,199	6,223	1,363,424	25

APPENDIX II

SUMMARY OF DISEASES TREATED IN HOSPITALS, BY REGIONS

	Group		*North*		*East*		*West*	
I	Infective and Parasitic Diseases ..	C	25,246	(35)	8,159	(17)	7,413	(16)
		D	882	(35)	329	(20)	512	(25)
		CMR	3.5		4		7	
		OP	128,334	(29)	90,876	(22)	114,866	(23)
II	Neoplasms	C	623	(0.9)	608	(1.3)	532	(1.1)
		D	61	(2.4)	25	(1.5)	48	(2.4)
		CMR	10		4		9	
		OP	1,227	(0.3)	1,603	(0.4)	2,138	(0.42)
III	Allergic, Endocrine system, Metabolic, and Nutritional Diseases.	C	474	(0.7)	389	(0.8)	705	(1.5)
		D	38	(1.5)	28	(1.7)	31	(1.5)
		CMR	8		7		4	
		OP	1,625	(0.4)	5,734	(1.4)	12,394	(2.5)
IV	Diseases of Blood and Blood-forming organs.	C	1,113	(1.5)	607	(1.3)	843	(1)
		D	68	(2.7)	64	(3.9)	92	(4.6)
		CMR	6		11		11	
		OP	5,125	(1.2)	9,967	(2.5)	6,909	(1.4)
V	Mental, Psychoneurotic and Personality Disorders	C	165	(0.2)	108	(0.2)	530	(1.1)
		D	11	(0.4)	17	(1.0)	33	(1.6)
		CMR	7		16		16	
		OP	67	(0.02)	119	(0.03)	148	(0.03)
VI	Diseases of the Nervous System and Sense Organs.	C	3,483	(5)	775	(1.7)	1,962	(4
		D	92	(3.6)	48	(3)	101	(5)
		CMR	2.6		6		5	
		OP	35,562	(8)	23,879	(6)	45,340	(9)
VII	Diseases of the Circulatory System ..	C	1,234	(1.7)	851	(1.8)	1,067	(2.3)
		D	174	(7)	52	(3)	95	(4.7)
		CMR	14		6		9	
		OP	3,727	(0.8)	4,762	(1.2)	6,109	(1.2)
VIII	Diseases of the Respiratory System ..	C	5,812	(8)	3,540	(7.5)	3,379	(7)
		D	309	(12)	181	(11)	288	(14)
		CMR	5		5		5	
		OP	28,670	(6.4)	27,316	(6.7)	46,714	(9.3)
IX	Diseases of the Digestive System ..	C	6,464	(9)	8,313	(18)	5,328	(11)
		D	303	(12)	282	(17)	352	(18)
		CMR	5		3		7	
		OP	53,081	(12)	81,912	(20)	59,506	(12)
X	Diseases of the Genito-Urinary System	C	4,825	(7)	3,636	(8)	2,804	(6)
		D	151	(6)	64	(4)	78	(4)
		CMR	3		2		2	
		OP	14,898	(3.3)	11,351	(2.8)	10,473	(2.1)
XI	Deliveries and complications of Pregnancy, Child-birth and the Puerperium.	C	5,624	(8)	9,400	(20)	12,609	(27)
		D	66	(3)	157		171	(8.5)
		CMR	1.2		1.7		1.4	
		OP	4,367	(1.0)	4,660	(1.1)	2,236	(0.4)
XII	Diseases of the Skin and Cellular Tissue	C	9,107	(13)	3,894	(8)	3,081	(7)
		D	67	(3)	42	(3)	16	(1)
		CMR	0.7		1.1		0.5	
		OP	67,020	(15)	65,254	(16)	90,103	(18)
XIII	Diseases of the Bones and Organs of Movement.	C	1,644	(2.3)	987	(2)	920	(18)
		D	16	(0.6)	4	(0.25)	15	(0.8)
		CMR	1.0		0.4		1.6	
		OP	21,403	(4.8)	32,999	(8.1)	34,698	(6.9)
XIV	Congenital Malformations	C	42	(0.1)	51	(0.1)	96	(0.2)
		D	6	(0.2)	11	(0.7)	6	(0.2)
		CMR	14		22		6	
		OP	333	(0.1)	193	(0.05)	134	(0.03)

APPENDIX II—continued

SUMMARY OF DISEASES TREATED IN HOSPITALS, BY REGIONS

Group		*North*	*East*	*West*
XV Certain Diseases of early infancy ..	C	178 (0.3)	369 (0.8)	313 (0.7)
	D	37 (1.5)	111 (7)	46 (2.3)
	CMR	21	30	15
	OP	942 (0.2)	832 (0.2)	3,726 (0.7)
XVI Symptoms, Senility, and Ill-defined Conditions.	C	604 (0.8)	1,276 (2.7)	1,004 (2)
	D	58 (2.3)	129 (8)	36 (1.8)
	CMR	10	10	3.6
	OP	50,064 (11)	4,821 (1.2)	18,833 (3.7)
XVII Accidents, Poisonings, and Violence ..	C	5,499 (7.6)	3,998 (8.5)	4,171 (9)
	D	203 (8)	84 (5.2)	90 (4.5)
	CMR	3.5	3.5	4.3
	OP	30,145 (6.8)	41,289 (10)	50,778 (10)
TOTALS	C	72,137	46,961	46,757
	D	2,548	1,624	2,010
	CMR	3.5	3.5	4.3
	OP	46,590	407,576	505,105

Note.—C = In-patient cases D = In-patient deaths CMR = In-patient case mortality rate *per cent*
OP = Out-patient cases The figures in brackets are percentages of the totals for that item.

APPENDIX III

A.—GENERAL PATHOLOGICAL WORK OF REGIONAL LABORATORIES

	Northern Region		*Eastern Region*		*Western Region*	
	No.	*Per Cent*	*No.*	*Per Cent*	*No.*	*Per Cent*
BLOOD EXAMINATIONS						
No. of examinations	21,696	—	20,737	—	13,020	—
P. falciparum	5,631	26.0	4,378	21.1	2,458	18.9
P. malariae	5	0.02	62	0.3	307	2.4
P. ovale	1	0.005	0	0	19	0.2
Microfilariae	232	1.1	1,395	6.7	128	1.0
Trypanosomes	0	0	14	0.07	7	0.05
Blood counts	1,422	6.6	3,480	16.8	5,281	40.6
STOOL EXAMINATIONS						
No. of examinations	21,246	—	17,404	—	13,910	—
Ova of taenia	413	1.9	55	0.3	52	0.4
Ova of ascaris	2,135	10.0	4,455	25.6	4,525	32.5
Ova of ankylostoma	4,370	20.6	4,905	28.2	2,883	20.7
Ova of schistosoma	198	0.9	5	0.03	24	0.2
E. histolytica	816	3.8	1,062	6.1	469	3.4
URINE EXAMINATIONS						
No. of examinations	23,826	—	16,020	—	14,465	—
Ova of schistosoma	1,726	7.2	143	0.9	304	2.1
SPUTUM EXAMINATIONS						
No. of examinations	3,491	—	4,379	—	5,069	—
No. of patients	2,989	—	3,478	—	4,554	—
No. of A.F.B.—positive	747	—	539	—	1,305	—
Per cent positive patients	—	25.0	—	15.5	—	28.7
SMEARS, GONOCOCCAL						
No. of examinations	1,813	—	1,862	—	4,399	—
No. positive	771	42.5	660	35.5	2,195	49.9
SMEARS, LEPROSY						
Skin scrapings	164	—	10,897	—	4,089	—
No. positive	14	8.5	3,472	31.9	1,324	32.3
Nasal smears	112	—	3,101	—	2,820	—
No. positive	9	8.0	475	15.3	1,245	44.2
TOTAL EXAMINATIONS	72,348	—	74,400	—	57,772	—

B—Pathology Department Lagos

N.B.—This table excludes examinations reported in Table A.

Biochemical investigations	1,276
Dark-ground examinations	69
Forensic Science investigations	354
Photographs	14
Yellow fever inoculations	2,708
Miscellaneous examinations	291
Histopathology	
Preparations reported on	748
Tissues received	1,150
Blocks cut	2,190
Slides stained	2,441
Benign tumours	141
Malignant tumours	135
Post-mortems	
Post-mortem, Coroners	557
Post-mortem, Public Health	195
Post-mortem, Hospital	135
Blood examinations (other than in Table A)	
Sedimentation rate	508
Sickling	132
Blood grouping—ABO	777
Blood grouping—Rh	453
Other blood examinations	56
Miscellaneous examinations	291

C—Bacteriology, Yaba Laboratory

Blood Cultures	No.	111	Sterile	91
	Staphylococcus	10	Streptococcus	2
	S. typhi	2	Other organisms	6
Stool Cultures	No.	1,021		
	Shig. flexneri	86	*Shig. schmitz*	16
	Shig. sonnei	6	*Shig. newcastle*	2
	Shig. shiga	13	*Shig. boyd*	1
	Salmonella group	13	Shig. (inagglutinable)	45
Urine Cultures	No.	323	No. sterile	143
	B. coli	128	Other organisms	52
Other examinations	No.	10,870		
	Pus	80	Pleural and Ascitic fluid	50
	Sputum, urine and stool cultures for M. Tuberculosis			39
	Throat swabs	49	Effusions	28
	Guinea pig inoculations			44
	Aschheim Zondek tests			33
	Smears for *B. pestis*			9,916
	Smears for *B. anthracis*			23
	Male Toad Pregnancy tests			555
	Miscellaneous			53

D—Serology, Yaba Laboratory

Test	No. of tests	No. positive	Percentage positive	No. doubtful	Percentage doubtful
Widal	207	10	—	—	—
Weil Felix	187	6	—	—	—
Br. abortus	78	1	—	—	—
Paul Bunnell	23	4	—	—	—
Kahn (blood)	10,618	2,227	—	497	—
Kahn (C.S.F.)	114	29	—	5	—
Wasserman	1,974	376	—	315	—
Richardson's verification	315	—	—	—	—
Ide	1,810	444	—	—	—
V.D.R.L. (Harris)	1,173	249	—	—	—
Gonococcal complement-fixation	19	—	—	—	—
Total tests	16,518	—	—	—	—

E—Other Work of Laboratory Service

Rabies	No. of brains examined	121
	Human brains positive	1
	Dog brains positive	44
	Cat brains positive	1
Rabies Vaccine	No. of sheep inoculated	173
	Percentage harvested	81.0
	Vaccine produced	263,925 ml
Smallpox Vaccine	Pulp produced	25,221 gram
	Pulp used for vaccine	21,875 gram
	No. of doses vaccine produced	6,125,000
	No. of doses vaccine issued	4,347,960
	Total stock	15,677,400 doses

APPENDIX IV

In-patients: Incidence of Disease per 100,000 Population 1952-53

	Group	In-patients		
		North 16,840,479	*East* 7,972,934	*West* 6,368,679
I	Infective and Parasitic Diseases	149.91	102.33	116.40
II	Neoplasm	3.70	7.63	8.35
III	Allergic, Endocrine, Metabolic System and Nutrition	2.81	4.88	11.07
IV	Diseases of the Blood and Blood-forming Organs	6.61	7.61	13.24
V	Mental, Psychoneurotic and Personality Disorders	0.98	1.35	8.32
VI	Diseases of the Nervous System and Sense Organs	20.68	9.72	30.81
VII	Diseases of the Circulatory System	7.33	10.67	16.75
VIII	Diseases of the Respiratory System	34.51	44.40	53.06
IX	Diseases of the Digestive System	38.38	104.26	83.66
X	Diseases of the Genito-Urinary System	28.65	45.60	44.03
XI	Deliveries and Complications of Pregnancy Childbirth and the Puerperium	33.40	117.90	197.98
XII	Diseases of the Skin and Cellular Tissues	54.08	48.84	48.38
XIII	Diseases of the Bones and Organs of Movement	9.76	12.38	14.45
XIV	Congenital Malformations	0.25	0.64	1.51
XV	Certain Diseases of Early Infancy	1.06	4.63	4.91
XVI	Symptoms, Senility and Ill-Defined Conditions	3.59	16.00	15.76
XVII	Accidents, Poisoning and Violence	32.65	50.14	65.49

APPENDIX V

OUT-PATIENTS : INCIDENCE OF DISEASES PER 100,000 POPULATION—1952-53

	Group	*North*	*East*	*West*
I	Infective and Parasitic Diseases	76.20	113.98	180.36
II	Neoplasm	0.72	2.01	3.35
III	Allergic, Endocrine, Metabolic and Nutrition	0.96	7.19	19.46
IV	Diseases of the Blood and Blood-forming Organs	3.04	12.50	10.84
V	Mental, Psychoneurotic and Personality Disorders ..	0.04	0.14	0.23
VI	Diseases of the Nervous System and Sense Organs ..	21.12	29.95	71.19
VII	Diseases of the Circulatory System	2.21	5.97	9.59
VIII	Diseases of the Respiratory System	17.02	34.26	73.35
IX	Diseases of the Digestive System	31.52	102.74	93.44
X	Diseases of the Genito-Urinary System	8.85	14.24	16.44
XI	Deliveries and Complications of Pregnancy, Child-birth and the Puerperium	2.59	5.85	3.51
XII	Diseases of the Skin and other Cellular Tissues	39.79	81.84	141.48
XIII	Diseases of the Bones and Organs of Movement	12.71	41.39	54.48
XIV	Congenital Malformations	0.20	0.24	0.21
XV	Certain Diseases of Early Infancy	0.56	1.04	5.85
XVI	Symptoms, Senility and Ill-Defined Conditions	29.73	6.07	29.57
XVII	Accidents, Poisoning and Violence	17.90	51.79	79.73

APPENDIX VI

IN-PATIENTS : CASE MORTALITY RATE—1952-53

	Group	*North*	*East*	*West*
I	Infective and Parasitic Diseases	3.52	3.98	6.91
II	Neoplasm	9.79	4.11	9.02
III	Allergic, Endocrine, Metabolic and Nutrition	8.02	7.20	4.40
IV	Diseases of the Blood and Blood-forming Organs	6.11	10.54	10.91
V	Mental, Psychoneurotic and Personality Disorders	6.67	15.74	6.23
VI	Diseases of the Nervous System and Sense Organs	2.64	6.19	5.15
VII	Diseases of the Circulatory System	14.10	6.11	8.90
VIII	Diseases of the Respiratory System	5.32	5.11	8.52
IX	Diseases of the Digestive System	4.69	3.39	6.61
X	Diseases of the Genito-Urinary System	3.13	1.76	2.78
XI	Deliveries and Complications of Pregnancy, Child-birth and the Puerperium	1.17	1.67	1.36
XII	Diseases of the Skin and Cellular Tissues	0.74	1.08	0.52
XIII	Diseases of the Bones and Organs of Movement	0.97	0.41	1.63
XIV	Congenital Malformations	14.29	21.57	6.25
XV	Certain Diseases of Early Infancy	20.79	30.08	14.70
XVI	Symptoms, Senility and Ill-Defined Conditions	9.60	10.11	3.58
XVII	Accidents, Poisoning and Violence	3.69	2.10	2.16

CHART I

DEPARTMENTAL ORGANISATION

1952-53

MEDICAL DIVISIONS AND AREAS.

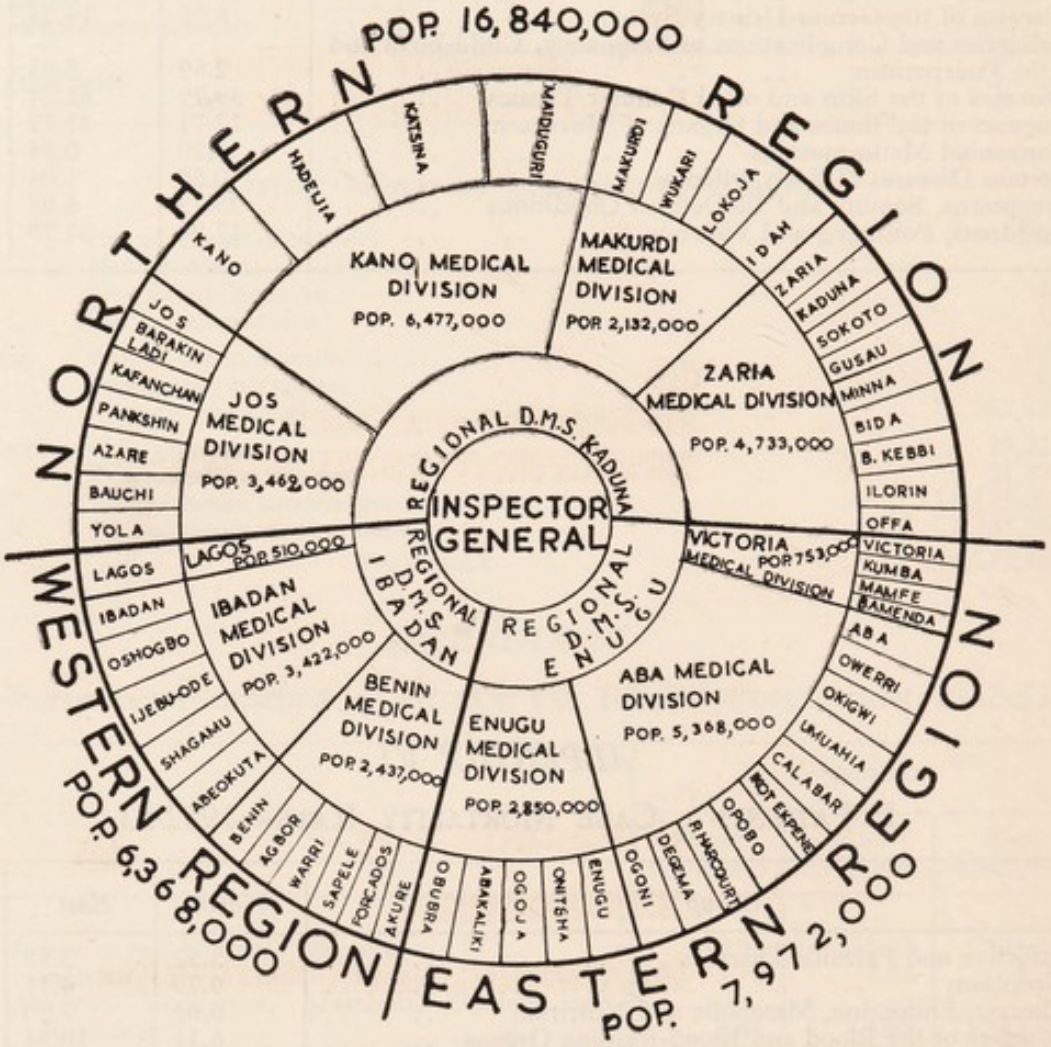
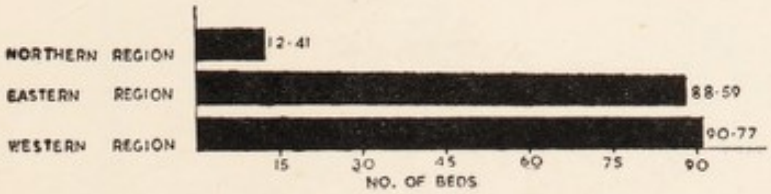


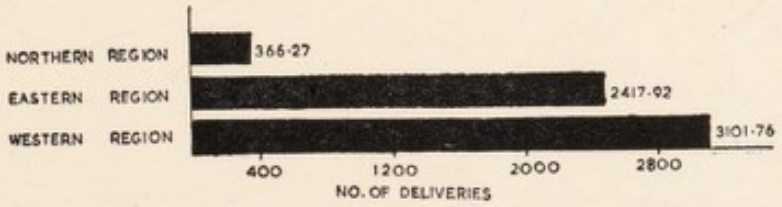
CHART II

GOVERNMENT AND NATIVE ADMIN. MATERNITY WORK 1952-53.

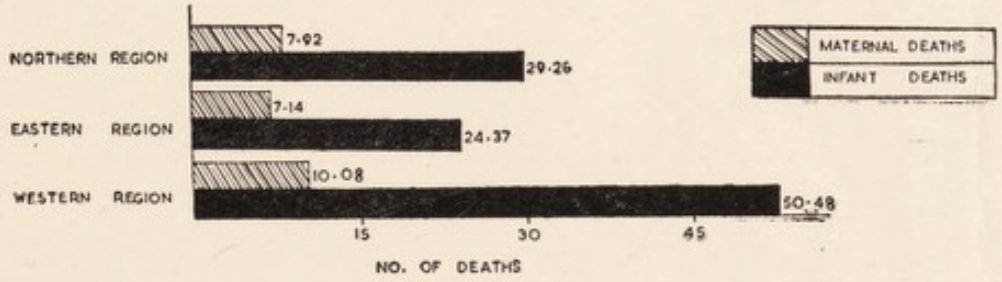
NO. OF BEDS PER MILLION POPULATION



NO. OF DELIVERIES PER MILLION POPULATION

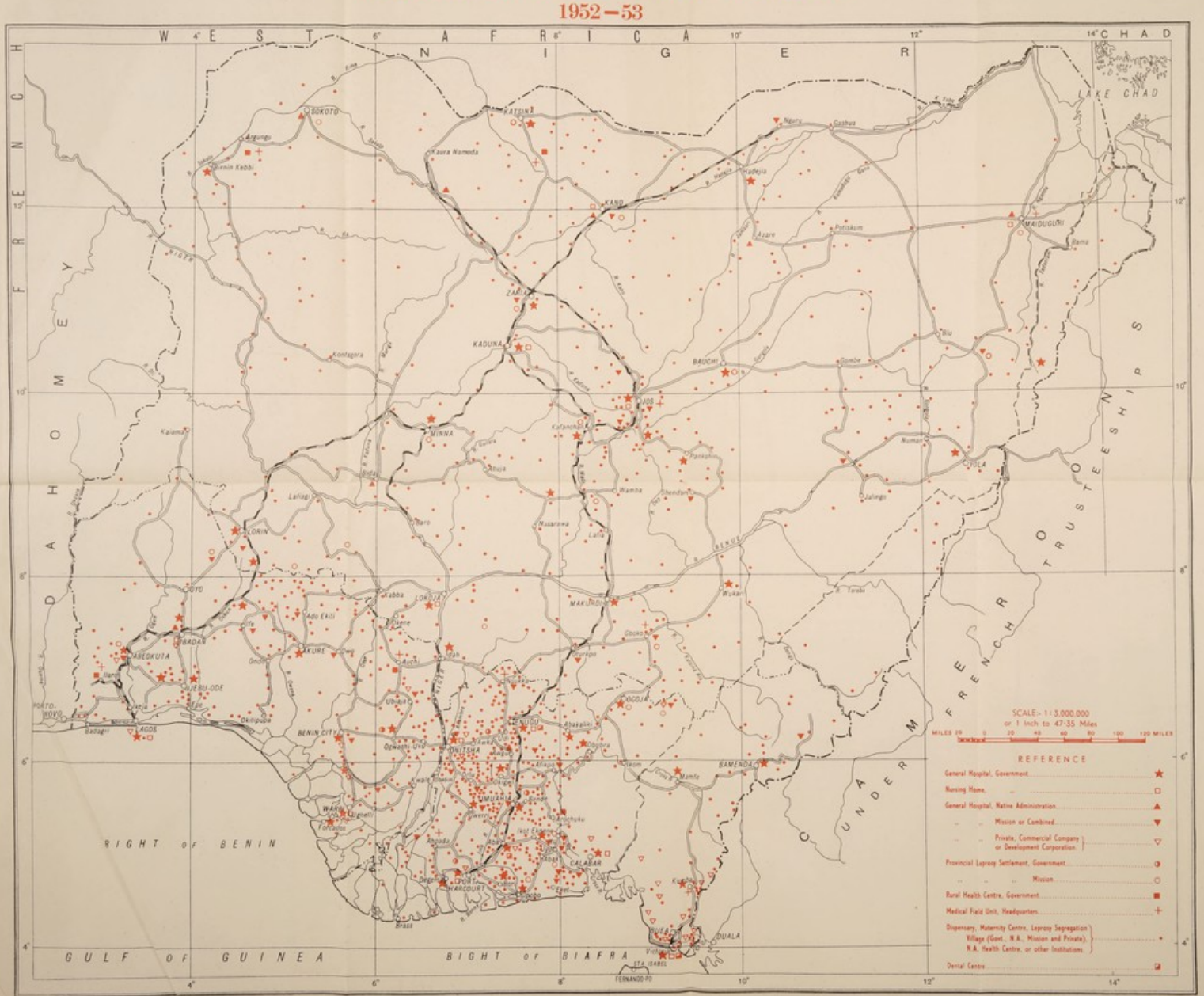


NO. OF MATERNAL AND INFANT DEATHS PER 1000 DELIVERIES.



MEDICAL FACILITIES IN NIGERIA

1952–53



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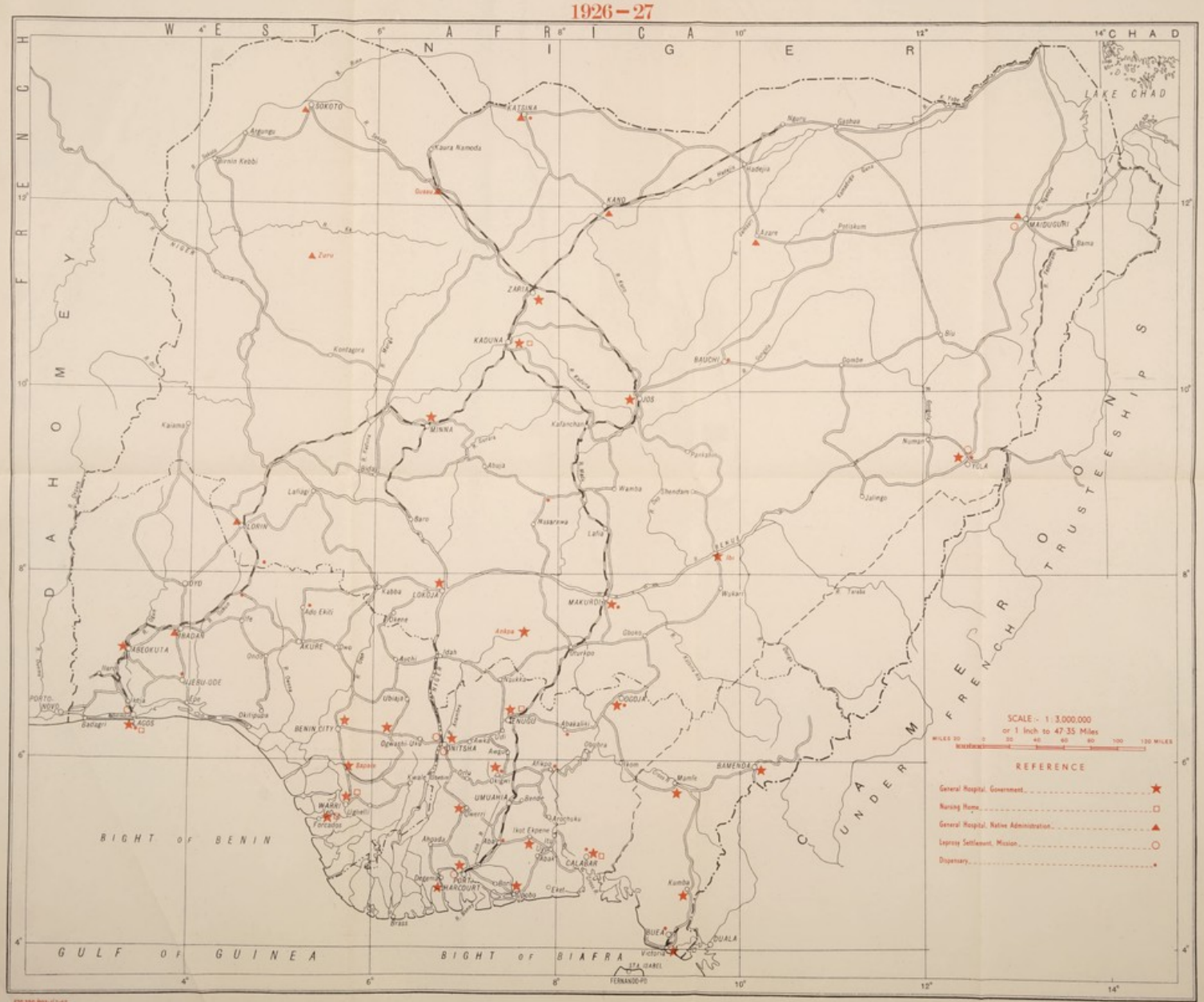
1926–27



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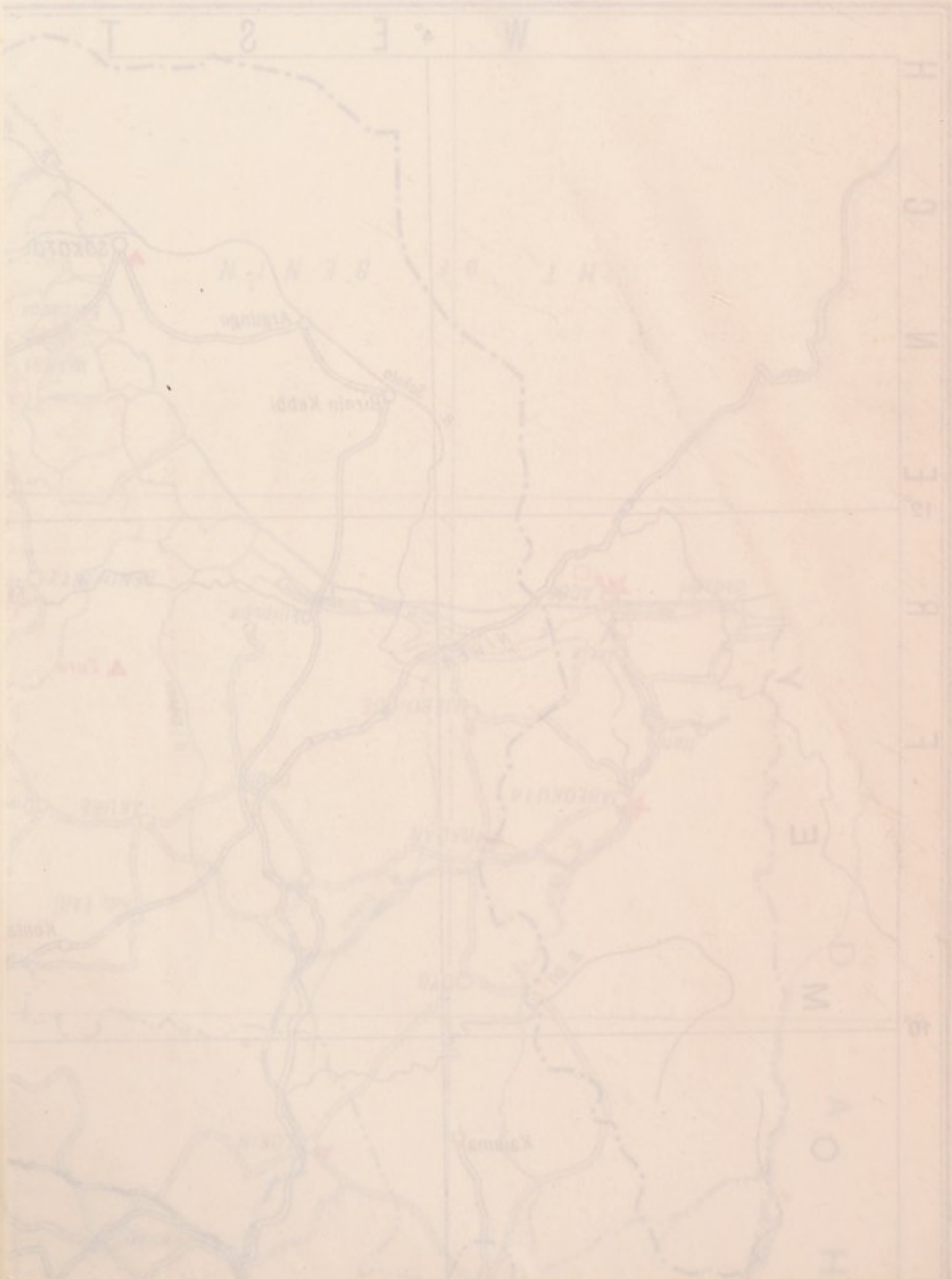

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