Annual medical and sanitary report / Tanganyika Territory.

TANGANYIKA TERRITORY

Annual Medical and Sanitary Report

For year ended 31st December

1936

Including the Annual Report of the Medical Laboratory, Dar es Salaam

1937
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Office of the
Director of Medical Services,
Dar es Salaam,
Tanganyika Territory.
21st August 1937.

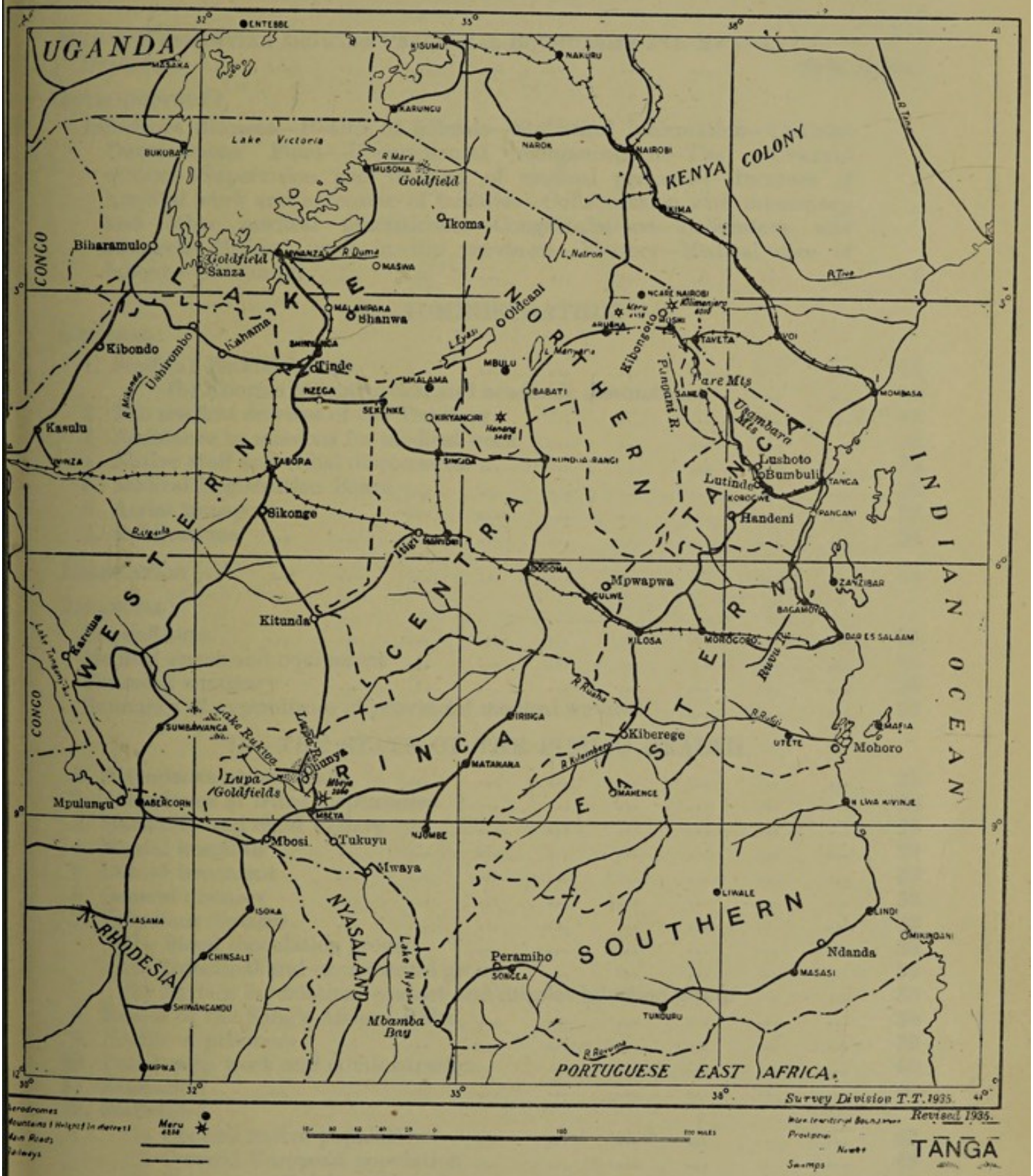
Sir,

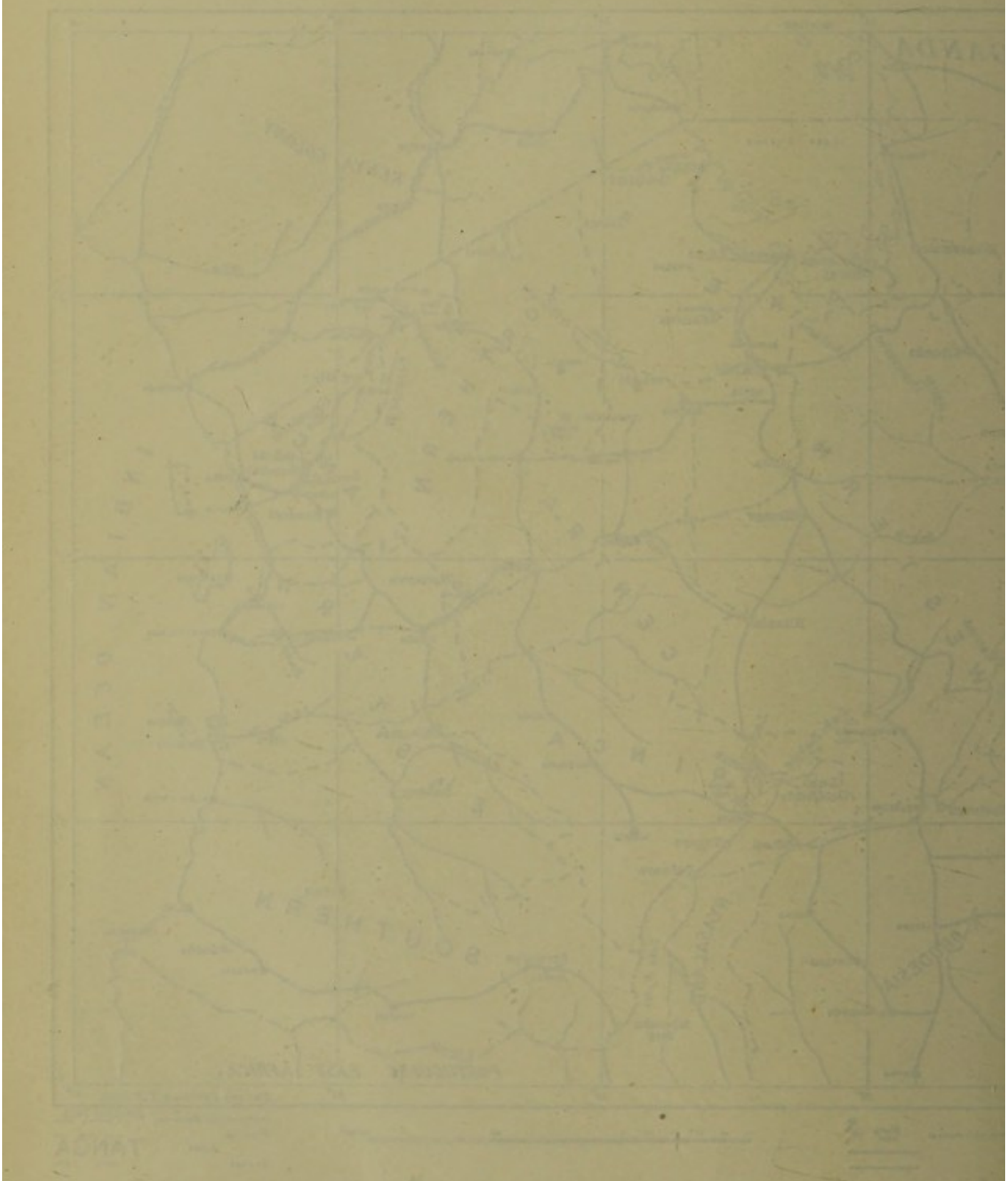
I have the honour to submit, for the information of His Excellency the Governor and for transmission to the Right Honourable the Secretary of State for the Colonies, the Medical Report on the health and sanitary condition of the Tanganyika Territory for the year 1936, together with the Report of the Medical Laboratory at Dar es Salaam.

I have the honour to be,
Sir,
Your obedient servant,
R. R. Scott,
Director of Medical Services

The Honourable
The Chief Secretary to the Government,
Dar es Salaam.

TANGANYIKA TERRITORY.





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TANGANYIKA TERRITORY

Annual Medical Report for the Year 1936

INTRODUCTORY.

The year 1936 has been one of consolidation and no spectacular events affecting the health of the territory have occurred.

No very serious outbreaks of fatal infectious disease are to be recorded; but the increased incidence in the Southern province of smallpox of a severe but not often fatal type has given some concern. Cerebro-spinal fever has shown a steady increase during the past three years, the main focus of infection being apparently across our western border. The adjoining district of Uha in Kigoma district had to be declared an infected area and measures taken to restrict recruiting and the movement of the people. Sporadic cases continue to occur in different parts of the country and I fear that they will continue to do so, for there appears to be reason to suppose that we are on the upward slope of a periodic rise in the number of cases of the disease, following a prolonged period of a negligible annual incidence.

Sixteen cases of plague with nine deaths were recorded from Iringa and Maswa districts, from both of which the disease has been recorded before. A fatal case of human rabies, the first recognized pathologically since the war, occurred in a veterinary guard who had been bitten by a dog at Mpwapwa. The existence of infection which might account for the unexplained death in Edinburgh in 1935 from rabies, some six months after leaving the territory, of a veterinary officer, who had been working in the district but who had had no cause to make him suspect infection, has thus been proved.

The occurrence at Dar es Salaam of six cases of diphtheria in Asians is reported and its rarity in this country makes it interesting. No carriers were found among the contacts. Typhus was recorded in three Europeans in the Lupa. The vector was not determined but the louse was not suspected.

The high incidence of malaria with occasional severe and fatal cases in natives in the Moshi area gives some concern. The large number of non-immunes who visit the heavily infected areas at the foot of the mountain provide the worst cases of the disease as seen in natives. The situation is being watched, but little can be done except to educate the mountain people in the dangers of the disease.

Tuberculosis work among the heavily infected people on Kilimanjaro is making some headway; and an increasing amount of collapse therapy is being undertaken in suitable cases. The nucleus of a village settlement, with Papworth as a model, is being laid out at Kibongoto in connection with the tuberculosis hospital.

Sleeping sickness continues to show a steady fall, little over half the cases which were notified in 1935 being recorded, in spite of a new outbreak in the Southern province south of the Rufiji river.

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The general health of European and Asian officials as judged by the hospital returns is fairly satisfactory, though a rise of twenty-five per cent occurred in the number of Asian officials on the sick list and also in the total number of days off-duty among this group. There was, however, a fall in the average number of days off-duty per Asian official.

I have to record with sincere regret the death of Dr J. S. Armstrong, M.C., by which we have lost a devoted and valued colleague who had latterly thrown his heart and soul into the preventive sleeping sickness work in the Singida district.

Retirements and invalidings of officials are recorded at pages 65 and 66.

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In connection with the statistical information which medical departments are expected to provide, I wish to draw attention to the importance of having reliable information about the density and distribution of populations. "The collection and accurate recording of vital statistics is directly comparable to commercial book-keeping without which no enterprise can hope to succeed," and in a young country such as Tanganyika, where extensive developments and changes are taking place at a relatively rapid rate it is most important that we should know, not only what redistribution of population is taking place, but also the natural increase of the different tribes and races.

Government was not in a position to take a census in 1936 and it is unlikely that it will be able to do so in 1937 but, for the reasons I have stated, I consider that one should be taken as soon as possible and I advocate that from 1941 it should be quinquennial. I believe that the prejudices that primitive people undoubtedly have against census-taking would tend to disappear in Tanganyika with a quinquennial census. Moreover, the staff engaged in taking the census would have a fair degree of continuity and there would be less liability to error than with a decennial one.

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The territory has continued to receive generous assistance from the Colonial Development Fund in the prosecution of research into malaria and tuberculosis. The grants for this work ceased on the 31st December and 31st May 1937 respectively, but the value of the work carried out by the malaria survey was recognized in the grant of a sum of £27,000 for the execution of the works recommended by the unit for the reduction of malaria at Dar es Salaam. This work which is to be spread over a number of years was put in hand at once. The final report of the tuberculosis research officer for the period 1930 to 1937 is in the printer's hands, and some brief references to his findings are contained in the section on tuberculosis at page 36.

A further generous free grant amounting to £11,726 for the continuation of trypanosomiasis research under Dr J. F. Corson, O.B.E., at Tinde was made from the Colonial Development Fund, and will allow of this work being carried on until 1941. The continuation of Dr Corson's work and certain other cognate investigations bearing on the transmissibility of *T. rhodesiense* through *G. brevipalpis* and directed to ascertain whether a biological test could be evolved to distinguish *T. brucei* from *T. rhodesiense* are included.

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The reorganization of the department's activities on provincial lines was effected in the Lake, Western and Tanga provinces and will be extended to other provinces as soon as circumstances permit.

As a step in the direction of the ultimate control of the district medical services through provincial medical officers, the accounting system of the department has been reorganized on a provincial basis and an attempt has been made to show the actual expenditure on the provincial services in relation to their population and hospital provision. This is shown in tabular form at page 27.

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Increasing attention has been given to the training and supervision in the districts of the native personnel who carry the elements of western medicine to the furthest corners of the territory and thus form our closest link with the rural population. The establishment of training schools with organized laboratory and clinical teaching for the African personnel tends to greater accuracy of diagnosis in the larger hospitals and a higher standard of work necessarily results. While these large hospitals at provincial and district headquarters necessarily tie the senior members of the staff to the station for the present more than may be desirable, they form an essential part of the medical organization and as teaching institutions they must be raised to the highest attainable pitch of efficiency. From them radiates the network of smaller hospitals, government and tribal dispensaries at which the African trained in them will work; and unless the junior staff are impressed during their period of training with the need for accuracy, satisfactory work cannot be expected from them when they are no longer under close supervision.

In this connection I must mention the illustrated text-books issued during the year by Dr Burke-Gaffney ("Clinical Pathology") and Dr Chilton ("Parasitic Diseases" : in Swahili) which have provided a valuable means of imparting a more thorough knowledge of the elements of these subjects to the African staff than was possible with cyclostyled lecture notes. Our thanks are due to the Government Printer and his staff for the excellence of the production of these works, and particularly of the coloured illustrations contained in them which were reproduced from water-colour drawings of actual organisms made specially by Dr Burke-Gaffney.

The numbers of patients treated both at government institutions and tribal dispensaries show increases amounting to ten per cent and fifteen per cent respectively over those for 1935; and the financial aspect of this gradual upward trend of hospital work with its consequent increased expenditure is causing us no little concern. Increased accuracy of diagnosis at the outposts plus increased efficiency of treatment means that a larger number of cases which require treatment beyond the capacity of the rural dispensary are sent to the central hospitals. The more the native population becomes accustomed to seek surgical aid for conditions which interfere either with their working capacity or with their comfort and happiness, the more the operative work at the larger hospitals increases. Successful operative surgery of this type is of great advertising value and increases the faith of the patient and his friends in western medicine, and is thus of great indirect value to the community as a whole, though its immediate results, affecting a single individual as they do, may often be thought at the time to have a greater aesthetic than a public health value.

A fuller survey of the existing medical facilities in the territory than has appeared for some years past has been prepared for this report, and a consideration of the figures presented will show that an extension of medical facilities can legitimately be demanded by the public; but the method by which such

extension is to be financed is the question to be solved by Government. It is obvious that certain areas are suffering from a serious lack of medical facilities if the density of their population is to be taken as a guide; and in some cases it is believed that the financial position of the inhabitants is sufficiently good to bear increased expenditure for social services. But in an agricultural community financial stability is an uncertain factor and we have the lessons of the recent depression to guide us in this connection. For instance, during 1930 the finances of the native treasuries in the Bukoba district were thought to be in such a satisfactory position that they would be able to provide the salary for an additional medical officer for district work : at the time they were actually supporting a sub-assistant surgeon : but the unfortunate change in their circumstances which had occurred as a result of the fall in the price of coffee has shown the need for a most careful forecast of commitments for recurrent services before demands for increased services of this sort are met, if the necessity for cutting down services is to be avoided when bad times occur.

The position is now being examined by Government with a view to seeing by what means the necessary financial provision can be made to extend the medical services in those areas in which the need is greatest.

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A step forward was taken in the direction of fuller collaboration with non-government medical practitioners, particularly those working for missions. The Tanganyika Missionary Council invited representatives of this department to meet them in July, and suggestions were made for the formation of a missionary medical committee which shall examine the means by which overlapping of medical services may be avoided as far as possible, and personnel and funds used to the best advantage of the population which it is the aim of both government and missionary societies to serve. In this connection the department desires to keep close touch with doctors who are practising privately in the territory; and with this end in view circulars and other publications of the department dealing with technical matters are issued to practitioners not in government service.

Our congratulations go to Dr A. J. Keevill who was awarded the M.B.E. in the Birthday Honours List. Dr Keevill is a member of the Moravian Mission working in the Tabora district and has long been associated with officers of this department in the treatment of sleeping sickness cases in that area.

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The routine work of the central laboratory at Dar es Salaam again showed an increase, amounting to thirty-two per cent above the number of specimens examined in 1935. The accommodation has not yet been enlarged and is inadequate for convenient working.

The finding of trypanosomes in ascitic fluid in an African boy was of unusual interest and is referred to at page 114.

A tragic and most unusual accident occurred on Christmas Day during a severe storm of rain and wind when six persons were electrocuted through contact with a wire fence. The storm had caused the fall of a coconut tree which broke a service wire in its fall and this made contact with the wire fence surrounding the compound causing it to become "alive." The wife of one of the servants residing on the premises ran to pick up the fallen coconuts and on grasping the wires of the fence was at once electrocuted. The same fate overtook others who attempted to rescue her or to come to the scene of the

disaster. The wet state of the ground and the bare feet of the natives no doubt contributed to the intensity of the shock, together with the fact that the current was "alternating."

External examination left no doubt as to the cause of death, as the characteristic marks typical of electrical scorching were apparent on those portions of the limbs and bodies which had been in actual contact with the wires. Rigidity was of exceptionally early onset; it had begun by the time the bodies were removed from the wires and was complete about three-quarters of an hour later.

The research work of Dr D. E. Wilson on brucellosis is referred to at page 112. Both *melitensis* and *abortus* fevers exist in the territory.

A note of warning sounded by the gradually increasing salinity of the Dar es Salaam water supply is to be found in the Government Analyst's report at page 109 and the bacteriological findings are considered at page 112. The need for occasionally checking the dispensing of medicines by chemical analysis is also shown by some test analyses.

Attention is directed to the increasing number of cases of arsenical poisoning detected by laboratory examination. The opportunities for stealing quantities of this poison in the course of past locust campaigns, and its effectiveness compared with many native poisons, may account for this increase.

I referred last year to two lines of research which should well repay their cost, schistosomiasis and African tick fever. I am glad to be able to report that an offer was received before the end of the year of the assistance of Dr Alan Mozley, a research worker from the London School of Hygiene and Tropical Medicine, for the purpose of conducting a survey of the snail hosts of the parasite during 1937. It may confidently be expected that it will be possible to devise suitable measures for destroying the snails when their habitat is known and so eliminating some of the important sources of infection. Our ignorance of the actual host has hitherto precluded any such active measures being taken.

Similar research work into the ecology of the spirillum tick, *ornithodorus moubata*, is also required to enable us to devise measures to combat this serious pest. One thousand seven hundred and thirty-nine cases of African relapsing fever were diagnosed during the year.

Extracts from the reports of the provincial and certain of the district medical officers are included in Part III. Medical matters are also referred to in the annual reports on native administration by the provincial commissioners.

In the Central province tsetse fly and water supply problems are serious; and the native authorities have done much to help themselves in these matters. The pressure of tsetse on all sides of the cattle-raising area of Singida is severe and extensive measures of defence against encroachment were undertaken by volunteer tribal labour. In two of the cleared areas where land is fertile and water supply ample the tribesmen from more restricted areas are settling; but it is not always easy to secure the occupation of cleared areas and they then soon revert to bush which simply means that the labour on clearing has been wasted.

The work of the hospital of the Augustana Lutheran Mission at Kiamboi in the Singida district under Dr Johnson calls for special commendation as an example of missionary co-operation in medical work with the local authorities in the area.

In the Eastern province additional dispensaries are demanded by the native population; but their lethargy and conservatism make it difficult to secure the

sanitary improvements which are necessary if the hookworm which is very prevalent in many parts of the province is to be combated successfully.

The District Officer of Ulanga and his wife (Mr and Mrs Culwick) are collecting valuable information about the diet of the rice-eating people of the Kilombero valley; and Mr Hartnoll has conducted some useful enquiries into the food supplies and rotation of crops among the Zaramu of Dar es Salaam district. The improvement of methods of agriculture, the prevention of soil erosion and resulting better food supplies, to which attention is being directed, are certain to reap their reward in time in the improvement of the health of the people.

In the Southern Highlands province one of the greatest problems confronting medical workers is the care of the sick in the Lupa goldfield. A health officer was posted to Chunya early in the year and a clearing station and three government dispensaries were erected. A medical officer has also been stationed at Chunya since December 1936. The health officer's report is at page 55.

The continued rise of Lake Nyasa forced us to evacuate the eighteen-bedded hospital at Mwaya in May 1936 and to leave this thickly populated area with a dressing station only. A site has been selected some nine miles from the lake, on slightly higher ground, for the erection of a new hospital.

In the Lake province the outstanding feature has been the development, by the close collaboration of the administrative staff with officers of this department, of a "medical auxiliary" service to replace the former tribal dressers.

This subject is referred to in connection with the medical services of the territory and has been mentioned in previous reports. Real progress has been achieved; and all the officers concerned, not omitting the native authorities who have provided the funds, are to be congratulated upon the results to date.

The maternity work conducted by the Africa Inland Mission in Shinyanga continues to go ahead and is very popular with the local Sukuma population.

In Bukoba district it was necessary for me to advise that the contributions by the native authorities to the maternity work conducted by the White Fathers and Church Missionary Society missions should be greatly reduced, and it was no longer possible for these missions in the absence of the former contributions to retain the expert European staff who conducted the work.

The Geita group of gold mines (Kentan Gold Areas, Limited) operating in west Mwanza have erected a large permanent native hospital, and employ a whole-time medical officer and a sub-assistant surgeon. The foresight of this company in paying attention to the welfare of their labour force will be certain to result in a better output of work; and they have set an example which other large employers of labour would do well to follow.

In the Northern Province a new departure has been made in the training of native authority clerks as dressers; and this experiment should have satisfactory results. An isolated tribe, the Sonjo, in the north of the Masai district were visited by a medical officer and elementary medical treatment arranged for them, although they were reported to be particularly free from disease.

The eastern part of the Southern province has continued to provide large numbers of cases of smallpox, fortunately not of a fatal type, in spite of extensive vaccination of the people. The Provincial Commissioner writes :—

> "The native authorities have done little to assist the enforcement of control measures, probably because they are familiar with previous visitations of the disease in its most virulent forms and take the view that the immunization which the present outbreak is conferring on the populace is a blessing in disguise."

A sister of the Universities Mission is doing useful work on leprosy in the Newala and Masasi districts. This disease is prevalent in the province; and the good work of the Benedictine missions at Ndanda and near Songea in caring for the patients and providing medical treatment also deserves mention. These three missions maintain four doctors between them; and at Ndanda a medical school is conducted for the systematic training of African dressers.

An outbreak of sleeping sickness in the north of Liwale district is described by Dr Maclean at page 34.

In the Tanga province the question of welfare and medical facilities for labour on the sisal estates has been under examination and proposals for effecting improvement of conditions have been submitted.

In Tanga town the new maternity and child welfare clinic was opened and now provides satisfactory conditions for the carrying on of this work, which is popular with the people.

The progressive native administration of Pare has established an innovation by sending to the clinic three native women for training as health visitors; they are now posted in the district and are reported to be doing useful work.

The Bethel Lutheran Mission and the Universities Mission to Central Africa conduct important medical work in the province, maintaining doctors at Bumbuli (western Usambaras) and Magila (Tanga district) respectively.

In the Western province the Provincial Commissioner in his report again refers to the success of the concentration policy in helping to reduce the incidence of sleeping sickness and improving the general condition of the people. He mentions the successful introduction by the Veterinary Department of cattle, the property of the native administration, through tsetse bush into concentrations in Uha and southern Tabora. He writes in regard to the disease in Uha (Kigoma district) :—

> ". . . . in 1932 the first few doctors diagnosed one thousand one hundred and forty-seven cases among a terrified and scattered population which hid its sick; in 1936 a complete staff among a closely settled population which trusted them discovered ninety-two cases and knew well that most of them came from an area still beyond its full control."

He goes on to quote the opinion of a missionary that the appearance of sleeping sickness among them had been a blessing in disguise, for the Ha were rapidly becoming a healthy, happy race. As evidence of this he points to tax collection, which is four shillings in that area ; up to 1932 the greatest amount collected was £7,000; in 1936 it was over £13,000.

I visited many of these concentrations in company with the Sleeping Sickness Officer in August, and saw for myself what an opportunity for improving the "moral and material" condition of the rural population they afford; medical assistance in sickness is only one of the social services which can economically be provided in them; better agriculture and animal husbandry, marketing of produce, education, improvement of housing, water supply and sanitation, religious and social amenities can all receive attention in a well-organized country village such as the concentrations are becoming, while the blessings of increased security of life and property and the speedier administration of justice must not be overlooked.

The difficulties which have occurred in connection with the better training of tribal dressers and of native midwives have delayed the improvement of the rural medical services but it is hoped that at least some of these are in the way of being solved during 1937. There is in this province, where special efforts to

train literate native girls in medical work have been made, the same difficulty in the supervision of the girls as has been experienced elsewhere. I take the liberty of quoting from Mr Bagshawe's report an opinion which has my full agreement :—

> "I can imagine nothing more valuable to a tribal area than a dressing station staffed by a trained dresser with a wife similarly trained and able to attend to the native women and children of the neighbourhood."

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We were pleased to welcome during the year the following visitors who were interested in medical matters :—

Dr Fenton, Chairman of Council, and Dr Dudley Robinson, Secretary, of the Royal Sanitary Institute, London, visited Dar es Salaam in February and March and discussed questions of training and examination of sanitary inspectors and health visitors. Their visits afforded an excellent opportunity for them to consider with members of the local board of examiners of the Institute the problems of training African natives for these duties.

Mr H. S. Leeson of the Department of Entomology of the London School of Hygiene and Tropical Medicine visited Tanganyika with a view to continuing the studies on *A. funestus* which he began some years ago in Southern Rhodesia. He arrived in July and visited the following places in connection with his survey : Mwanza, Shinyanga, Tabora, Dodoma, Kondoa, Mpwapwa, Iringa, Mbeya, Chunya, Kilosa, Morogoro, Tanga, Amani, Moshi and Arusha.

Professor G. Rose of the Robert Koch Institute, Berlin, visited Tanganyika in December 1936 in the course of an extensive visit to the African territories for the purpose of learning at first hand the nature of, and facilities for, research into problems of tropical medicine and parasitology, including tuberculosis and pneumonia as affecting natives, and general health administration. In addition to seeing the medical activities conducted at Dar es Salaam he visited the following places : Tuberculosis Laboratory, Moshi; Vaccine Lymph Institute, Mpwapwa; Sleeping Sickness Research Laboratory, Shinyanga; Trypanosomiasis Research Laboratory, Tinde ; Mwanza : medical training school and rural health administration.

Miss Margery Perham, vice-Principal of St Hugh's College, Oxford, who holds a research fellowship of the International Institute of African Languages and Cultures and is a research lecturer in colonial administration at the university, visited Tanganyika in December 1936 and discussed various problems affecting Africans living under urban conditions.

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The problem of the medical care of labour employed on the large estates has been receiving careful consideration and a memorandum on the medical aspects of labour management in Tanganyika was presented to the committee appointed to report and advise on questions relating to the supply and welfare of native labour in Tanganyika, before which evidence was given. Proposals were submitted for the provision of a government medical officer and a sanitary superintendent in the centre of the Tanga sisal estate area who would visit the estates, ascertain the causes of absenteeism and advise measures for improving the health and welfare of the labour. The committee had not reported at the end of the year and no decision has yet been taken on the proposals.

Matters relating to the medical care of labour are referred to in the reports of the Medical Officers of Health of Tanga and the Southern Highlands and the Medical Officer, Morogoro. (*See* pages 53, 55 and 57).

I will conclude these introductory remarks with a reference to the object of our existence as a department. We are here—in my view—to help forward the inhabitants of the territory to a healthier and happier state of existence than that in which we find them. Health and wealth are complementary; and we cannot neglect the one in seeking the other. Wealth in an agricultural country does not necessarily mean the same thing as wealth in an industrial country; a sufficiency of good food, with some to spare for sale and for one's poorer friends and relations, a weather-proof and vermin-proof house, and the means of enjoying simple social pleasures, may to some be the height of ambition, and therefore wealth. Under such conditions, assuming protection from enemies, wild animals and infectious disease the majority of folk will enjoy health; and it is for us to see how we can help them to secure it. We can help by the closest collaboration with the Agricultural, Animal Husbandry and Education departments in their endeavour to raise the standard of living of the people—and by that I mean particularly their nutrition. We can help by finding what foods not now produced in any given area would provide a better mixed diet : we can help by raising the working and producing capacity of the people by curing them of yaws, syphilis and the common worm diseases; and we can help by teaching the people how to avoid some of the debilitating diseases by more hygienic living.

These are the things we must use our best endeavours to secure : not all of us are surgeons or sanitarians; but all of us have a place to fill in the complicated organization which modern government builds up to secure even the simple ideals I have indicated. We must see that we do not lose sight of the ideal while we are doing our best to fill the little niche in which each one of us is placed.

A word of sincere thanks remains to be paid to my colleagues who have done the work which this report attempts to record; and to the others too numerous to mention, within and without the service, who have helped us in so many different ways to help the other fellow along the road.

I.—ADMINISTRATION.

(A).—General.

1. *Staff.*

(a) Tables showing the authorized establishment of the department and details of appointments and casualties are given on pages 64-66.

(b) *Courses of instruction attended in Europe and academic distinctions awarded.*—Dr D. E. Wilson obtained the degree of Doctor of Medicine at the University of Aberdeen. The title of his thesis was "An investigation into Brucella infections in Tanganyika Territory."

Mr W. D. Raymond obtained a first class certificate in a course of instruction at the Civilian Anti-Gas School, London. He also attended a course of advanced study at the Imperial College of Science and Technology, Organic Chemistry Department, London, in Microchemistry and Research in Organic Chemistry.

Dr P. S. Bell obtained the Fellowship of the Royal College of Surgeons, Edinburgh.

Dr B. A. Coghlan attended a course of study for the second part of the D.P.H.

Dr F. R. Lockhart attended a course of instruction in general medicine at the Post Graduate School, Hammersmith.

Mr W. K. Connell, F.R.C.S., visited Vienna for the purpose of studying methods of treatment at post graduate clinics for fracture and other injuries.

Dr C. J. MacQuillan obtained the degree of Doctor of Medicine at the University of Dublin. The title of his thesis was "A sociological and medical survey conducted in the Tanganyika Territory."

Dr G. A. Wilson attended a course of instruction in Industrial Hygiene at the London School of Hygiene and Tropical Medicine.

Mr J. G. Findlay obtained the Tropical Certificate of the Royal Sanitary Institute.

Mr F. O. Hersèe attended a course in Sanitary Science at the Royal Sanitary Institute.

2. *The Medical Services of the Territory.*

The native population of the territory as recorded in the census, 1931, numbered 5,022,640, spread over an area of 366,632 square miles, and having an average density of 13·7 per square mile. There are, however, many square miles which are uninhabited. Of the eight provinces, the Western has the lowest density—6 per square mile; and the Lake the highest—32·6 per square mile.

A sum of £190,783 was provided in the estimates for ordinary recurrent expenditure on medical services, actual expenditure amounting to £185,687 equivalent to 73·9 cents of a shilling (8·68 pence) per head. The expenditure in 1935 was 77 cents. Of this sum about 54 per cent is spent on curative services and 37 per cent on preventive work. In addition a large amount of simple treatment is undertaken by native authorities through their own

dressers; and much good work is done by the missions on whose staffs there are some eighteen registered medical practitioners who are almost wholly employed on native work.

A number of additional facilities at native hospitals were constructed from funds derived from the unclaimed balances of the former German Savings Bank. They included new wards at Iringa, Singida, Tunduru and Sumbawanga; operating theatres at Iringa, Malangali and Bukoba; out-patient buildings at Iringa; a maternity and child welfare clinic at Tanga and a dispensary at Sumbawanga; amounting in all to an approximate expenditure of £4,616. In addition, the following works were undertaken from territorial funds : a medical clearing station at Chunya, three two-roomed dispensaries in the Lupa area, an Asian ward at Mwanza and a non-native ward at the Musoma hospital. These works amounted in all to £2,029.

Government maintains twenty-nine executive medical and health posts at twenty different stations; these can be seen on the map at the front of the report. There are nineteen resident missionary medical practitioners, some thirty private practitioners in active practice, and forty-six Asian sub-assistant surgeons to serve the needs of the territory. There are also a number of registered practitioners not resident or not in active practice, for example the married medical women. The territorial distribution of these doctors, which is subject to change from time to time, is shown in table A; the numbers given in tables B and C do not agree in all cases with those in table A which includes some persons not actually practising.

Tables B and C show respectively the numbers of registered and licensed medical practitioners in active practice compared with the native and non-native populations. In table B missionary medical practitioners are included as their work is almost entirely native and in table C the private practitioners are included as being engaged chiefly among non-natives. Government medical officers and sub-assistant surgeons are available for all classes of the community and are therefore included in both tables. Table D indicates the number and distribution of native authority (tribal) and medical department dispensaries together with the average population and area served by each dispensary.

Table A.—Distribution of Medical Staff in Government Service and otherwise.

M.O. = Government medical officer.
M.M.P. = Missionary medical practitioner.
P.P. = Medical practitioner not in government or missionary service.
S.A.S. = Sub-assistant surgeon.
Comp. = Asian compounder.
Disp. = African dispenser (only dispensers in charge of stations are shown).

District and Stations	M.O.	M.M.P.	P.P.	S.A.S.	Comp.	Disp.
CENTRAL PROVINCE						
Dodoma	1	...	...	1	1	...
Kondoa	...	...	...	1	...	...
Manyoni	...	1	...	...	1	...
Mkalama	...	2	...	1	...	...
Mpwapwa	1*	...	...	1	...	...
Singida	1	...	...	1	...	...
Carried forward ...	3	3	...	5	2	...

*One medical officer in charge of Lymph Institute.

District and Stations	M.O.	M.M.P.	P.P.	S.A.S.	Comp.	Disp.
Brought forward ...	3	3	...	5	2	...
EASTERN PROVINCE:						
Bagamoyo	...	...	...	1	...	...
Dar es Salaam	10*	1	15	3	3	...
Dondo	...	...	...	...	...	1
Kilosa	...	...	...	1	...	...
Kisaki	...	...	...	...	...	1
Kimamba	...	...	1†	...	...	1
Kiberege	...	...	...	...	...	1
Kibiti	...	...	...	...	...	1
Mafia	...	...	...	1	...	...
Mohoro	...	...	...	...	...	1
Morogoro	1	...	1	1	1	...
Mpanganya	...	...	...	...	...	1
Ruvu	...	...	...	...	...	1
Rufiji-Utete	...	...	...	1	...	...
Ulanga-Mahenge	...	...	...	1	...	...
LAKE PROVINCE						
Biharamulo	...	...	...	1	...	...
Bukoba	1	2	2	2	1	...
Bugufi-Ngara	...	...	...	...	...	1
Ikoma	...	...	...	...	1	...
Kwimba-Ngudu	...	...	...	...	...	1
Mantare	...	1	...	...	...	...
Maswa	...	...	...	...	1	...
Missenyi	...	...	...	...	...	1
Musoma	1	1	...	1	1	...
Mwanza	3	...	4	2	1	...
Negezi	...	...	...	...	...	1
Nyakahanga	...	...	...	...	...	1
Shanwa	...	...	...	1	...	...
Shinyanga	...	1	...	1	...	...
Tinde	1‡	...	...	...	...	...
NORTHERN PROVINCE:						
Arusha	1	...	1	1	1	...
Babati	...	...	...	...	...	1
Kibongoto	1	...	...	...	1	...
Mbulu	...	...	...	1	...	...
Mbugwe	...	...	...	...	...	1
Moshi	3§	1	2	2	1	...
Usa	...	...	...	...	...	1
SOUTHERN PROVINCE:						
Kilwa	...	...	...	1	...	...
Lindi	1	...	1	1	...	...
Liwale	...	...	...	...	1	...
Carried forward ...	26	10	27	28	15	16

*Includes Headquarters Staff, Tutorial Officer, Senior Pathologist and Malaria Research Officer. †Licensed Practitioner. ‡Includes Sleeping Sickness Research Officer. §Includes Tuberculosis Reseach Officer.

District and Stations	M.O.	M.M.P.	P.P.	S.A.S.	Comp.	Disp.
Brought forward ...	26	10	27	28	15	16
SOUTHERN PROVINCE—*Contd.*						
Masasi	...	3	...	...	...	...
Mikindani	...	...	...	1	...	...
Ruponda	...	...	...	...	...	1
Songea	1	1	...	1	...	...
Tunduru	...	...	...	1	...	...
SOUTHERN HIGHLANDS PROVINCE:						
Chunya	1	...	2	...	...	...
Iringa	1	1*	1	1	1	...
Kungutas	...	...	...	...	...	1
Lupa Market	...	...	...	...	...	1
Malangali	...	...	...	1	...	...
Mbeya	...	...	2†	...	...	...
Mwaya	...	...	...	...	1	...
Njombe	...	1	...	...	1	...
Sengambia	...	...	...	...	...	1
Tukuyu	1	...	...	...	1	...
TANGA PROVINCE:						
Amani	...	...	...	...	...	1
Handeni	...	...	...	...	...	1
Korogwe	...	1	...	1	...	...
Lushoto	...	1	2	1	...	...
Pangani	...	...	...	1	...	...
Same	...	...	...	...	...	1
Tanga	3	...	5	3	1	...
Usangi	...	...	...	...	1	...
WESTERN PROVINCE:						
Bukene	...	...	1	...	...	...
Kahama	1	...	...	1	...	...
Kasulo	...	...	...	1	...	...
Kakonko	...	...	...	...	...	1
Kafura	...	...	...	...	...	1
Kigoma	1	...	...	1	...	...
Kibondo	1	...	...	...	...	...
Makere	...	...	...	...	...	1
Nzega	...	...	...	1	...	...
Nyaviyumbu	...	...	...	...	...	1
Nyonga	...	...	...	...	...	1
Sumbawanga	...	...	...	1	...	...
Tabora	3‡	1	1	2	1	...
Ushirombo	...	...	...	...	...	1
Uvinza	...	...	...	...	...	1
Uyogo	...	...	...	...	...	1
TOTAL ...	39	19	41	46	22	31

*Includes one Licensed Medical Practitioner. †Includes one Private Practitioner employed part time by Government. ‡Includes Sleeping Sickness Officer.

Table B.—Natives.

(For abbreviations *see* table A.)

Province	M.O.*	M.M.P.	S.A.S.	Population	Population per M.O.	Population per M.O. M.M.P.	Population per M.O. M.M.P. S.A.S.
Central	2	3	5	579,712	289,856	115,942	57,971
Eastern	5	1	9	619,191	123,838	103,198	41,299
Lake	5	5	8	1,390,609	278,122	139,061	77,256
Northern ...	4	1	4	344,198	86,049	68,839	38,244
Southern ...	2	4	5	543,413	271,706	90,569	49,401
Southern Highlands ...	4	2	2	491,911	122,978	81,965	61,489
Tanga	3	2	6	355,914	118,638	71,183	32,356
Western ...	4	1	7	697,692	174,423	139,538	58,141
Territory ...	29	19	46	5,022,640	173,194	104,638	53,432

Table C.—Non-Natives.

(For abbreviations *see* table A.)

Province	M.O.*	P.P.	S.A.S.	Population	Population per M.O.	Population per M.O. P.P.	Population per M.O. P.P. S.A.S.
Central	2	...	5	2,316	1,158	1,158	302
Eastern	5	12	9	14,322	2,864	842	550
Lake	5	5	8	5,340	1,068	534	296
Northern ...	4	2	4	4,257	1,064	709	425
Southern ...	2	1	5	1,818	909	606	227
Southern Highlands ...	4	4	2	2,834	708	354	283
Tanga	3	5	6	6,641	2,213	830	474
Western ...	4	1	7	3,653	913	730	304
Territory ...	29	30	46	41,181	1,421	697	392

*Executive Medical and Health Officers only.

The Native population is taken from the 1931 census and the Non-native population from the 1936 Blue Book.

Table D.—Native Dispensaries.

District	Area sq. miles	Native* population	Tribal Dispensaries	Medical Department Dispensaries	Square miles to each dispensary	Population to each dispensary
Central Province:						
Dodoma	7,363	127,321*	6	...	1,227	21,220
Manyoni	13,030	43,593	3	...	4,343	14,531
Mpwapwa ...	3,278	37,380	4	...	819	9,345
Kondoa	5,750	118,151	3	...	1,916	39,384
Singida	8,076	250,239	9	1†	807	25,023
Total ...			25	1		
Eastern Province:						
Bagamoyo ...	3,910	62,057	5	...	782	12,411
Dar es Salaam ...	4,080	130,127	4	2	680	21,668
Kilosa	6,000	68,686	7	1	750	8,585
Morogoro	7,620	149,484*	9	1	762	14,948
Rufiji	5,103	87,364	7	3	510	8,736
Ulanga	15,570	93,152	14	1	1,038	6,210
Total ...			46	8		
Lake Province:						
Biharamulo ...	6,556	100,208	4	1 (1)	1,093	16,701
Bukoba	7,010	275,922*	19	2	333	13,142
Kwimba	1,830	200,062	8	1	203	22,229
Maswa	10,870	230,126	9	...	1,208	25,569
Musoma	7,250	184,028	12	1†	558	14,156
Mwanza	5,580	250,170*	23	...	243	10,877
Shinyanga ...	3,500	144,536	6	1	500	20,648
Total ...			81	7		
Northern Province:						
Arusha	6,250	47,414*	1	2	2,083	15,804
Masai	18,470	32,168	6	...	3,078	5,361
Mbulu	5,160	98,816	8	1	573	10,979
Moshi	2,120	161,558*	5	(1)	353	26,926
Total ...			20	4		
Southern Province:						
Lindi	8,148	124,556*	6	1	1,164	17,794
Kilwa	18,636	81,406	4	...	2,662	11,629
Liwale	...	...	2	...	...	...
Masasi	6,716	49,092	1	...	6,716	49,092
Mikindani ...	1,595	46,764	3	...	532	15,588
Newala	1,900	75,512	3	...	633	25,170
Songea	16,398	115,786	14	...	1,366	8,720
Tunduru	4,830	46,479	3	...	1,610	15,493
Total ...			36	1		

*Excluding the Township population. Subsidiary dispensaries not included in Table A are in brackets.

†Four Medical Department dispensaries are normally staffed by Compounders.

DISTRICT	Area sq. milles	Native* population	Tribal Dispensaries	Medical Department Dispensaries	Square miles to each dispensary	Population to each dispensary
SOUTHERN HIGHLANDS:						
Iringa	11,911	86,795	8	...	1,489	10,849
Mbeya	16,540	84,591	14	3	973	4,976
Njombe ...	8,330	125,463	11	1†	694	10,455
Rungwe ...	1,750	195,062	9	1†	175	19,506
Total ...			42	5		
TANGA PROVINCE:						
Handeni	5,930	63,930	3	1	1,482	15,982
Pangani	1,221	17,846	3	...	407	5,949
Pare	3,870	57,911	5	1	645	9,652
Tanga	1,457	96,950*	3	...	486	32,316
Usambara ...	3,624	111,777	10	1	329	10,161
Total ...			24	3		
WESTERN PROVINCE:						
Kahama	8,400	76,240	3	2	1,680	15,248
Nzega	6,000	116,076	10	...	600	11,607
Kigoma	21,010	205,926	1	5	3,501	34,321
Tabora	38,600	203,491*	5	1 (1)	5,514	29,356
Ufipa	25,390	78,501	4	...	6,347	19,625
Total ...			23	9		
TERRITORY ...	366,632		297	37	1,104	‡

*Excluding the Township population. Subsidiary dispensaries not included in Table A are in brackets.

†Four Medical Department dispensaries are normally staffed by compounders.

‡The average population per dispensary is approximately fifteen thousand.

The distribution of the medical staff is not in strict proportion to the population in the districts. Other factors such as proximity to headquarters stations, density of population and a limited medical staff have to be considered; there are twenty-three districts with a native population of over 100,000, of which nine have no government medical officer. The largest of these latter is Maswa with a population of 230,126 : the smallest Biharamulo with 100,208. There are sixteen other districts with no government medical officer.

The densely populated districts of the Lake province are served as follows :—

	Population	Density per square mile	Medical Officers	Missionary Medical Practitioners	Sub-Assistant Surgeons	Compounders	Dispensers in charge
Bukoba ...	277,201	39	1	2	2	1	...
Missenyi ...	...	...	...	...	...	...	1
Nyakahunga	...	...	...	...	...	...	1
Biharamulo ...	100,208	15	...	...	1	...	...
Bugufi ...	...	...	...	...	...	...	1
Mwanza ...	254,448	45	3	...	2	1	...
Maswa ...	230,126	21	...	...	...	...	...
Shanwa ...	...	...	...	...	1	...	...
Musoma ...	184,028	25	1	1	1	1	...
Ikoma ...	...	...	...	...	...	1	...
Shinyanga ...	144,536	41	...	1	1	...	...
Negezi ...	...	...	...	...	...	...	1
Kwimba ...	200,062	109	...	...	...	...	1
Mantare ...	...	...	...	1	...	...	...

The total population is thus 1,390,609 for five government and five missionary doctors. This means: 278,122 persons per government medical officer, and 139,061 persons per doctor working for natives. Kwimba district is most in need of additional provision.

Rungwe in the Southern Highlands province is another district of high density (population 195,062 : 111 per square mile). This is served by one medical officer at Tukuyu; the second hospital at Mwaya, served by a compounder, had to be closed during the year owing to flooding by Lake Nyasa.

Six laboratory posts have normally been filled by medical officers, of which four have been provided for special research and survey work under the Colonial Development Fund, viz. two on malaria, one on tuberculosis and one on trypanosomiasis.

Hospital Provision.

Native.—Hospital beds, total 2,012; average number of the population per bed, 2,500; mean provincial population per bed, 2,648; best provided province (Eastern) per bed, 1,323; worst provided province (Lake) per bed, 3,841.

European.—European hospitals exist at nine stations in seven provinces and the provincial European population per government European hospital (including Mbeya) varies between 314 at Lindi and 2,435 in the Eastern Province.

In eleven districts with over a hundred Europeans and in two with over two hundred there is no European hospital.

Calculations based on the 1935 returns showed that the percentage of Europeans treated at government hospitals amounted to: in-patients 4·8 per cent and out-patients 0·48 per cent.

The tribal dispensaries constructed and maintained by the native authorities provide the furthest outposts of medical work in the districts and it is our constant endeavour to improve the efficiency of this intimate link with the people. The difficulties in the way of maintaining adequate supervision of these

dispensaries by government medical staff were explained in the annual report for 1935 (page 13), and these can only gradually be met; but a greater interest is being taken in this work and its importance realized by the medical staff and improvements are slowly being effected in the more progressive areas.

Thirteen new tribal dispensaries were opened during the year making a total of 297 for the territory. The distribution of the dispensaries is shown in table D, the Lake province being particularly well provided in this respect, and having the advantage of possessing three schools for the thorough technical training of the medical auxiliaries who staff them.

Thus the Medical Department of Government, through its provincial and district medical staff who are responsible for the technical supervision of the tribal dispensaries, and by collaboration with the missionary medical organization, maintains touch with the various elements of the population in the furthest corners of the territory. While Dr Shircore's aim, when the tribal organization was first proposed, to have a dispensary within twenty miles of every village, has not yet been achieved, progress is being made; and the increasing number of patients treated year after year show that a need is being met. There is infinite room for improvement, but funds and means of training staff necessarily control with a strict hand the rate of progress in this direction.

3. *Assistance to Missions for Medical Work.*

Drugs and equipment to the value of £320 were supplied to missionary societies for treating parasitic diseases. Additional financial assistance amounting to £971 was given to certain missions actually engaged in maternity and child welfare work.

Certain mission bodies have under consideration a proposal for the formation of a medical missionary society which will have for its aim closer co-operation between medical missions and Government.

Courses of training for African dispensers, conducted in the vernacular, are being continued at two missions. Six students completed their courses of instruction at these medical schools during 1936. Government provide an external examiner at the final examination of these students.

4. *Native Staff and Tribal Dispensaries.*

There is no alteration in the policy outlined in the 1935 report.

The training of tribal dressers was continued at Mwanza, Bukoba and Musoma and courses carried on as in previous years were systematized at Tabora and Tukuyu. These make a total of five centres at which regular training is given to tribal medical staff. The total number of tribal students in training at the end of the year was sixty-six.

The training of government African dispensers was continued at Dar es Salaam. Sixteen students were in training at the end of the year.

5. *Medical Registration Board.*

The tables below show the number of medical practitioners and dentists registered in the territory, and the nature of their qualifications, together with the alterations effected during the year :—

TABLES SHOWING THE NUMBER OF PERSONS REGISTERED AS MEDICAL PRACTITIONERS AND DENTISTS ON 31st DECEMBER 1936.

Medical Practitioners.

	British Qualifications			Qualifications not registrable in British Register	Total
	Government Service	Private or Missionary	Not resident	Private or Missionary	
British ...	47*	19	13*	—	79
British Indian	3	4	6	—	13
Goan	—	6	3	—	9
German ...	—	3	—	23	26
Swiss	—	—	—	1	1
United States	—	—	—	3	3
Greek	—	—	—	1	1
Total ...	50*	32	22*	28	132

*Two medical practitioners hold dental qualifications in addition and appear in both lists.

Dentists.

	British Qualifications			Foreign Qualifications	Total
	Government Service	Private or Missionary	Not resident	Private or Missionary	
British ...	2*	1	3*	—	6
German ...	—	—	—	4	4
Japanese ...	—	—	—	1†	1
Total ...	2*	1	3*	5	11

*Two medical practitioners hold dental qualifications in addition and appear in both lists.
†Registered in Foreign List of British Dentists' Register.

TABLE SHOWING THE NUMBER OF PERSONS WHOSE NAMES WERE ADDED TO, OR REMOVED FROM, THE REGISTER DURING THE YEAR 1936.

	Added		Total	Removed		Total
	Medical	Dental		Medical	Dental	
British	2	—	2	1	—	1
German	4	2	6	—	—	—
Goan...	1	—	1	—	—	—
Total...	7	2	9	1	—	1

In addition to the registered medical practitioners in the table above, fifty-nine persons are licensed to practise medicine in the territory under specified conditions; the licences require renewal each year. Of these fifty-two are in government service, and seven are privately employed by commercial undertakings or charities.

6. *Aerial Transport.*

During the year the following aeroplane journeys were made on medical grounds: (a) by medical practitioners in emergency illness, 7; (b) for other

cognate purposes, 8. Outward and return journeys on consecutive days are classed as a single trip. (b) includes visits of inspection and despatches of serum by specially chartered aircraft.

Preliminary examination of the question of providing an air ambulance based at Dar es Salaam was undertaken.

7. *Publications.*

The following medical pamphlets were published by Government and distributed to officials, missions and others to whom they might prove to be of value :—

(a) "Ugonjwa wa Malaria" (No. 17, four pages, in Swahili, illustrated).
(b) "Enteric Fever" (No. 18, one page).
(c) "Leprosy" (No. 19, four pages with seven illustrations).
(d) "Silicosis" (No. 20, ten pages, by C. Wilcocks, Tuberculosis Research Officer).
(e) "Rabies" (No. 21, two pages, in Swahili).
(f) "A further note on the Yellow Fever situation in relation to Tanganyika Territory" (No. 22, six pages, by R. R. Scott).

The following posters were issued; they were prepared from posters of a similar character issued by the Prevention of Accidents Committee of the Rand Mutual Assurance Company, Limited, in the Transvaal and with their assistance and permission which is gratefully acknowledged :—

(a) *Jilinde Leo* (No. 25 : Safety first).
(b) *Gharama ya Kuepuka* (No. 26 : Prevention is better than cure).
(c) *Vidonda* (No. 27 : Early treatment of injuries).
(d) *Hadhari kabla ya hatari* (No. 28 : Safety first).
(e) *Chupa zilizovunjika* (No. 29 : Broken bottles; illustrated).
(f) *Kuchubuka tu* (No. 30 : Danger of an infected scratch; illustrated).
(g) *Tazama mguu* (No. 31 : Ulcer due to neglected injury; illustrated).
(h) *Ukijikata* (No. 32 : Seek first-aid; illustrated).

(B).—Legislation.

The following legislation affecting public health was promulgated during the year :—

The Town Development (Control) Ordinance, 1936 (No. 15 of 1936).—An Ordinance to make provision for controlling development in townships and minor settlements.

The Minor Settlements (Amendment) Ordinance, 1936 (No. 27 of 1936).—An Ordinance to amend the Minor Settlements Ordinance, 1931, in respect of sanitary rates.

The Markets Ordinance. The Markets (Townships) Rules, 1936 (Government Notice No. 84 of 1936).—Certain provisions previously included in the Township Rules are amended and transferred to rules under the Markets Ordinance.

The Townships Ordinance. The Township (Amendment) Rules, 1936 (Government Notice No. 85 of 1936).—These rules revoke certain sections of the Township Rules relating to markets, equivalent provisions having been made in new Market Rules under the Markets Ordinance.

The Township (Building) (Amendment) Rules, 1936 (Government Notice No. 91 of 1936).—These rules amend certain sections of the Township Rules relating to the erection of buildings.

The Township (Amendment) Rules, 1936 (Government Notice No. 101 of 1936).—These rules amend the section of the Township Rules dealing with the subdivision of plots.

The Township (Township Authorities) (Amendment) Rules, 1936 (Government Notice No. 142 of 1936).—These rules amend the constitution of township authorities and, *inter alia*, remove the necessity for certain medical officers to act as executive officers of township authorities.

The Townships (Cultivation of Crops) (Amendment) Rules, 1936 (Government Notice No. 160 of 1936).—Township authorities are enabled by these rules to prohibit or regulate the cultivation of any crop within the township.

The Infectious Disease Ordinance. The Infectious Disease (Declaration of Infected Area) Order, 1936 (Government Notices Nos. 61 and 81 of 1936).—Parts of Maswa district in the Lake Province were declared infected with plague.

The Infectious Disease (Declaration of Infected Area) (Revocation) Order, 1936 (Government Notices Nos. 74 and 108 of 1936).—The notices declaring part of Maswa district infected were revoked.

The Infectious Disease (Declaration of Infected Area) (No. 3) Order, 1936 (Government Notice No. 151 of 1936).—The Uha chiefdoms in Kigoma district were declared an infected area owing to the occurrence of cerebro-spinal meningitis.

(C).—FINANCIAL.—*Expenditure.*

The revised estimates of expenditure on medical services for the year provided the sum of £190,783, equal to 9·80 per cent of the total expenditure of the territory on ordinary and recurrent services, a reduction of £199 as compared with the provision for 1935 when the percentage of territorial expenditure was 11·7 per cent. The actual expenditure for the year under review was £185,687 representing a saving of £5,096 on the sum provided.

On the revenue side, medical receipts show a further increase over the sum estimated, amounting to £1,580 as against £787 for 1935. (*See* table at page 68 for financial details.)

During the year approval was given for a more elastic method of graduating hospital maintenance fees in accordance with a patient's income. It is believed that this has resulted in a number of persons who were unable to pay the former fixed fees and who consequently defaulted with considerable loss to the revenue, paying a sum more in accordance with their capacity; this together with the generally better times, has doubtless contributed largely to the net increase of revenue which has occurred.

Medical Stores and Equipment.

The serious depletion in stocks of medical stores and equipment, to which reference was made in the report for 1935, became so acute during the year under review that it was necessary to make very large increased provision in the estimates for 1937, an increase of £5,775 or 47 per cent of the allocations for 1936, making a total of £18,000 which must be regarded as a minimum annual expenditure if stocks are not to fall below the margin of safety, and which does not in my view allow an adequate sum for replacement of worn-out equipment.

The system of earmarking sums of money proportionate to the estimated consumption of the different stations, which was mentioned in the previous report, has caused indenting officers to appreciate the need for giving careful

consideration to the relative cost of the stores for which they indent. Certain minor difficulties have been experienced in estimating and adjusting these earmarks due to lack of accurate data of consumption in the past, on which to base them, to fluctuations in prices and to incorrect classification in respect of special work such as sleeping sickness. These, however, are remediable and will disappear as more experience of the system is gained.

By the end of the year arrangements were complete to transfer the medical store from the old buildings, which were inconvenient and inadequate to our present needs, to new and much more commodious premises taken over from the Railway Administration. It is now possible to have not only all the medical stores and equipment housed in one block but also the sanitation stores which were formerly dealt with quite separately. Work was also begun on constructing a separate building adjacent to the new main store for use as a spirit store and as an unallocated store in which essential reserve stocks can be held.

Financial Summary.

(For details *see* table at page 66.)

	Estimated £	Actual £
Revenue:		
Receipts, Medical*	6,750	8,330
Reimbursements by Railways	3,070	3,070
Total ...	£9,820	£11,400

	Approved Estimate £	Revised Estimate £	Actual £
Expenditure:			
Ordinary recurrent ...	189,001	...	185,704
Non-recurrent ...	900	...	31
Total ...	£189,901	£190,783	£185,735

	Estimated £	Actual £
Colonial Development Fund:		
Malaria Research Scheme	5,677	5,169
Tuberculosis Investigation	2,071	1,749
Sleeping Sickness Research	1,552	1,631
Anti-Malaria Works, Dar es Salaam ...	2,518	1,824
Total ...	£11,818	£10,373

*Does not include £1,064 for bills of health collected by Marine and Customs departments shown in table of financial details.

Summary of Expenditure of Provincial Medical Services.

	Eastern	Central	Lake	Southern	Southern Highlands	Tanga	Western	Northern	Total
Population(1931 census)	619,191	579,712	1,390,600	543,413	491,911	355,914	697,692	344,198	5,022,640
Hospital beds	521	227	435	228	172	247	201	239	2,270
Population per hospital bed	1,188·5	2,553·8	3,196·8	2,383·4	2,859·9	1,440·9	3,470·8	1,440·2	2,212·2
	£	£	£	£	£	£	£	£	£
Medical, nursing and subordinate personnel	22,021	5,024	14,046	6,917	6,806	11,982	13,165	9,445	89,406
Upkeep of institutions, stores, equipment ...	6,667	2,235	2,030	2,120	2,065	2,452	3,832	*2,668	24,069
Transport, freight and travelling	1,811	229	1,430	421	547	1,229	1,167	664	7,498
Total departmental ...	30,499	7,488	17,506	9,458	9,418	15,663	18,164	12,777	120,973
Total by native treasuries	1,411	1,207	9,140	987	1,938	938	2,052	892	18,565

Summary of Expenditure on non-provincial Medical Services.

	Headquarters	Laboratory		Dental	Territorial	Sleeping Sickness
		Routine	Research "C.D.F."			
	£	£	£	£	£	£
Personnel	6,279	3,685	6,366	1,135	(a) 3,934	8,112
Upkeep, stores, etc. ...	12	677	3,150	165	(b) 2,501	3,556
Transport, etc.... ...	81	35	†957	—	(c) 149	584
Total	6,372	4,397	10,473	1,300	6,584	12,252

*Includes Tuberculosis Scheme. †Includes steamer passages. (a) Includes tutorial medical officer, matron, supervisory staff at mental hospital, storekeepers and temporary nursing assistance. (b) Includes mental hospital vaccines and sera, epidemic measures and medical attendance outside the territory. (c) Includes travelling and transport allowances.

II.—THE STATE OF THE PUBLIC HEALTH.

1. Attendance at Hospitals.

The figures for new patients attending at the general hospitals during the last five years are given below. These do not include patients treated at maternity clinics, infectious diseases hospitals, sleeping sickness treatment centres, or dispensaries in charge of Africans :—

Year	In-patients	Out-patients	Total	Output figure
1932	29,250	479,517	508,767	1,635
1933	30,680	514,197	544,877	1,751
1934	34,332	546,445	580,777	1,866
1935	35,206	542,659	577,865	1,856
1936	36,559	598,016	634,575	2,038

A method of assessing the output of a hospital by calculation from the in-patients and out-patients has been evolved by Dr R. Mackay, Malaria Research Officer. The statistical value of the method is under examination but the total output figures calculated by this method are shown above as a matter of interest. The steady upward trend of the output of curative work at the government hospitals is readily apparent when these figures are plotted graphically over a period of eleven years.

2. Attendance at Tribal Dispensaries.

The cases treated during the year numbered 529,954, an increase of 68,857 over 1935. The figures for the last five years are as follows :—

1932	374,614
1933	402,011
1934	451,520
1935	461,097
1936	529,954

Thirteen new tribal dispensaries were opened in the Central, Eastern, Lake, Northern, Southern, Tanga and Western provinces during 1936. One dispensary was closed during the year; and a total of 297 were in operation at the end of 1936. Provision has been made for the opening of twenty more in various provinces during 1937. The standard of work at these dispensaries which are maintained by the native authorities is steadily rising, particularly where facilities exist as in the Lake province for systematic instruction of the native personnel employed.

3. Maternity and Child Welfare.

Maternity and child welfare work is carried on at thirteen special clinics maintained by Government and by missionary societies, some of which receive financial assistance for this work from Government. The figures for all clinics are as follows :—

	1932	1933	1934	1935	1936
Total number of confinements admitted to clinics... ...	2,344	2,673	3,809	3,396	3,614
Total number of confinements attended to elsewhere ...	190	66	33	8	2
Total number of new cases (in-and out-patients) seen at clinics:					
Mothers	35,283	25,485	28,554	27,365	30,689
Children	46,806	42,932	41,163	40,820	48,648
Total number of attendances at clinics:					
Mothers	273,763	292,916	269,254	204,008	177,432
Children	454,401	485,798	395,648	306,537	294,174

The clinics are situated in the following areas :—

Central Province.—Dodoma District : Dodoma, Mvumi, Buigiri, Kilimatinde, Mpwapwa, all maintained by Church Missionary Society.

Eastern Province.—Dar es Salaam District : Dar es Salaam, maintained by Government; Kilosa District : Berega, maintained by Church Missionary Society.

Lake Province.—Shinyanga District : Shinyanga, maintained by African Inland Mission; Bukoba District : Rubungo, maintained by Church Missionary Society; Kagondo, maintained by White Sisters Mission.

Tanga Province.—Tanga District : Tanga, maintained by Government.

Western Province.—Kahama District : Nzega and Kahama, both maintained by Government.

The purpose for which Government provides and contributes to the maintenance of these clinics is not directly to produce healthy babies; but to get large numbers of obstetrical cases on which to train native midwives. But, as experience elsewhere has shown, a great deal of the work consists in the treatment of minor illness in mothers and children. This is inevitable in the early stages while the confidence of the women is being secured; but it tends soon to absorb a disproportionate amount of time and energy expended on the individual instead of on the educative work for which the clinics are primarily established; and this should not be lost sight of when the establishment of new clinics is under consideration.

4. Mental Hospitals.

Dodoma mental hospital which is administered by a senior medical officer, assisted by a trained European mental hospital superintendent and his wife also trained, has accommodation for seventy non-European males and forty females. More accommodation is urgently required on both male and female sides. There is no accommodation for Europeans. The accommodation on the male side is inadequate to meet the demands made at present, as several instances have occurred where it has not been possible to accept patients for admission through want of accommodation. It is anticipated that new buildings will be erected in 1937 to provide additional accommodation for some twelve African patients.

In these circumstances patients are accommodated in first and second class prisons which are gazetted as lunatic asylums for the purposes of the law. While the Commissioner of Prisons and his staff do everything possible for these unfortunate patients, who are in all cases separated from prisoners, it is manifestly unfair both to patients and staff that they should be so accommodated; and in the absence of specially trained staff, both medical and subordinate, no treatment can be given to early cases so admitted, the very ones who offer the best prospect of recovery.

At Lutindi mental hospital, situated in the western Usambara mountains some twenty-five miles north of Korogwe, and established and maintained by the Bethel Bielfeld (Lutheran) Mission, there is accommodation for over a hundred patients. This institution has grown from small beginnings in 1904, when accommodation was provided for a single patient, and is under the supervision of European missionary workers trained in mental hospital work. It is visited frequently by the mission doctor at Bumbuli, some twenty-nine miles away and by the Senior Medical Officer, Tanga, and the visitors appointed by law. Government pays a *per capita* fee to the mission in respect of each patient.

A medical officer holding a diploma in psychological medicine has recently been appointed to the department, and it is intended to make as much use as possible of his services in an advisory capacity.

Statement of Patients in Mental Institutions.

Numbers :—

	Dodoma			Lutindi			Prison lunatic asylums					
							Males		Females		Total	
	M.	F.	Total	M.	F.	Total	Civil	Criminal	Civil	Criminal	Civil	Criminal
In-patients, 1st Jan. 1936	68	28	96	73	35	108	9	17	—	—	9	17
Admitted during the year	31	17	48	12	2	14	124	11	24	2	148	13
Discharged during the year	13	3	16	12	—	12	93	1	10	—	103	1
Escaped	1	—	1	—	—	—	—	—	—	—	—	—
Transferred to mental hospital	—	—	—	—	—	—	26	6	12	—	38	6
Died during year ...	18	7	25	13	1	14	5	2	1	—	6	2
In-patients, 31st December 1936	67	35	102	60	36	96	9	19	1	2	10	21

Classification of Admissions.

	Dodoma	Lutindi
Mania	12	6
Melancholia	2	1
Delusional insanity ...	11	4
Confusional insanity ...	4	—
Dementia	6	1
Epilepsy	6	—
Mental defectives ...	6	—
Paralysis	—	2
For observation ...	1	—

Causes of Deaths of Patients Dying in Mental Hospitals.

Mental Hospital, Dodoma.

Sex of deceased	Bodily condition on admission	Form of Mental Disorder	Date of Admission	Cause of Death
Female ...	Poor	Acute Mania	8.12.30	Inanition
,, ...	,,	Dementia	18.2.31	Diarrhoea
,, ...	,,	,, ...	13.6.31	Lobar Pneumonia
Male ...	Fair	Chronic Dementia ...	31.7.32	Bronchitis
,, ...	,,	Epilepsy	13.8.32	Ankylostomiasis
Female ...	Poor	Acute Mania	12.4.33	Acute Diarrhoea
Male ...	Good	Chronic Dementia ...	14.6.33	Inanition
Female ...	,,	Dementia	5.8.33	Sudden Heart Failure
,, ...	F. Good	Epilepsy	8.8.33	Acute Bronchitis
Male ...	Good	,, ...	22.9.33	Epilepsy
,, ...	,,	Acute Mania	6.4.34	Diarrhoea
,, ...	Fair	Delusional Insanity ...	15.8.34	,,
,, ...	Good	,, ,,	3.10.34	,,
,, ...	Poor	Mental Deficiency ...	28.11.34	Ankylostomiasis
,, ...	,,	Imbecility	31.1.35	Leprosy
,, ...	Good	Acute Mania	2.3.35	Phlebitis
,, ...	Fair	Mental Deficiency ...	17.4.35	Diarrhoea
,, ...	,,	Chronic Dementia ...	29.6.35	Ankylostomiasis
,, ...	,,	Acute Mania	9.10.35	Septicaemia
,, ...	Good	,, ...	5.12.35	Exhaustion
,, ...	,,	Delusional Insanity ...	16.12.35	Inanition
,, ...	F. Good	Dementia	10.3.36	,,
Female ...	Poor	Acute Mania	1.4.36	Exhaustion
Male ...	Fair	Epilepsy	20.6.36	Epilepsy
,, ...	,,	Delusional Insanity ...	11.7.36	Cerebral Haemorrhage

Mental Hospital, Lutindi.

Sex of deceased	Bodily condition on admission	Form of Mental Disorder	Date of Admission	Cause of Death
Female ...	Poor	Delusional Insanity ...	1.4.23	Chronic Debility
Male ...	Good	Mania	25.3.31	Exhaustion
,, ...	,,	,, ...	20.2.32	Cerebral Malaria
,, ...	,,	Delusional Insanity ...	8.7.33	,,
,, ...	,,	Mania-Epilepsy	25.10.34	Exhaustion
,, ...	Fair	Mania	26.4.35	Cerebral Malaria
,, ...	Good	,, ...	27.4.35	Enteritis
,, ...	Poor	Paralysis...	21.5.35	Paralysis
,, ...	Weak	Dementia	12.8.35	Chronic Debility
,, ...	Fair	,, ...	9.9.35	Dysentery
,, ...	Weak	Delusional Insanity ...	27.9.35	Chronic Debility
,, ...	Poor	Paralysis...	12.11.35	Paralysis
,, ...	,,	Delusional Insanity ...	11.3.36	Chronic Debility
,, ...	Fair	Epilepsy with temporary Insanity ...	22.10.34	Exhaustion

The following inspections of the mental hospitals were made :—

	Dodoma	Lutindi
The Chief Secretary	1	—
The Deputy Director of Medical Services ...	1	—
The Provincial Commissioner, Central Province ...	3	—
The Solicitor-General	1	—
Judge G. K. Knight-Bruce	1	—
The Board of Visitors	12	—
The Senior Medical Officer	40	3
The District Officer, Lushoto	—	3
The Assistant District Officer, Korogwe	—	1
The Medical Officer, Bumbuli Mission	—	8

5. Dental Treatment.

(*See* report by Senior Dental Surgeon at page 60.)

The following work for officials, their wives and families was performed by the Senior Dental Surgeon, Dar es Salaam. The post of dental surgeon was not filled until the end of the year and no work was, therefore, carried out at Tanga :—

Attendances	2,569	Gum treatment... ...	354
Fillings, permanent ...	1,040	Dentures	140
Extractions	810	Repairs	90
Pulp treatment ...	87	Radiograms	289

6. General Diseases.

Of general diseases the greatest number (95,209) treated was as in 1935 due to diseases of the digestive system : these amounted to 14·97 per cent of the total cases treated. Diseases of the skin and cellular tissue accounted for 14·86 per cent and the respiratory system for 12·22 per cent. The proportions closely resemble those for 1935.

The group of parasitic and infectious diseases accounted for the greatest number of deaths (500). The proportion of the total was 33·24 per cent as compared with 32·40 per cent in 1935. There were 267 deaths (17·76 per cent) from diseases of the respiratory system as compared with 388 (21·99 per cent) for 1935 and 154 (10·24 per cent) from diseases of the digestive system as against 172 (11·19 per cent) for 1935.

For details of other general diseases *see* tables at pages 70-91.

7. Infectious Diseases.

Infectious diseases accounted for 36·03 per cent of the total cases and 33·24 per cent of the total deaths among patients treated in government hospitals and dispensaries as against 35·17 and 32·40 per cent in 1935. The following table shows the incidence of dangerous infectious diseases since 1932 :—

Year	Smallpox		Cerebro-spinal Meningitis		Plague		Influenza		Rabies		Diphtheria	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
1932 ...	768	48	7	1	12	10	123	30	—	—	—	—
1933 ...	626	38	—	—	9	5	—	—	—	—	—	—
1934 ...	411	37	55	13	—	—	2,600	491	—	—	—	—
1935 ...	503	4	153	66	1	1	2,819	82	—	—	—	—
1936 ...	1,649	50	179	114	16	9	—	—	1	1	6	2

The various infectious diseases are dealt with under separate headings below. The relative numbers of cases of diseases treated at hospitals have been calculated as the percentage of out-patients at any one hospital to total out-patients treated at that hospital.

(1) BLOOD INOCULATION GROUP.

Malaria.—Fifty-two thousand seven hundred and twenty-five cases, of which 34,154 were subtertian, were treated during the year. The figures include cases in which the diagnosis was not microscopically confirmed. The greatest number treated in one hospital (8,322) was at Moshi and the highest relative numbers were at Kibongoto and Kondoa. Sixty-three deaths were recorded as against sixty-seven in 1935. A whole-time medical officer working on malaria research has been stationed at Moshi throughout the year and reference to the incidence of the disease in this area is contained in the report of the Medical Officer of Health of the Northern province at page 63.

Blackwater Fever.—Forty-six cases with eight deaths were reported as against fifty-seven cases with twenty-two deaths in 1935. Seven cases with two deaths occurred at Mwanza and five cases with no deaths at Tanga.

African Relapsing Fever.—One thousand seven hundred and thirty-nine cases with seven deaths were reported. The greatest number treated at a single hospital was two hundred and sixty at Kigoma and the highest relative numbers were at Morogoro and Biharamulo.

Plague.—Eight cases of plague with six deaths occurred in the Maswa district of the Lake province and eight cases with three deaths in the Iringa district of the Southern Highlands province.

SLEEPING SICKNESS.

A number of cases still continue to occur in the old epidemic areas, but the only serious outbreak during the year was in the Liwale district. A brief description of it is given below under the Southern province. The following table gives the number of cases diagnosed and deaths reported in the different provinces during the last three years :—

Province	New cases			Deaths		
	1934	1935	1936	1934	1935	1936
Central	12	17	8	9	6	1
Eastern	1	—	2	—	—	—
Lake	381	321	139	102	92	97
Northern	—	—	—	—	—	—
Southern	3	4	103	4	—	61
Southern Highlands (formerly Iringa) ...	—	—	—	—	—	—
Tanga	—	—	—	—	—	—
Western	1,078	733	284	282	244	225
Total ...	1,475	1,075	536	397	342	384

The situation in the different provinces are as follows :—

Central Province.—The only cases reported during the year were eight in Mkalama now part of the Singida district. In this district *G. morsitans* is rapidly advancing both from east and from the west while *G. swynnertoni* is advancing from the north. Since 1934 systematic clearings have been carried

out partly with a view to arresting the tsetse advance, partly to prepare places for the resettlement of people who are living in congested areas on the one hand and those who are living in fly-infested or infestible bush on the other. The clearings made were too late to be effective as barriers against the fly advance but those in the Rift valley, in the Duruma valley east of the Iramba plateau, and along parts of the Kisukwani river due west of the old Mkalama station are being occupied by native settlers.

The Eastern Province.—One case occurred in the Dar es Salaam district and one in Rufiji. The former was a native of Kilwa and may have been infected there. The source of infection of the Rufiji case is not known.

The Lake Province.—In Bukoba district land was selected for the resettlement of the inhabitants of the southern part of the district who live in tsetse bush bordering on the Biharamulo sleeping sickness area. Six hundred and fifty-seven families moved into the selected area during the year. This is a continuation of the resettlement scheme commenced south of the Kagera river in 1934 where about eight hundred and fifty families were moved out of the bush.

In Mwanza district concentrations were made in the sleeping sickness area between Emin Pasha Gulf and Smith Sound. A census of the number of families moved is not yet available.

The cases diagnosed in the province during the year came from the following districts: Biharamulo, fifteen; Mwanza, twenty-three; and Musoma, one hundred and one.

The Southern Province.—The more important endemic areas in this province are along the upper reaches of the Rovuma river and its tributaries in the Songea and Tunduru districts, along parts of the Mbemkuru river in both Kilwa and Lindi districts and along parts of the Liwale and Matandu rivers in Liwale district.

A serious outbreak occurred in Liwale district during 1935 and 1936 which was traced to an old endemic area in the north of Lindi district. A Liwale man visited a place called Namiha in this area, remained there some months and returned home ill in or about September 1935. One person after another in the group of villages near the sick man's home contracted a similar disease. An African district sanitary inspector, trained in microscopy, saw two of these cases on the 6th March 1936 and diagnosed sleeping sickness. The Sleeping Sickness Officer who visited the affected area in October and November was able to get a clear history of a spread from one small village to another either following the visit of an infected person or being contracted and brought home by a person who visited an infected village. In the affected group of villages, the largest of which is Madaba with two hundred and one families, six cases appeared to have occurred in 1935 and one hundred and three in 1936.

The Western Province.—In Kigoma district the vast majority of the people are now living either in open country or in concentrations. In the north (Uha) there are about six hundred families living on the edge of the great Moyowosi-Malagarasi swamp where for various reasons they had been allowed to make small unsuitable concentrations. It is proposed to resettle them in 1937. South of the railway line there is still a very scattered population living in small bush villages. In Kigoma district (including Kasulo and Kibondo) the number of new cases dropped from eight hundred and sixty-eight in 1933 to eighty-nine in 1936.

In Tabora district a resurvey of the chiefdoms of Uyoa and Urambo was completed and a new concentration of the Urambo people was made about

forty-two miles from Tabora. Approximately one thousand families were moved into an area of twenty-four square miles. The people of the Ukumbi section of the Urambo chiefdom remain in their former concentration in the north.

(2) INTESTINAL AND EXCREMENTAL GROUP.

The Enteric Group.—Seventy-five cases of enteric fever and seventeen cases of paratyphoid fever with sixteen and two deaths respectively were treated at government hospitals. The greatest number of enteric cases occurred at Morogoro (nineteen cases with four deaths), Tanga (eleven cases with three deaths), Mwanza (ten cases with one death). Eleven cases of paratyphoid with one death were treated at Mwanza.

Dysentery.—One thousand seven hundred and nine cases, of which 627 were amoebic, 72 bacillary and 1,010 unspecified, were treated during the year and fifteen deaths were recorded. The comparative figures for 1935 are 1,469 cases, 532 amoebic, 106 bacillary, 831 unspecified, 83 deaths. The greatest number of cases was reported from Lindi where 167 cases (5 amoebic, 2 bacillary and 160 unspecified) were treated.

HELMINTH DISEASES.

Ankylostomiasis.—Of a total of 17,555 cases the greatest number treated at a single hospital was 2,211 at Tanga. The highest relative numbers were at Kigoma and Bagamoyo. *See* also report of the Medical Officer, Morogoro, at page 57.

Taeniasis.—Of 17,914 cases treated, the greatest number at a single hospital was 5,366 at Kibongoto and the highest relative numbers were at Moshi and Arusha.

Ascariasis.—Of 16,135 cases treated, the greatest number at a single hospital was 5,247 at Kibongoto and the highest relative numbers were at Moshi and Arusha.

Schistosomiasis.—Of 3,733 cases treated, 668 were at Mwanza, 350 at Tabora, 335 at Dar es Salaam and 314 at Maswa.

(3) SURFACE INOCULATION, CONTACT AND DROPLET INFECTION GROUP.

Syphilis.—Twenty-three thousand four hundred and eighty-four cases of all types were treated at government institutions and fifteen deaths were recorded. The greatest numbers treated were 2,827 at Bukoba, 2,471 at Shanwa and 2,171 at Mwanza.

Gonorrhoea.—Nine thousand six hundred and nineteen cases were recorded with five deaths. The highest number treated at a single hospital was 1,267 at Bukoba. The relative highest number was at Dar es Salaam.

Yaws.—Seventy thousand six hundred and eighty-two cases and four deaths were recorded in government institutions. The greatest number treated at a single hospital was 7,675 at Dar es Salaam and the highest relative numbers were at Kasulu and Lindi. The total cases of syphilis and yaws treated at government institutions and at missions to which assistance in the form of drugs is given by Government are shown below :—

	Syphilis	Yaws
1932	35,229 ...	114,115
1933	33,058 ...	109,113
1934	33,701 ...	117,884
1935	34,581 ...	104,611
1936	39,503 ...	101,179

Leprosy.—There are thirty-one leprosy settlements in the territory with a total of about 3,400 inmates. Eleven of these settlements are controlled directly by Government and the remainder by missionary societies. Assistance is given to mission-controlled settlements in the form of grants towards maintenance and of drugs and material. A sum of £2,700 was allocated by Government for the maintenance of leprosy patients.

Smallpox.—The outbreak of smallpox in the Southern province continued throughout the year. Extensive vaccination was carried out but the policy of concealment practised in the early stages, partly as a result of the mildness of the lesions, enabled the disease to spread widely. A total of 1,640 cases was recorded of which 1,417 were in the Lindi district. Fifty deaths from smallpox were reported largely from native sources. The opinion of the doctors most intimately associated with the outbreak is that the mortality rate was even lower than this and that the majority of the deaths reported were more likely to have been due to intercurrent diseases. Seven cases of mild smallpox with no deaths occurred in Rungwe district.

Cerebro-spinal Meningitis.—One hundred and seventy-nine cases of cerebro-spinal meningitis were recorded with 114 deaths. Of these, 104 cases with 66 deaths occurred in Biharamulo district and 51 cases with 37 deaths in Kigoma district.

Diphtheria.—Six cases with two deaths occurred in Dar es Salaam. (*See* Senior Pathologist's and Medical Officer of Health's reports, pages 50 and 98.)

Scarlet Fever.—Two cases (European children) were reported from Moshi.

Tuberculosis.—The Tuberculosis Research Officer, Dr Wilcocks, continued his valuable survey of the incidence of the disease in different parts of the territory, including areas in the Northern, Tanga, Lake, Central and Southern Highlands provinces; the funds so generously provided by the Colonial Development Committee will come to an end in May 1937, and a final report summarizing the whole of the work since its commencement in 1930 is in course of preparation.

The survey has demonstrated a high incidence of infection throughout the areas examined, particularly in those of dense population, and the fact that our natives react more severely to tuberculin than do people in England, in which they resemble the natives of South Africa. A high disease rate has been shown to be associated with a high positive tuberculin rate and a severe reaction.

Bovine tuberculosis is not at present a factor of importance in the spread of human tuberculosis in the territory, but contact with sputum-positive cases, which is closest in families and which, outside families, varies directly with the density of the population, is the most important factor in the spread of the disease. Living tubercle bacilli were found in the dry dust of the houses of sputum-positive cases.

The largest number of pulmonary cases was seen between the ages of fifteen and thirty-five, and they showed a preponderance of cases of acute "galloping" consumption. There is reason to think that the resistance of these natives to infection is not so great as that of the white races.

Treatment by artificial pneumo-thorax and other modern procedures holds out great hopes in selected cases; and therapeutic collapse of the lung is now practised at several hospitals in the territory, notably under Dr Davies at Kibongoto on the western slopes of Kilimanjaro, where a tuberculosis hospital

has been established since 1927. In connection with this hospital a chain of dispensaries stretching round to the east of the mountain is conducted by Dr Davies partly in collaboration with mission dispensaries and partly by African staff directly under his control. Early cases are detected at and sent for treatment from these dispensaries; and on discharge from hospital the cases are visited, and contacts kept under observation from them by home visiting when necessary. Refills are given in artificial pneumo-thorax cases by the senior staff; and radiograms can be taken by means of portable X-ray apparatus operated from the back wheel of a motor car.

At Kibongoto the construction of a nucleus African Papworth has been started, in the form of a small village settlement of model dwellings in which convalescent patients with their families may reside during a period of graduated work, and pursue under medical observation a rural life under ideal conditions and with the guidance of the Agricultural and Veterinary departments. Industries on a small scale are also contemplated, starting with small articles which the native commonly makes for himself, such as mats and baskets.

A paper on silicosis was prepared by Dr Wilcocks and was printed as a medical pamphlet for distribution to gold-miners and others likely to be concerned with cases of the disease. A scenario for film purposes illustrating tuberculosis was also prepared in connection with the Bantu Educational Kinema Experiment.

During the year 3,044 cases of tuberculosis with 102 deaths were notified. Their distribution is shown in the following table :—

TABLE SHOWING INCIDENCE OF TUBERCULOSIS AT THE VARIOUS STATIONS IN THE TERRITORY DURING 1934, 1935 AND 1936.

	1934				1935				1936			
	Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary	
	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths
Central Province:												
Dodoma ...	12	3	2	...	21	2	2	...	6	4	2	...
Kondoa ...	6	...	...	...	5	...	...	...	1	...	...	...
Singida ...	17	3	1	...	11	1	...	...	13	1	4	1
Mkalama ...	3	...	...	...	5	...	1	...	4	...	1	...
Manyoni ...	7	...	...	...	6	1	...	...	5	...	...	...
Mpwapwa ...	3	...	1	...	...	...	...	...	3	...	...	...
Eastern Province:												
Dar es Salaam:												
European Hospital ...	3	...	...	...	1	...	...	...	1	...	2	1
Sewa Hadji Hospital ...	55	1	6	1	41	...	6	2	53	...	3	1
Health Office	57	...	...	...	48	...	...	...	50	...	...	...
Private Practitioners	9	...	...	...	10	...	...	...	6	...	...	...
Carried forward	172	7	10	1	148	4	9	2	142	5	12	3

TABLE SHOWING INCIDENCE OF TUBERCULOSIS AT THE VARIOUS STATIONS IN THE TERRITORY DURING 1934, 1935 AND 1936—*contd.*

	1934				1935				1936			
	Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary	
	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths
Brought forward	172	7	10	1	148	4	9	2	142	5	12	3
Bagamoyo ...	6	...	...	...	3	...	...	...	10	...	...	...
Kilosa ...	12	2	...	...	11	2	...	...	12	...	2	...
Mafia... ...	8	...	1	...	...	...	...	...	...	...	...	...
Mahenge ...	12	...	...	...	3	...	...	...	12	...	...	...
Utete ...	4	2	...	...	1	...	...	...	10	...	...	...
Morogoro ...	10	2	...	...	17	5	6	...	17	2	9	2
Southern Highlands:												
Iringa ...	7	1	1	...	7	2	1	...	6	1	3	...
Mbeya ...	4	1	3	...	5	...	8	...	13	...	1	...
Chunya ...	...	...	...	...	...	...	...	...	...	...	4	1
Tukuyu ...	14	2	20	1	22	...	14	...	10	...	10	2
Njombe ...	...	...	...	...	...	...	...	...	...	...	...	...
Malangali ...	5	...	1	...	3	1	1	...	2	...	1	...
Mwaya ...	5	...	21	...	5	1	25	...	...	...	...	...
Lake Province:												
Biharamulo ...	37	1	3	...	5	...	1	...	13	1	...	...
Bukoba ...	43	12	12	1	26	5	4	...	21	3	4	...
Musoma ...	3	1	1	...	7	...	...	...	7	...	2	...
Mwanza ...	24	3	2	...	19	2	2	...	19	2	1	1
Mwanza Health Office ...	24	...	...	...	14	...	...	...	7	...	...	...
Shinyanga ...	8	...	...	...	5	...	1	...	...	...	...	...
Maswa ...	8	2	...	...	7	1	2	...	...	...	...	...
Shanwa ...	...	...	...	...	4	...	...	...	3	...	1	...
Northern Province:												
Arusha ...	36	6	6	...	29	4	48	...	15	2	19	2
Mbulu ...	...	...	27	...	1	...	2	...	11	2	1	1
Moshi ...	58	7	7	...	96	7	25	2	83	4	48	...
„ Kibongoto	162	6	76	2	128	13	181	...	881	10	775	...
„ District Work ...	661	...	405	...	460	...	446	...	253	...	114	...
Southern Province:												
Lindi ...	15	1	4	1	8	3	3	1	11	...	...	...
Kilwa ...	2	...	...	...	2	...	2	...	1	...	...	...
Liwale ...	...	...	...	...	...	...	...	...	1	...	1	...
Mikindani ...	19	...	...	...	10	...	...	...	10	1	...	...
Songea ...	4	2	4	1	5	...	1	...	2	2	4	1
Tunduru ...	2	1	1	...	2	...	1	...	2	...	...	...
Carried forward	1365	59	605	7	1053	50	783	5	1574	35	1012	13

TABLE SHOWING INCIDENCE OF TUBERCULOSIS AT THE VARIOUS STATIONS IN THE TERRITORY DURING 1934, 1935 AND 1936—*contd.*

	1934				1935				1936			
	Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary		Pulmonary		Non-pulmonary	
	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths	Cases	De-aths
Brought forward	1365	59	605	7	1053	50	783	5	1074	35	1012	13
Tanga Province:												
Handeni ...	...	...	...	...	...	...	...	...	...	...	...	...
Korogwe ...	7	...	...	...	11	...	1	...	12	...	6	...
Lushoto ...	11	3	10	1	5	1	3	1	4	1	2	...
Pangani ...	18	2	1	...	17	2	...	...	14	3	...	...
Tanga ...	100	7	13	...	55	4	13	1	102	16	10	2
Tanga Health Office ...	111	...	...	...	29	17	...	...	33	18	...	...
Usangi ...	111	...	44	...	50	...	53	...	157	...	63	...
Western Province:												
Kahama ...	10	...	7	...	12	1	...	...	6	1	...	...
Kasulo ...	2	1	2	2	1	...	...	...	2	...	1	...
Kibondo ...	12	3	...	...	5	1	...	...	7	2	5	1
Kigoma ...	4	2	5	3	8	...	1	...	4	2	4	1
Nzega ...	6	1	1	...	7	2	1	1	3	2	1	...
Sumbawanga	1	...	3	...	...	...	1	...	1	1	3	...
Tabora ...	26	1	...	...	28	1	2	...	15	3	3	1
Total ...	1,784	79	691	13	1,281	79	858	8	1,934	84	1,110	18

8. HEALTH OF THE KING'S AFRICAN RIFLES.

Six deaths among native troops occurred, and nine invalidings. Units were stationed at Dar es Salaam, Tabora, Masoko (near Tukuyu) and Arusha during the year. The mean effective monthly strength in Dar es Salaam was 281 with a sick rate of 0·12 per cent: the figures for the territory as a whole being 1,168 and 2·57 per cent.

9. HEALTH OF PRISONERS.

The general health of prisoners shows a reduction in the number of sick and in the death rate as compared with 1935. The death rates for the last five years have been as follows:—

	Daily average number of prisoners	Daily average on sick list	Admissions to hospital	Number of deaths	Deaths per 1,000 prisoners
1932	2,417·00	90·3	1,096	58	23·99
1933	2,518·09	82·3	1,231	43	17·07
1934	2,725·10	85·7	1,395	50	18·34
1935	2,602·30	85·0	1,514	67	25·74
1936	2,565·20	81·70	1,423	55	21·44

An enquiry was made as to the death rate among life-sentence prisoners. The Commissioner of Prisons found that only nine deaths had occurred among life-sentence prisoners during the past five years following periods of imprisonment varying between one year and six months and six years and nine months. These deaths formed only 3·24 per cent of the total deaths among prisoners during the same period.

10. Port Health Work and Administration.

Routine port health work was carried out as in previous years. The numbers of steamers and dhows given pratique during the year at the different ports are as follows :—

Stations	Steamers	Dhows
Bagamoyo	2 ...	168
Bukoba	52 ...	53
Dar es Salaam ...	641 ...	1,250
Kigoma	278 ...	—
Kilwa	27 ...	239
Lindi	122 ...	75
Mafia	28 ...	268
Mikindani	67 ...	67
Musoma	76 ...	198
Mwanza	86 ...	1,783
Pangani	75 ...	182
Tanga	485 ...	276
Total ...	1,939 ...	4,559

11. Sanitation.

Sewerage and Storm-water Drainage.—Material for the new sewerage scheme for Tanga township was delivered and the preliminary construction put in hand.

The urgency of the provision of a sewerage system for Dar es Salaam is increasing. During the year township improvements and the erection of many new buildings in the bazaar area have emphasized the inadequate existing provision for sewage disposal. Storm-water drainage in certain parts of Dar es Salaam is very unsatisfactory and increasing erosion in the native area calls for the provision of new drains as soon as possible.

Water Supplies.—The public water supply of Tabora township was increased and improved during the year.

Chemical changes, including increase in chlorides and presence of nitrites, have been noted in the Dar es Salaam public water supply. Fuller details are to be found in the Government Analyst's report at page 109. Consideration is being given to the provision of a purification plant for the water supplies of Dar es Salaam, Morogoro and other stations.

Anti-malarial Drainage.—A grant of £27,000 has been received from the Colonial Development Fund to carry out the anti-malarial drainage works in Dar es Salaam recommended by the Malaria Research Officer.

Control of Domestic Mosquitoes.—The incidence of aedes mosquitoes at stations where some measure of control can be maintained shows some reduction in the large towns : dhows are the most prolific source. (*See* table—Aedes Index—at page 42.)

Refuse Disposal.—Refuse disposal by controlled tipping continues to replace incineration in the townships with satisfactory results. In Dar es Salaam extensive reclamation of borrow pits and depressions has been effected and the medical officer of health anticipates actual saving of money on anti-malarial filling by the use of this material.

The question of manufacturing compost from town refuse has been under consideration and the Medical Officer, Morogoro, has observed the process as carried out by the Agricultural Department with a view to ascertaining the existence of fly-breeding during the course of manufacture. Dr McKenzie reports :—

> "Frequent and careful examinations have been made and no sign of breeding has taken place and the compost ground is quite free from flies. . . . . One thing I am now certain of is that flies do *not* breed in these particular compost heaps."

Aedes Index for 1936.

(The Aedes Index means the percentage of houses inspected in which the larvae of Aedes mosquitoes are found.)

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Mean Index for 12 months
Arusha	·27	·12	·04	·15	Nil	Nil	Nil	Nil	·04	Nil	Nil	Nil	·05
Bukoba	·36	·39	·85	·61	Nil	·12	·11	·13	Nil	Nil	·22	·10	·24
Dar es Salaam (whole town excluding dhows)	2·84	2·99	1·93	3·89	3·41	1·56	·96	·77	·86	·78	·93	1·91	1·90
Dar es Salaam Zone I (Residential)	1·10	1·90	1·48	2·63	1·23	·75	·35	·15	·42	·19	·30	·49	·92
Dar es Salaam Zone II (Commercial)	2·56	2·56	1·48	2·89	3·35	1·31	·78	·76	·68	·73	·75	1·52	1·62
Dar es Salaam Zone III (Native Quarter)	4·85	3·91	2·44	5·00	4·13	2·03	1·33	·97	1·00	1·00	1·07	2·52	2·52
Dar es Salaam, dhows	2·80	5·08	2·00	Nil	Nil	4·62	1·28	1·54	2·35	2·94	6·25	Nil	3·21
Kigoma	1·00	2·00	3·56	2·33	2·44	·36	·50	2·00	·31	·32	·45	1·04	1·33
Kigoma (on ships)	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	·00
Kilosa	3·09	3·80	9·09	12·97	13·10	12·10	6·20	13·30	9·90	7·00	9·50	8·20	9·02
Lindi...	4·36	4·96	4·13	5·19	6·21	5·89	1·33	1·05	1·22	1·20	1·95	2·27	3·31
Lindi, dhows	36·36	30·00	14·28	25·00	Nil	Nil	Nil	Nil	Nil	Nil	Nil	3·12	21·74
Mikindani	·98	·62	·77	·75	·69	·54	·85	·62	·37	·12	·26	·83	·62
Morogoro	5·07	4·95	9·15	7·54	8·46	3·90	3·30	2·50	1·90	·90	·17	1·50	4·11
Moshi	·49	·38	·32	·66	·60	·31	·19	·60	1·30	·22	·20	Nil	·44
Mwanza	3·18	1·91	3·53	1·74	1·67	1·33	·36	·04	·86	·99	·90	1·24	1·48
Nzega	2·12	2·39	3·00	3·10	2·71	2·00	2·24	3·66	·04	2·88	3·90	2·55	2·55
Pangani	3·42	2·36	2·51	3·61	2·03	3·57	2·97	2·74	1·72	1·82	1·86	3·05	2·64
Shinyanga	3·29	4·60	3·95	2·63	3·95	2·60	3·20	1·28	2·56	1·92	2·56	1·92	2·87
Songea	2·68	·84	·84	·84	·80	Nil	Nil	Nil	Nil	Nil	Nil	·80	·57
Tabora	·07	·60	·12	2·15	·62	·41	·60	·05	·60	·16	·20	·43	·50
Tanga	·23	·24	·28	·22	·55	·39	·29	·26	·31	·42	·27	·36	·32
Tanga, dhows	9·40	9·30	5·00	Nil	20·80	6·25	Nil	Nil	Nil	Nil	3·03	Nil	8·93

Note.—A "Nil" return in the case of dhows does not in general indicate the freedom of the dhows from Aedes larvae but the seasonal absence of long-distance dhows from the port.

12. Statistics.

(1) General native population.

The most recent estimate (1931) of the native population of the territory is computed at 5,022,640. No reliable statistics relating to birth, death and infant mortality rates are available at present.

(2) General European population.

Acknowledgment is made to the Registrar-General of Births and Deaths for a return of the registered deaths, a total of fifty-nine, which are summarized as follows :—

Causes of Deaths of Europeans during 1936.

(Classified according to the Manual of the International List of Causes of Deaths, 1931.)

Infectious and parasitic diseases	17
Cancer and other tumours	2
Chronic poisoning	1
Diseases of the nervous and sense organs	4
,, ,, circulatory system	6
,, ,, respiratory ,, ...	4
,, ,, digestive ,, ...	9
Non-venereal diseases of the genito-urinary system and annexa ...	2
Diseases of pregnancy, childbirth and the puerperal state ...	1
Old age	3
Affections produced by external causes	6
Ill-defined diseases	4
Total ...	59

(3) European official population.

(For table of sick, invaliding and death rates, *see* page 45.)

Deaths.—There were six deaths among European officials, all due to disease :—

	1935	1936
Suicide	1 ...	—
Blackwater fever	1 ...	—
Ruptured appendix	1 ...	—
General peritonitis	1 ...	—
Accident—drowning	1 ...	—
,, aeroplane propeller	1 ...	—
,, fall from aerial ropeway	1 ...	—
Appendicitis	— ...	1
Aortic aneurysm	— ...	1
Cerebral malaria	— ...	1
Septicaemia	— ...	1
Myocarditis	— ...	1
Apoplexy	— ...	1
Total ...	7 ...	6

Invalidings.—Nine European officials were invalided during the year as compared with eight and six during the two preceding years :—

	1934	1935	1936
Tuberculosis	1	—	—
Pain in the region of gall bladder	1	—	—
Neurasthenia	—	1	2
Neoplasm of the neck	1	—	—
Pleurisy	—	1	—
Empyema	1	—	—
Epilepsy	1	—	—
Gastric ulcer	2	—	—
Cerebral gumma	—	1	—
Myocarditis	—	—	1
Debility	1	—	—
Appendicitis	—	1	1
Nervous exhaustion	—	1	—
Malignant swelling of sub-maxillary gland	—	1	—
Malignant condition of abdomen	—	—	1
Sprue	—	—	1
Fracture, humerus	—	—	1
Malaria	—	—	1
Gastro-duodenitis	—	—	1
Total	8	6	9

(4) ASIAN OFFICIAL POPULATION.

Deaths.—There were four deaths among Asian officials, three due to disease and one to wounds :—

Blackwater fever	1	2	—
Acute appendicitis	1	—	—
By violence	1	—	—
Stricture of the urethra	—	1	—
Peritonitis	—	1	—
Cholecystitis	—	1	—
Pneumonia	—	1	—
Enteric fever	—	—	1
Myocarditis	—	—	1
Stab wound, abdomen	—	—	1
Exfoliative dermatitis	—	—	1
Total	3	6	4

Invalidings.—Seven Asian officials were invalided during the year :—

Pulmonary tuberculosis	—	2	—
General debility and premature senility	—	2	1
Sciatica	1	—	—
Neurasthenia	1	—	1
Diabetes	1	—	2
Cardiac dilatation	1	—	—
Mediastinal new growth	1	—	—
Gastric ulcer	1	—	—
Chronic interstitial nephritis	—	1	—
Fistula in ano	—	1	—
Aneurysm of the aorta	—	—	1
Malaria	—	—	1
Jaundice	—	—	1
Total	6	6	7

Sick, Invaliding and Death Rates, European and Asian Officials.

	European			Asian		
	1934	1935	1936	1934	1935	1936
1. Total number of Officials Resident	965	947	950	1,152	1,143	1,178
2. Average number Resident	598	587	589	841	834	860
3. Total number on Sick List...	623	570	641	823	809	1,068
4. Total number of days on Sick List	4,434	4,015	4,655	4,117	4,190	5,247
5. Average daily number on Sick List	12·15	11·00	12·75	11·28	11·48	14·38
6. Percentage of sick to average number Resident	2·03	1·87	2·16	1·34	1·38	1·67
7. Average number of days on Sick List for each Patient ...	7·12	7·04	7·26	5·00	5·18	4·91
8. Average sick time to each Resident	7·41	6·84	7·90	4·89	5·02	6·10
9. Total number Invalided	8	8	9	6	6	7
10. Percentage of Invalidings to Total Resident	0·83	0·84	·95	0·52	0·52	0·50
11. Total Deaths	Nil	7*	5†	3	6	5
12. Percentage of Deaths to Total Resident	Nil	0·74	·53	0·26	0·52	·42
13. Percentage of Deaths to average number Resident	Nil	1·19	·85	0·36	0·72	·58
14. Number of cases of sickness contracted away from Residence	5	16	2	2	1	2

Note.—One European official died in England, one in South Africa and one on Lake steamer in Kenya waters; they are not shown in the above return.

*One death not shown in the Table of Returns of Diseases and Deaths (In- and Out-patients).
†Two deaths not shown in the Table of Returns of Diseases and Deaths (In- and Out-patients).

(5) CLASSIFICATION OF HOSPITAL CASES AND DEATHS.

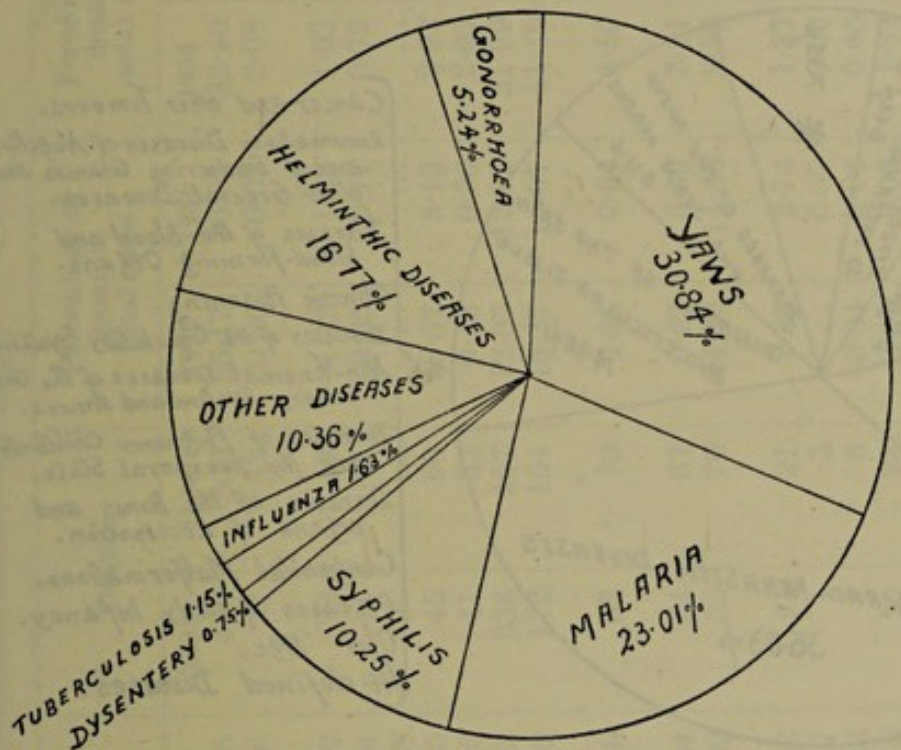
Tables showing the classification of hospital cases and deaths by groups for 1935 and 1936 are given at page 49, and detailed lists of diseases and deaths classified in groups for all races and for Europeans separately are at pages 70 and 81.

Diagrams showing the proportion of cases and deaths at hospitals classified according to the groups used in the Manual of the International List of Causes of Deaths are reproduced at page.....

It is of interest to note that in spite of an increase of cases treated, amounting to almost ten per cent of the figure for 1935, the proportions of the cases in the different groups showed no significant variation. On the other hand there was a reduction in the total deaths (in- and out-patients together) and a reduction in the death rate from 2·65 to 2·36 per thousand patients. The respiratory group shows an appreciably lower death rate.

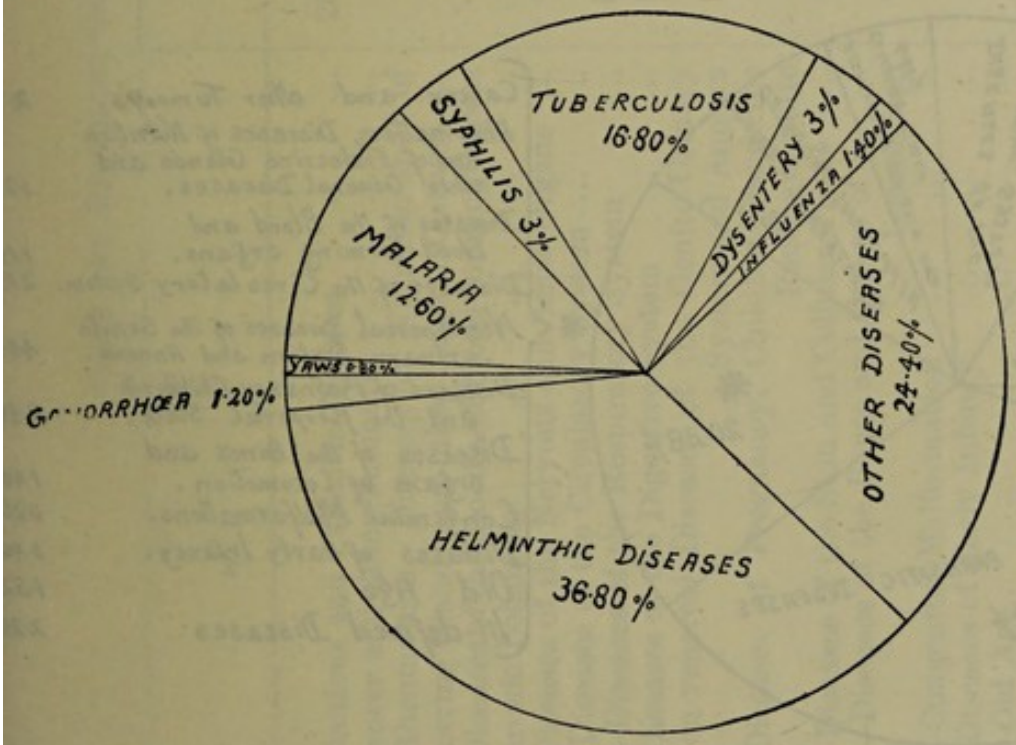
It is of interest to note that the number of cases of cancer and other tumours rose from 325 to 436 (34 per cent) with a corresponding increase in the number of deaths.

Proportion in Percentages of Infectious and Parasitic Diseases.
In- and Out-Patients treated at Hospitals.



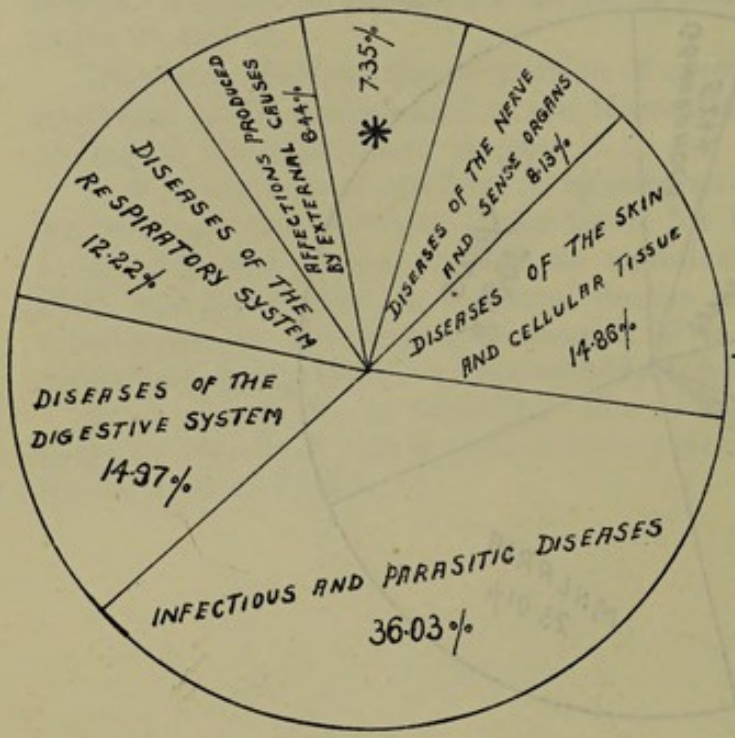
Total Incidence 229,175.

Proportion of Deaths in Percentages of Infectious & Parasitic Diseases
In and Out-Patients at Hospitals.



Total Deaths 500

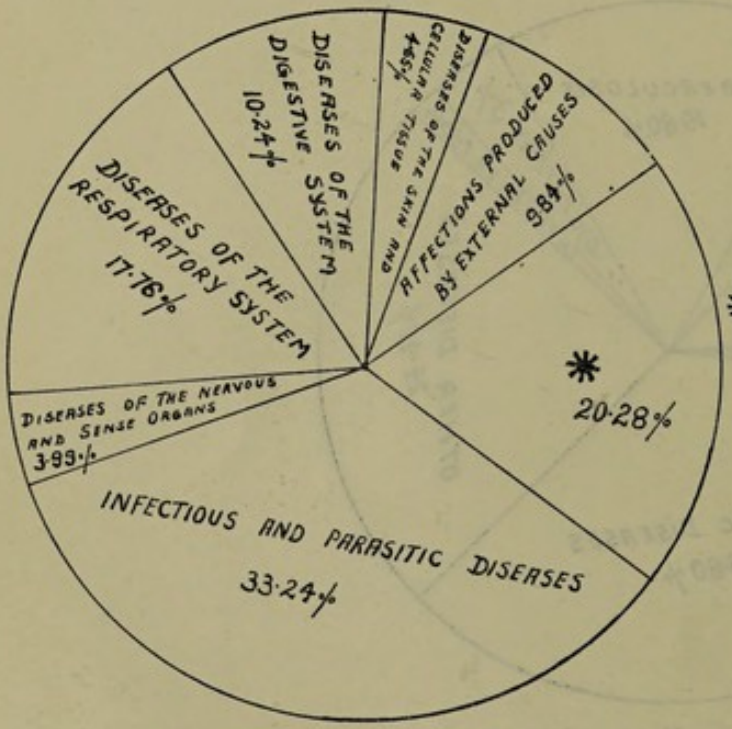
Proportion of Infectious, Parasitic, Systemic and other Diseases Shown as percentages of total cases treated at Hospitals.



* Cancer and other Tumours. 0.07%
Rheumatism Diseases of Nutrition and of Endocrine Glands and other General Diseases. 1.28%
Diseases of the Blood and blood-forming Organs. 0.77%
Chronic Poisoning. ----
Diseases of the Circulatory System. 0.36%
Non-Venereal Diseases of the Genito-urinary System and Annexa. 0.84%
Diseases of Pregnancy Childbirth and the puerperal State. 0.59%
Diseases of the Bones and organs of Locomotion. 2.74%
Congenital Malformations. 0.07%
Diseases of early Infancy. 0.04%
Old Age. 0.03%
Ill-defined Diseases. 0.56%

Total Incidence 636,037

Proportion of Deaths of Infectious, Parasitic, Systemic & other Diseases shown as Percentages of Total Deaths at Hospitals.



* Cancer and other Tumours. 2.79%
Rheumatism, Diseases of Nutrition and of Endocrine Glands and other General Diseases. 1.27%
Diseases of the Blood and blood-forming organs. 1.14%
Diseases of the Circulatory System. 2.13%
Non-Venereal Diseases of the Genito-urinary System and Annexa. 4.65%
Diseases of Pregnancy, Childbirth and the puerperal State. 2.46%
Diseases of the Bones and organs of Locomotion. 1.40%
Congenital Malformations. 0.20%
Diseases of early Infancy. 0.40%
Old Age. 1.52%
Ill-defined Diseases. 2.26%

Total Deaths 1504

Cases and Deaths by Groups, 1936 (Government institutions only).

	Cases		Deaths		Percentage of group to total cases		Percentage of deaths to total deaths	
	1935	1936	1935	1936	1935	1936	1935	1936
I.—Infectious and Parasitic Diseases	203,734	229,175	498	500	35·17	36·03	32·40	33·24
II.—Cancer and other Tumours	325	436	32	42	0·06	0·07	2·08	2·79
III.—Rheumatism, Diseases of Nutrition and of Endocrine Glands and other General Diseases ...	7,656	8,112	25	19	1·32	1·28	1·63	1·27
IV.—Diseases of the Blood and Blood-forming Organs	3,750	4,894	11	17	0·65	0·77	0·72	1·14
V.—Chronic Poisoning	7	18	...	...	...	...	...	...
VI.—Diseases of the Nervous and Sense Organs ...	49,663	51,720	45	60	8·57	8·13	2·93	3·99
VII.—Diseases of the Circulatory System	2,515	2,306	41	33	0·43	0·36	2·67	2·19
VIII.—Diseases of the Respiratory System ...	69,956	77,693	338	267	12·07	12·22	21·99	17·76
IX.—Diseases of the Digestive System	89,029	95,209	172	154	15·37	14·97	11·19	10·24
X.—Non-venereal Diseases of the Genito-Urinary System and Annexa	5,077	5,340	63	70	0·88	0·84	4·10	4·65
XI.—Diseases of Pregnancy, Childbirth and the Puerperal State	1,553	3,764	34	37	0·27	0·59	2·21	2·46
XII.—Diseases of the Skin and Cellular Tissue ...	84,556	94,502	55	70	14·60	14·86	3·58	4·65
XIII.—Diseases of the Bones and Organs of Locomotion	16,533	17,436	21	21	2·85	2·74	1·37	1·40
XIV.—Congenital Malformation	27	417	1	3	...	0·07	0·06	0·20
XV.—Diseases of Early Infancy	238	263	7	6	0·04	0·04	0·45	0·40
XVI.—Old Age...	533	219	29	23	0·09	0·03	1·89	1·52
XVII.—Affections produced by External Causes ...	41,130	40,984	141	148	7·10	6·44	9·17	9·84
XVIII.—Ill-defined Diseases	3,050	3,549	24	34	0·53	0·56	1·56	2·26
Total ...	579,332	636,037	1,537	1,504	100·00	100·00	100·00	100·00

Note.—The classification is in accordance with the Manual of the International List of Causes of Death, 1931 edition.

III.—ABSTRACTS FROM ANNUAL REPORTS OF MEDICAL AND HEALTH OFFICERS.

Dar es Salaam: Dr B. O. WILKIN, Acting Senior Health Officer.

A reduction in the number of sanitary inspectors as a result of staff movements was particularly unfortunate in a year of returning prosperity and increased building activity.

The Malaria Research Unit, financed by the Colonial Development Fund, completed its programme during 1936 and the control of anti-malaria measures reverted consequently to the Health department. Construction was begun on the drainage schemes drawn up by the unit.

Refuse Disposal.—Regulated tipping was substituted this year in the place of open incineration. No increase of staff was involved. A greater bulk of refuse became available for filling depressions and it is considered that a considerable reduction in the cost of new drainage schemes, amounting perhaps to several thousand pounds a year, can be effected by the use of this material.

Street Cleaning.—Difficulties have been experienced in keeping the streets free from blowing refuse resulting from the practice of sweeping the street cleanings into small collections. Small experimental trucks carrying dustbins have been constructed and appear to provide a satisfactory solution when available in sufficient numbers.

Latrines.—Four labourers have been trained in the use of the latrine-borer auger apparatus and a number of experimental unlined bore-holes have been constructed in compounds in the native area.

Trading Premises.—Unsatisfactory conditions exist in certain premises, particularly those associated with the supply of milk and those involving the storage of rat-attracting produce. Surveys of these trades have been made with a view to effecting the necessary improvements.

Food Inspection.—No difficulty has been experienced in the examination of foodstuffs, or in gaining admission to any shop or godown where foodstuffs are stored. All foodstuffs found unfit for human consumption have been voluntarily surrendered for destruction. Only on one occasion has it been considered necessary to ask the magistrate to give a destruction order, this being due to the large quantity of foodstuffs seized. One hundred and fifty-five lots of foodstuffs were surrendered during the year. Of 284 samples of milk taken, four were found to be slightly below the required standard.

Diphtheria.—Six cases of diphtheria (with two deaths) occurred in Asian residents. Milk was suspected as the source of infection but the number and distribution of cases did not support this theory. The anti-diphteritic serum obtained from South Africa proved efficient in controlling cases detected early. The public were warned of the occurrence of this disease and of the necessity of cases receiving early treatment.

Tuberculosis.—The African cases of tuberculosis admitted to the infectious diseases hospital are all in an advanced state of the disease, and show extensive affection of both lungs. The death rate is consequently very high. Artificial pneumothorax gave very encouraging results in an Indian case but none of the Africans who received this treatment have responded well and maintained improvement.

Maternity and Child Welfare.—The central clinic is situated in Bagamoyo Street. Clinics for women and children are also held at the central African school dispensary, the King's African Rifles dispensary, the police barracks and at the Ilala native suburb. Extensive repair or rebuilding will soon be required in connection with the Bagamoyo Street clinic and it is felt that consideration should be given to the question of erecting a new main clinic on a more central site.

School Medical Inspections.—These were conducted by the health officers and the sister in charge of the clinic. A large number of cases of streptococcal dermatitis and ringworm of the scalp occurred, the treatment of which was unfortunately handicapped by the intervention of the school holidays.

Water Supply.—Chemical changes have been noted in the pipe-borne water supplied to the town and have been the subject of investigation by the Senior Pathologist. *B. coli* were on one occasion found in a sample of the water: they were ascribed to the presence of a dead frog in part of the collecting plant: measures were taken to remove the source and obviate a recurrence.

Port Health.—New port health regulations were brought into force, by which vessels complying with certain conditions were freed from the necessity of flying the quarantine flag on arrival and of awaiting the visit of the Port Health Officer before beginning work. Minor difficulties have been experienced in the application of the new procedure but should prove of a temporary nature only. Out of 641 vessels arriving in the port, standard quarantine messages were received from 105.

Tanga: Dr A. I. Meek, Senior Health Officer.

Malaria.—A generous rainy season stimulated mosquito breeding activity, providing record anopheline larvae catches in Tanga township. With the exception of one channel dug in Liwali Street, no new drainage works were attempted, as all available labour was required to keep in order the miles of earth channels already dug. Kisosora alone claimed the daily attention of a large squad during the rainy season in order to clear the drains of the hundreds of tons of sand washed down from Nguvumali and to prevent as far as possible the inundation of this low-lying area. Considerable areas of low-lying ground were, however, filled in by dumping town refuse covered with earth daily, at Chumbageni, Nagiwana, Machingago, Narembwe and Bombo.

Representatives from the London School of Hygiene and Tropical Medicine (Messrs Leeson and Gillet) visited Tanga and collected material in the course of their *A. funestus* investigation.

Cerebro-spinal Meningitis.—Some anxiety was caused in the southern Usambara area by the occurrence of cerebro-spinal meningitis imported from Kigoma. The diagnosis of fifteen cases with five deaths was confirmed. The cases occurred among estate labourers chiefly at Ambangulu, Korogwe area. This estate was also affected by an epidemic pneumonia which may have been a modification of the same disease, although the association was not clearly established. Every possible local preventive action was taken and all employers of labour informed of the situation, general instructions being circulated with regard to measures necessary for the prevention of an extensive outbreak.

Helminthic Infestations.—The incidence of helminthic infestations remains high in the out-districts. Facilities for treatment in the Handeni district are poor, due to reduction in tribal dispensaries and lack of native authority funds for the supply of drugs. In the course of an inspection carried out by the

senior health officer in the Kilindini country of the Handeni district, samples of stools from one hundred and seventeen natives were found to have helminthic infection, thirty-three per cent being due to hookworm and nineteen per cent due to roundworm. Several cases with whipworm and rectal bilharzia were also noted.

Examination of eighty-two stools at Ngera village, Handeni district, indicated a similar infection rate in spite of the fact that a tribal dresser is stationed there, and an African district sanitary inspector available for inspection and educative work. These two factors were rendered ineffective due to the fact that the district officer was unable to supply drugs for the dispensary, and although latrines have been dug at most essential places the inhabitants prefer to go elsewhere. Supplies of carbon tetrachloride, etc., were sent from the Health Office, Tanga, and arrangements made for immediate treatment of cases. With regard to future medical attention, it is proposed to train a dresser at Tanga for posting to this area.

Urinary bilharzia is common in the Tanga district. Curative work was carried out, in addition to that at the Tanga hospital, in connection with the maternity and child welfare clinic and at schools, where the incidence is found to be in the neighbourhood of nine per cent in adults and forty per cent in children. Treatment of cases up-country is a matter of difficulty, unless in the case of schools, where pupils might be transferred to Tanga for an intensive course of injections; and even then they may return only to become reinfected. Only a very moderate improvement appears to be indicated in the case of Pongwe school where weekly injections are given. Fortunately no great disability appears to accompany the disease although its debilitating effect must be recognized.

Beri-beri.—Cases among estate labourers at Kibaranga (with four deaths) in the Tanga district and among the general population of the southern Usambara area were reported. The disease which occurred, however, during the big rains in the latter area was more of the nature of an "epidemic dropsy" attributable to the eating of old and musty grain from the previous year's crops, and measures directed to improve the storage of grain and foodstuffs at out-district stations appear to be indicated.

Maternity and Child Welfare.—The maternity and child welfare centre continues to increase in popularity. In-patient confinement cases have risen to the satisfactory figure of one hundred and ninety-two for the year. A successful baby show was held and three ayahs were trained for duty in the Pare district.

School Hygiene.—The annual routine examination of all pupils was carried out in July. Of four hundred and sixty pupils examined, thirty-seven were found to be suffering from bilharzia and twenty-two from ankylostomiasis.

Markets.—Improvements to zone II, Tanga market and to Muheza markets were carried out. The provision of a water supply for the fish market, Tanga, and of concrete tables for butchers at Muheza meat market remains to be made. Improvements to Lushoto market were carried out including the erection of a more hygienic type of fly-proof butcher's shop compartment.

Much concern was caused in health, veterinary and township authority circles, with regard to the collapse of the township controlled butcher trade and the corresponding alarming increase in the sale of uninspected meat at stalls just beyond the township boundary. The introduction of a bye-law to cope with the situation is being considered.

Town Planning.—The Nguvumali settlement to the west of Tanga is rapidly assuming the proportions of an extra-rural township residential zone. The question of regularizing the layout and sanitary control is receiving the attention of the Central Town Planning and Building Committee.

Muheza considered as a township leaves much to be desired regarding housing conditions. Considerable improvements could be effected given an up-to-date layout plan and an urban sanitary inspector for the daily supervision necessary, in addition to periodical inspections from Tanga.

Proposals were again put forward by the administration of Korogwe with regard to the development of the elevated land south of the river, for the building of new administrative offices and other government institutions and residences. No sites are available for any extensive building plan in the area at present under occupation.

Refuse Disposal.—Controlled tipping of refuse was continued with success except during the rains when some difficulty was experienced. Many hollows were thus filled in, areas convenient to each district being chosen due to shortage of transport. Kisosora area provides much scope for being dealt with in this manner but is somewhat beyond the convenient radius which might be served by hand transport. Due consideration was given to filling-in operations in the vicinity of Tanga hospital, refuse from Ras Kazone and the east end of zone II being utilized for this purpose.

Latrine Boring.—Equipment necessary for latrine boring apparatus was procured in December and an endeavour will be made to popularize this method of latrine construction in native areas and *shambas*.

Estate Labour.—A tour of a number of sisal estates was carried out in conjunction with the assistant district officer in charge of labour, Muheza, and various recommendations were made with regard to housing, sanitation, rationing, water supply and medical attention. Several attempts to reorganize housing conditions on *shambas* were noted, including in one instance the provision of camps consisting of separate two-roomed units of semi-permanent construction, viz. sun-dried brick walls rendered in cement and lime-washed, cement floors and corrugated asbestos roofing, each house being suitably lit and ventilated. This appeared to be a genuine attempt to produce a more congenial and hygienic type of family dwelling for native labourers. As each unit is intended for occupation of one family or alternatively two labourers, the arrangement would tend to limit the number of immediate contacts in the event of the occurrence of infectious disease.

The custom of allowing the permanent native staff of several estates in this province to cultivate small *shambas* in the vicinity of their dwellings should materially assist in maintaining a better fed, contented and hence economically superior labour. This measure is worthy of more general adoption where possible.

Port Health Work and Administration.—Four hundred and eighty-five steamers and two hundred and seventy-six dhows were boarded for the purpose of inspection of passengers other than "saloon" prior to landing at Tanga. Routine vaccination of immigrants was performed where necessary as in the previous year. None of the dangerous infectious diseases affected the port during the year.

Western Province: Dr G. S. P. Noble, Acting Sleeping Sickness Officer.

Water Supply.—The water supply of Tabora town, which has been a source of anxiety for years, has been improved by the sinking of new wells and the

installation of a clarifying plant. This supply is available in the European residential zone.

Anthrax.—Three cases were seen at the native hospital, Tabora, during the year, all being sporadic with no further cases from the same areas. One case was notified from Kahama.

Port Health.—Thirteen aeroplanes landed during the year, none of which arrived from the areas in the Air Navigation Schedule listed as infected with yellow fever.

Maternity and Child Welfare.—Clinics are maintained at Kahama and Nzega and a sub-clinic, under Kahama, is maintained at Ushirombo.

KIGOMA STATION: *Relapsing Fever.*—This is an unusually common disease throughout this area, but most of the patients seeking treatment have come from the vicinity of Kigoma township including Ujiji. Ticks are to be found in great numbers of native houses and quarters both in Mwanza village, Ujiji and Kigoma, while the old police lines are infested with them.

Trypanosomiasis.—Three cases of sleeping sickness were treated at Kigoma during 1936. The place where these patients were infected is not known though Uha is suspected in all three instances.

Cerebro-spinal Meningitis.—An epidemic of cerebro-spinal meningitis began in Belgian territory at the beginning of the second half of the year. In August, cases were diagnosed at Kasulu and an investigation brought to light a number of cases scattered throughout Uha. On the 7th October Uha was declared an infected area and recruiting of labour prohibited. At the end of the year it could be said that the disease had died out in Uha.

Helminthic Diseases.—With the exception of ankylostomiasis, helminthic diseases are uncommon in this area. Ankylostomiasis, however, is extremely prevalent throughout Uha and Kigoma and causes a great deal of disability. The disease not only complicates the treatment of other diseases but severe infestations are extremely common.

Dysentery.—Outbreaks of dysentery were reported from Ujiji and Nzega.

Southern Province: Dr J. WILLIAMSON, Medical Officer.

LINDI: *Refuse Collection and Disposal.*—A daily house-to-house collection of refuse is maintained for all European houses, commercial and government houses, hospital, prison and police lines. Indiscriminate dumping of refuse in surface water drains and open spaces still continues despite repeated efforts to persuade all inhabitants to utilize the dustbin stations provided by Government. All refuse collected is carted to the refuse dump in Gold Coast street, and to the dump in Mtanda road near Baluchi street, where it is burned. Fly breeding occurs in both these dumps owing to the impossibility of completely destroying the refuse by burning particularly during the rainy season. Covering of the refuse with soil cannot be done because of the lack of transport facilities and it is recommended that two large-capacity oven type incinerators with a proper refuse drying shed should be erected at the site in Gold Coast street.

Drainage.—With the exception of the masonry surface water drains in Gold Coast street, Artillery road and Market avenue, all the surface water drains are earth drains. The majority of the earth drains are unsatisfactory, having right-angled bends and junctions, and small culverts which become rapidly blocked with refuse and cause flooding. Representations have been made for a comprehensive masonry surface water drainage system to be installed in Lindi township.

Swamps.—The filling-in of swamps and depressions continued throughout the year. An attempt is being made to fill and properly drain the large creek at Ufukoni near the fish and meat market.

SONGEA : The general health of the community has been satisfactory and no serious outbreaks of infectious disease have occurred in the township. No serious epidemic has been reported in the district during the year.

Southern Highlands Province: Dr W. J. AITKEN, Medical Officer of Health.

Labour Conditions.—These are generally unsatisfactory owing to the poverty of the majority of alluvial miners and the ignorance of their employees.

Food and Deficiency Diseases.—Scurvy was common, but the vast majority of cases had only just arrived in the diggings and of these fifteen per cent came from Tanganyika, eight per cent from Nyasaland and the remainder from Northern Rhodesia. Ninety-four cases of this condition were treated at Chunya, and one hundred and thirty-six cases with six deaths reported from Mbeya. The disease as seen in the Lupa appears to be more in the nature of a general avitaminosis with a bias towards "C," the gums being invariably affected. Lemon juice is specific, a severe case making a rapid and complete recovery on two ounces of lemon juice administered three times daily. The manufacture of citrine fruit juice has commenced in Mbeya but unfortunately full advantage of this facility is not being taken by the miners.

The supply of maize meal has caused some anxiety due to the state of the Chunya-Mbeya road during the rains. Prices are high and many samples are bad, and there have been complaints that the maize flour is too rough thus causing stomach troubles, especially with new labourers who have been accustomed to hand-ground flour. Two new mills have opened at Chunya and are now producing a good smooth meal. Grain merchants are to be encouraged to store over the wet season when traffic dislocations are common and an attempt is being made to introduce the dwarf millet (*Eleusine coracana*) into the district as this grain stores well and would prove a useful substitute for maize.

Permanent camps are encouraged to set aside places for planting such foods as tomatoes, pawpaws and cassava, and the use of cassava, pumpkin and sweet potato leaves has been advocated as a source of vitamins A and C.

Water Supplies.—In May 1936 a water boring plant was installed at Chunya. The water is the same as that which feeds by seepage the water holes in the Galahenga river from which the present supply is drawn, and in view of the fissures in the granite and the close proximity of native dwellings on the higher ground, it will be necessary to treat the water. It is hoped to pump two thousand gallons an hour for eight hours, but delivery for domestic purposes will be only about sixty per cent of this rate. This, however, is adequate.

Towards the end of the dry season there was a serious water shortage throughout the diggings and at Makongolosi the position was acute as there are only two water holes some distance off for two hundred Europeans and about two thousand five hundred natives. A sharp outbreak of epidemic diarrhoea appeared amongst the labourers at Makongolosi and was attributed to this cause. The water boring plant has now been moved to Makongolosi and good progress is being made.

Typhoid Fever.—Typhoid has practically disappeared during the year and the majority of Europeans are now receiving protective inoculations.

Typhus.—Three cases of typhus in Europeans occurred in June. In each case the symptoms were the same. A sore throat, intense headache, high temperature and a rapid pulse and a profuse rose-coloured papular rash all over the body, particularly on the face. This appeared on the fourth day and soon disappeared. There was also severe constipation, great weakness and mental depression. The disease appears to be seasonal, appearing in May and this fact seems to indicate that the vector is to be found in the field, being either a tick, mite or flea.

Mosquito Breeding.—Mr Leeson of the London School of Tropical Medicine and Hygiene visited the Lupa in August to investigate *Anopheles funestus* but despite researches from the Ipogolo to Lake Rukwa none were found. Three larvae were found in the Chunya-Galahenga stream from whence the water supply is obtained. These were *A. coustani* and *A. maculipalpis.* No anopheline larvae were found in the Lupa, Chunya or Sira rivers, nor in Lake Rukwa, but *A. de meilloni* was found in the Lukolongo and Ipogolo rivers. Trenches and holes left by excavation for dry-blowing may be a source of breeding during the rains.

Dispensaries.—Three dispensaries have been built during the year, at the Lupa market, Kunguta's and Sengambia. They have rapidly become popular and are appreciated by the general body of employers.

IRINGA: *Swamps and Borrow Pits.*—A start was made during November with the scheme of planting suitable species of eucalyptus trees in the swampy valley on the northern side of the township. The young trees have been raised by the district agricultural officer at Iheme, and are delivered ready for planting in small bamboo pots. Some difficulty has been experienced owing to inundation of the lower levels by heavy rains, and in order to ensure a fair start for the young trees, mound planting has had to be resorted to. Good progress has been made with the scheme, and it is expected that two thousand five hundred to three thousand trees will be planted before the end of the rainy season.

The work of filling in borrow pits has been continued throughout the year. These pits have chiefly been created by mud brick-making on the part of natives for use in the construction of huts. Excavations for this purpose have been practically uncontrolled in the past and an endeavour will be made in the coming year to have operations confined to certain areas and controlled by an African inspector.

Springs.—Several springs have been producing culex mosquitoes, and towards the end of the year the sanitary labour gang was employed constructing outfall drains to eliminate pools and swampy patches caused by overflow from the springs. In all, about one and a half miles of drains were made resulting in complete elimination of mosquitoes from the affected area. For continued success, routine clearing of grass and silt from the new drains will be essential.

Plague.—Eight cases of plague were notified in January, three of which were fatal. One more case occurred in February. They were all members of one family at Mlolo village about five miles west of Iringa township. The cases were isolated in one large house, and one thousand four hundred and thirty plague inoculations were administered to natives in the village. Anti-rat measures in the township accounted for six thousand six hundred and forty-one rats during the year.

TUKUYU: *Medical School.*—A training school for tribal dressers has been in existence since January 1935. The teaching is carried out by the medical officer assisted by some of his subordinate staff. During the latter part of 1936

the medical officer was assisted by two African dispensers, one laboratory orderly and one theatre orderly. There were twelve students in training in 1936 and at the end of the year an additional five were selected for 1937. The minimum standard of general education required of candidates from 1936 onwards as a pass is standard V. The new students have passed standard VI. The duration of the medical course is a minimum of three years.

Morogoro: Dr A. McKenzie, Medical Officer.

Anti-malarial Drainage.—During the early part of the year a control pool was dug in the Mlali swamp with radiating drains tapping the swamp in different directions. The overflow from this pool is to a drain discharging into the Kikundi stream and consists of four-inch iron pipes the intake ends of which control the water level. The usefulness of this control pool is shown by the small amount of breeding that has taken place in the swamp since the construction. Oiling of the pool has been carried out by means of saturated sacking.

Enteric Fever.—Enteric fever has occurred in sporadic form in the town and district this year. In Morogoro hospital, eighteen cases have been treated and four deaths have occurred. A special bacteriological investigation was carried out in December by Dr Skan. (His findings are detailed in the Senior Pathologist's report at page 113.) T.A.B. vaccination was carried out in Morogoro town and in the Turiani area of the district.

Ankylostomiasis.—A careful record of the progress of severe and moderately severe cases of ankylostomiasis has been kept this year. Stools are examined before and after the routine anthelmintic of carbon tetrachloride and oil of chenopodium : the stools are carefully sieved and the adults collected and counted. In all cases when the haemoglobin is low, a weekly red-cell count and haemoglobin estimation is made. Some interesting facts have emerged which are briefly summarized here.

An investigation of seventy cases of moderate infection with ankylostomes gave the following results : 32 were apparently relieved of their parasites by one treatment and passed an average of 16·4 worms each; 38, whose stools still showed eggs after the first treatment, passed in that and subsequent treatments an average of 49 worms : In their first treatment, these passed an average of 22·4 worms. Very little correlation between the number of worms passed and the degree of anaemia was found, but among those with severe degrees of anaemia, it appeared that a greater number of treatments were necessary to remove all the parasites. The red-cell count showed little of interest : The colour index is constantly low and rarely reaches 0·9. To combat the anaemia, massive iron therapy (90gr. of a scale preparation daily) is given and the ordinary hospital diet is supplemented by a quarter of a pound of cooked liver daily, by shark oil and by palm oil.

Nutritional Disorders.—The writer records his conviction that faulty nutrition is the root cause of a large proportion of the sickness encountered at Morogoro, the chief manifestations of nutritional errors being a liability to severe and spreading ulcers and a form of intestinal disturbances which he provisionally names "nutritional diarrhoea."

The hospital diet has been redesigned. Liver is provided three times a week, meat twice and fish once : the cereals are varied and fresh fruit supplied when available. Striking changes have been noted in the texture of the skin and in the weight of patients : Amongst fifty-eight Nyaturu there was an average

increase in weight of nearly ten pounds per man in the course of two months' hospital treatment. The writer considers that the solution of estate feeding of labour lies in the provision of cooked food.

Northern Province: Dr D. B. WILSON, Medical Officer of Health.

Cerebro-spinal Meningitis.—An outbreak with several deaths occurred during August and September at the Kisangara estate near Lembeni. The sanitary superintendent was sent to investigate, and it was found that the cases had occurred amongst labourers recruited in the Kigoma district. Isolated cases were reported from Msaranga, Taveta and at the Karanga sisal estate near Moshi.

Chicken-pox.—Twenty-nine cases were reported during the year in Moshi township, a number of which occurred in the Indian school.

Anthrax.—Suspected cases of anthrax occurred at Rombo, six cases with four deaths; and at Kirua Vunjo, eight cases with five deaths. Two cases occurred within the township.

Scarlet Fever.—Two Greek children at the Hellenic School, Kibosho, contracted scarlet fever during the year. The first occurred in June and the second several months later. Both children were of the same family but boarded at the school.

Helminthic Diseases.—Ankylostomiasis is relatively uncommon, the majority of cases being from imported labourers. Tapeworm and roundworm infections are very prevalent. At Mbulu eighty per cent of the natives suffer from tapeworm infection due to their habit of eating raw meat.

Refuse Disposal.—The use of incinerators in Moshi and Arusha has been discontinued in favour of controlled tipping. In this way a large number of depressions have been filled up, and low-lying ground brought up to a proper level thus eliminating mosquito breeding places. Each day's refuse is covered with a foot of rammed earth and no nuisance has arisen. Care is taken to prevent fly breeding at the dumps.

Latrines.—Borehole latrines have been sunk in all areas where an African district sanitary inspector is posted. A water-flushed trough closet for public use was erected in Moshi and has proved satisfactory. At least three others of this type are required.

Labour.—A new labour camp was erected in the new native layout of Moshi township to house a hundred men employed by the Moshi Trading Company during the cotton season. This camp is well maintained and of satisfactory construction.

Food.—A rural meat market was constructed at West Machame by the native co-operative society and is an example of what can be done by a progressive people.

Lake Province: Dr J. M. CAMPBELL, Senior Health Officer.

The year was not marked by any dramatic change either in departmental or in extra-departmental affairs; but development in many directions was steady and satisfactory. In the larger departmental hospitals greater accuracy in diagnosis was aimed at and achieved, largely owing to the teaching laboratories attached to these hospitals. In these laboratories the pupils carried out a vast amount of microscopical work and, in general, this meant that microscopical methods of diagnosis were much more freely used in the out-patient departments. Efforts were also made by medical officers to combat the tendency to class all genital and pudendal disease as syphilis or gonorrhoea—

the prevalence of chancroid conditions, poradenitis, and such was recognized. The substitution of African medical auxiliaries for tribal dressers was started—the microscope and syringe became field weapons in the struggle against helminthic and protozoal diseases. Many improvements in the hospitals were effected during the year.

Thus steady progress was made against the everyday common diseases which are responsible for a huge infant death rate and an enormous amount of adult debility. Such progress is not obvious—it receives little publicity and is hardly recognized by the lay public. Sporadic plague in Maswa and sporadic cerebro-spinal meningitis in Bukoba and western Mwanza were responsible for a few deaths. It is unfortunate that the public imagination is so stirred by these spectacular diseases because, in order to allay the panic they cause, measures must be taken out of all proportion to their real importance. Plague, of course, in a cotton exporting district, becomes of consequence in so far as it may interfere with trade; and unhappily its arrival coincided with the cotton boom in the province; and cerebro-spinal meningitis though a rare cause of death in a scattered agricultural community is a real danger when it strikes a mining labour camp as it did in Geita.

Reports from all stations in the province, whether in the charge of European medical officers, sub-assistant surgeons or African dispensers, agree on one point, i.e. the prevailing diseases are: malaria, helminthic disease, venereal disease, ulcers, conjunctivitis, relapsing fever and a few chest complaints.

Cerebro-spinal Fever.—Sporadic cases occurred in Karagwe and Saragura. The Saragura mining company (Kentan Gold Areas, Limited) is taking steps to increase the accommodation for their labour and this should have a good effect in diminishing the incidence of the disease.

Plague.—Last year it was stated that: "It is a matter of providence only, that plague did not enter the province during the year. The unprecedented increase in 'rat attractive' material apparently did not entice any plague rats across our border." Providence was not so kind in 1936 and plague broke out in Maswa. Only eight cases with seven deaths occurred.

Malaria.—In the Mwanza hospital 1,443 cases were treated and one death was recorded; corresponding figures for last year were 1,255 cases with four deaths. This does not mean that malaria was more prevalent, it is rather an indication of an increase in the number of microscopical examinations carried out. No new drainage schemes were introduced; but all anti-larval work was continued.

In Bukoba a great deal of drainage and river clearing was carried out during the year. Drainage of the aerodrome which has been carried out will have a very good effect.

In Musoma anti-larval measures were continued throughout the year, but no new works were inaugurated either here or at any of the other stations in the province.

Relapsing Fever.—One hundred and twelve cases were treated in the Mwanza hospital. In 1935 there were one hundred and eleven cases. There was a great increase in the number of microscopical examinations carried out, and the number of cases of relapsing fever was about the same—an indication that there was probably a diminution in the prevalence of the disease.

Pulmonary Tuberculosis.—This disease is still comparatively rare—there were only nineteen cases treated in hospital at Mwanza in 1935 and eighteen in 1936.

Helminthic Diseases: Ankylostomiasis.—A further decrease in the number of cases treated in the Mwanza hospital is recorded. The disease is very prevalent in this district.

Schistosomiasis.—Both *S. haematobium* and *S. mansoni* are very common—there was an increase in the number of cases treated in the Mwanza hospital from 443 cases in 1935 to 584 cases in 1936.

In Ushashi (Musoma) a schistosomiasis campaign was carried out. The people were impressed by the medical officer and district officer with the necessity for continuing the treatment, with the result that 231 people received 1,755 injections—an average of 7·59 per patient. At the Musoma hospital, however, people were so reluctant to continue treatment that cases had to be treated as in-patients. The difference is difficult to understand; but I think that the Ushashi campaign illustrates the value of co-operation between the Administration and the Medical Department in introducing European medicine to the masses.

Deficiency Diseases.—An interesting comment is made by the Medical Officer, Musoma, who states that deficiency disease was only observed in prison inmates, that all cases cleared up on treatment with yeast and cod liver oil, and that it must be assumed that deficiency diseases exist outside the prison, but that sufferers do not attend the hospital for treatment.

Housing and Town Planning.—I will quote from my last year's annual report since conditions are unaltered: "In Mwanza particularly, and to no less extent in Bukoba and Musoma, the powers conferred by a Town Planning Act are urgently required. Mwanza has grown in a haphazard way for years and even with a Town Planning Act it will be difficult to cope with the chaos that has resulted.

EXTRACT FROM THE REPORT BY THE SENIOR DENTAL SURGEON

Mr H. M. Fisher, L.D.S., R.C.S.

Below is a brief summary of the dental work done during 1936 for officials and their families. The staff consisted of the writer and a dental mechanic, two African attendants and a messenger:—

	European	Asian	Total
Attendances	1,798	771	2,569
Fillings, permanent ...	918	122	1,040
Extractions	228	582	810
Pulp treatment	69	18	87
Gum treatment	251	103	354
Dentures	...	...	140
Repairs	...	...	90
Radiograms	...	...	289

In addition to the above, there were some 718 African attendances, chiefly for extractions, but some fillings were done for them when time permitted; dentures were made for some of them and two were treated for fractured mandibles.

The officer selected for the appointment of dental surgeon, vacant since Mr Newton retired in October 1935, had not arrived at the end of 1936.

It is hoped, on the writer's return from leave in 1937, that the officer selected in place of Mr Newton will tour the territory; adequate and regular treatment is essential in any dental scheme, and if the larger out-stations are visited twice a year, the attendances at Dar es Salaam should be reduced and more time should be available for the writer to undertake some of those duties which will benefit the native population.

IV.—EDUCATION OF THE PUBLIC IN HYGIENE.

A list of educational pamphlets and posters published and distributed during the year will be found on page 24. Scenarios for films dealing with infant malaria, malaria generally, and tuberculosis were prepared for the Bantu Educational Kinema Experiment: Drs Wilcocks and D. B. Wilson assisted in the preparation and arrangement of the material for these films. Articles on medical and health matters were contributed to the local press as usual.

V.—SPECIAL RESEARCH.

(Undertaken with the assistance of the Colonial Development Fund.)

1. Tuberculosis.

The funds provided under the Colonial Development Fund for the research work and survey by Dr Wilcocks will no longer be available after the 31st May 1937 and the final report summarizing the whole of his findings will be published as soon as possible thereafter.

A brief account of the work appears in Part II at page 36.

2. Trypanosomiasis.

Trypanosomiasis research was continued at the Tinde laboratory by Dr J. F. Corson.

Two major experiments, the transmission of *Trypanosoma gambiense* through series of monkeys by *Glossina morsitans* and the transmission of *T. rhodesiense* through sheep by *G. morsitans*, were continued during the year. A number of subsidiary experiments were also carried out.

The transmission of *T. gambiense* through monkeys by *G. morsitans* was begun in September 1934. The procedure is simply to transmit the parasite from one monkey to another by means of laboratory bred flies, a fresh group of flies being used for each transmission. The object is to ascertain whether this trypanosome will alter its character and in particular to see whether it will come to resemble *T. rhodesiense* and *T. brucei* as a result of passage through *G. morsitans*.

The virulence of the strain is kept under observation in the monkeys themselves but from time to time it is further tested by inoculation of the parasite into rats and guinea-pigs. Several instances of enhanced virulence have been observed but so far no sub-strain has shown persistent virulence—that is, when a virulent sub-strain was inoculated into other rats or guinea-pigs it reverted to the characters of the parent strain.

The transmission of *T. rhodesiense* through sheep by *G. morsitans* is a continuation and extension of a group of experiments carried on for several

years. One strain was found infective to man sixteen months and again two years after it had been isolated from a human patient. The infectivity of *T. rhodesiense* to *G. morsitans* after passage through a reedbuck was tested and it was found that the salivary glands of forty-seven per cent of the flies which lived for a month after feeding on the reedbuck were infected.

Further experiments are being carried out to see whether the species of vertebrate host influences the rate of infection in flies. Forty hyraxes from *G. morsitans*-infested areas were examined for natural infections and none was found with polymorphic trypanosomes. Eight of them were subsequently exposed to infection with *T. rhodesiense*, four by inoculation and four by the bite of an infective fly. All became infected and died but it was not proved that death was caused by the infection.

A certain amount of work was done on the reaction of *T. rhodesiense* to normal human serum. The results are not yet conclusive but they suggest that human serum may be able to destroy *in vitro* a strain of trypanosomes that is capable of infecting the man from whom the serum is obtained if inoculated into him.

Dr Fairbairn carried out a number of experiments on the reaction of *T. rhodesiense* to normal human serum. The results are not yet conclusive but they suggest that tests carried out *in vitro* will not of themselves demonstrate whether or not a particular individual is susceptible to a particular strain of trypanosomes.

The list of scientific publications by members of the staff includes three contributions by Dr Corson relating to his work.

3. Malaria.

The provision under the Colonial Development Fund for malaria research ended on the 31st December and reports by Dr Mackay and Dr D. B. Wilson are in course of preparation and will be published later.

Anti-Malarial Measures.—The main anti-malarial scheme for Dar es Salaam estimated to cost £27,533 was prepared and submitted to Government during 1935. A grant of the required sum has been made from the Colonial Development Fund and the preliminary work at Gerezani has been put in hand. Kivukoni, the area lying to the east of the ferry which plies across the harbour entrance, has long been suspected to be a supplementary source of malaria, affecting particularly the residential part of Dar es Salaam. Although experiments with dye-sprayed mosquitoes were a complete failure, the method tried subsequently of feeding the mosquitoes with dye produced evidence that anophelines made the flight across the harbour entrance into the residential area. Immediate measures became necessary and works to the value of £430 within a radius of half a mile of the ferry were carried out during 1936. It remains to be seen by further observation whether these will suffice to reduce the infestation of the residential area from this source, in view of the extensive swamps which lie to the east of the controlled area.

Endemiology.—Experiments have been made to determine the part played by local anopheles in ensuring a constant supply of parasites from season to season. The bionomics of the carrier species have been studied including their reactions to salinity and their range of flight. Further investigation has been carried on into the human and economic factors involved.

Control.—It is considered that future malarial control at Dar es Salaam should provide for anopheline suppression by major works (at present being

undertaken) and by the establishment of a protective zone where conditions would be inimical to the spread of malaria, entailing perhaps changes in the township boundaries and decantation of the population of small huts at present in the proposed area of protection. Measures might also be directed with advantage against the gametocyte carrier, since maximum results are to be expected only if anopheline reduction coincides with minimum gametocyte output. With the probable advent of a cheap cinchona preparation this should not prove very difficult. At present it is being attempted in selected areas only in which infection rates both in mosquito and man justify its adoption as an adjunct of other forms of control.

Northern Province.—The malaria officer (Dr D. B. Wilson) has investigated the question of malaria in sub-immune communities and in this connection has carried out examinations at Moshi school, at Arusha Chini, in Masailand and in parts of Mount Kilimanjaro. His evidence shows that those Africans who are not born in hyper-endemic areas are, if they move to an uncontrolled malarious locality, unlikely to acquire an effective immunity and that, unless very full treatment be given, they will also suffer a considerable aftermath from the persistence of relatively large numbers of parasites.

Investigations have also been carried out by Dr Wilson into malaria control in the townships of Moshi and Arusha and on the estates in the Usa area. The measures in Moshi have included regular searching for larvae, oiling of occasional breeding places, training of streams and furrows and construction of sub-soil drains. A scheme for regular control has been submitted. Arusha is considered too cold for *A. gambiae* to establish itself but some brought up from lower levels breed for a few generations during the rains. Simple measures, including oiling and levelling, have been adopted for reduction of this breeding.

ADDENDA.

LIST OF SCIENTIFIC PAPERS PUBLISHED BY MEMBERS OF THE STAFF IN 1936.
(*See* also list in the laboratory report at page 95.)

CALWELL, H. G. "A case of Congenital Relapsing Fever." *E. Afr. Med. Jl.*, 1936, 12, II, 347-48.

CHILTON, N. "A description of the Common Parasitic Diseases of East Africa, with Notes on their Diagnosis and Treatment for Swahili-speaking Rural Dressers," 1936. Government Printer, Dar es Salaam.

CORSON, J. F. "A Note on Hyrax and Dikdiks (*Rhynchotragus*) from Areas inhabited by Tsetse Flies." *Jl. Trop. Med. and Hyg.*, 1936, 39, 12, 125-26.

CORSON, J. F. "Antelopes as Reservoirs of *Trypanosoma gambiense* (Correspondence)." *Tran. Roy. Soc. Trop. Med. and Hyg.*, 1936, 29, 6, 690.

MACLEAN, G. "Notes on Trypanosomiasis." *Quart. Bull. Health Org.*, 1936, 1, 179-81.

RAYMOND, W. D. "The Poisonous Effects of Some Local Species of *Euphorbia*." *E. Afr. Med. Jl.*, 1936, 12, 12, 369-74.

AUTHORIZED ESTABLISHMENT OF THE DEPARTMENT.

STAFF.—*European:*

Director of Medical Services.
Deputy Director of Medical Services.
Assistant Director of Medical Services.
4 Senior Medical Officers.
3 Senior Health Officers. (One post not filled.)
1 Sleeping Sickness Officer.
2 Specialists.
35 Medical Officers. (Four paid from Loan Funds.)
1 Senior Pathologist.
1 Pathologist.
1 Senior Dental Surgeon.
1 Dental Surgeon.
1 Government Analyst.
1 Matron.
1 Assistant Matron.
2 Senior Nursing Sisters.
1 Senior Health Visitor.
5 Health Visitors.
26 Nursing Sisters.
1 Laboratory Assistant.
1 Chief Clerk.
2 European Clerks.
1 Storekeeper.
2 Assistant Storekeepers.
1 Medical Instructor.
1 Superintendent, Mental Hospital.
1 Supervisor of Female Patients.
1 Senior Sanitary Superintendent.
20 Sanitary Superintendents. (Two paid from Loan funds.)
7 Agricultural Surveyors.
1 Dental Mechanic.

Asian:

1 Assistant Surgeon.
3 Senior Sub-Assistant Surgeons.
51 Sub-Assistant Surgeons.
28 Compounders. (Four posts not filled.)
1 Special Grade Clerk.
1 First Grade Clerk.
6 Second Grade Clerks.
12 Third Grade Clerks.
1 Fourth Grade Clerk.

African:

16 Clerks.
109 Dispensers.
140 Sanitary Inspectors.
Hospital orderlies, nurses and menials: average number employed—760.
Sanitary labourers: average number employed—1,100.
17 Motor Drivers.

APPOINTMENTS.—*European:*

Assistant Director of Medical Services : Dr R. Nixon from 1st January.
Senior Medical Officer : Dr W. A. Young from 15th May.
Specialists : Dr C. F. Shelton and Mr W. K. Connell, F.R.C.S., from 1st January.
Senior Pathologist : Dr H. J. O'D. Burke-Gaffney from 1st January.
Pathologist : Dr D. E. Wilson from 15th June.
Medical Officer : Dr J. F. Jarvis from 7th August.
Assistant Matron : Miss K. P. Heckford from 1st January.
Senior Health Visitor : Miss A. L. Ryder from 1st January.
Nursing Sisters : Miss M. R. Harrison from 17th April; Miss E. V. St Lo Malet from 27th June; Miss A. G. McDonald from 7th August; Miss A. Smith from 22nd August; Miss M. MacDonald from 14th November.
Assistant Storekeeper : Mr H. M. W. Nicholson from 22nd August.
Clerk : Mr A. E. Stringman from 26th September.

ACTING APPOINTMENTS.—*European:*

Deputy Director of Medical Services : Dr R Nixon from 1st January to 1st March ; Dr G. S. P. Noble from 1st March to 2nd June.
Assistant Director of Medical Services : Dr F. R. Lockhart from 1st January to 13th January ; Dr G. S. P. Noble from 13th January to 1st March ; Dr W. H. Smith from 1st March to 31st October.
Senior Medical Officers : Dr D. V. Latham from 1st January to 31st December; Dr J. Williamson from 1st January to 8th March; Dr R. C. Speirs from 27th November to 31st December.
Senior Health Officer : Dr W. J. Aitken from 18th April to 15th May.
Sleeping Sickness Officer : Dr G. S. P. Noble from 10th November to 31st December.
Matron : Miss K. P. Heckford from 16th March to 31st October.
Senior Nursing Sisters : Miss R. V. G. Daye from 30th October to 31st December; Miss J. L. Vaux from 30th October to 31st December.
Storekeeper : Mr H. M. W. Nicholson from 10th November to 31st December.
Senior Sanitary Superintendent : Mr T. Bell from 1st June to 31st December.

Asian:

European Clerk : J. de Souza from 20th March to 31st December.
Special Grade Clerk : E. Rebello from 1st January to 13th April.

PROMOTIONS.

Dr R. Nixon to be Assistant Director of Medical Services as from 1st January.
Dr H. J. O'D. Burke-Gaffney to be Senior Pathologist as from 1st January.
Dr W. A. Young to be Senior Medical Officer as from 15th May.
Miss K. P. Heckford to be Assistant Matron as from 1st January.
Miss A. L. Ryder to be Senior Health Visitor as from 1st January.
Dr D. E. Wilson to be Pathologist as from 15th June.
Dr C. F. Shelton to be Specialist as from 1st January.
Mr W. K. Connell, F.R.C.S., to be Specialist as from 1st January.

RETIREMENTS.—*European:*

Miss M. Donald, Senior Nursing Sister, 2nd March.

Asian: Nil.

TRANSFERS.—*European:*

Dr J. C. R. Buchanan, Medical Officer, to British Somaliland, 14th December (on promotion).

Asian: Nil.

RESIGNATIONS.—*European:*

Miss D. M. Essam, Nursing Sister, 12th June.
Miss H. F. Kilby, Nursing Sister, 27th June.
Miss E. M. Thomas, Nursing Sister, 22nd August.
Miss M. C. Ferguson, Nursing Sister, 3rd November.

Asian: Nil.

APPOINTMENTS TERMINATED.—*European:*

Mr H. L. Lachland, Clerk, 12th July.

Asian:

Mr A. D'Cruz, Clerk, 26th April.

INVALIDINGS.—*European:*

Miss E. Bullock, Nursing Sister, 1st July.
Dr F. V. Adams, Medical Officer, 1st November.

Asian:

Mr A. K. Iyer, Sub-Assistant Surgeon, 21st June.

DEATHS.—*European:*

Dr J. S. Armstrong, Medical Officer, 14th April.

Asian: Nil.

TABLE SHOWING FINANCIAL DETAILS.

From 1st January to 31st December 1936.

DETAILS OF EXPENDITURE.

	Approved Estimates £	Actual Expenditure £
Expenditure:		
Personal Emoluments	139,790	135,333
Other Charges:		
Outfit Allowances	90	150
Upkeep of Hospitals	6,750	6,476
Upkeep of Quarantine and Infectious Diseases Hospitals	180	212
Tuberculosis Scheme (Kilimanjaro)	366	369
Upkeep of Laboratory, Dar es Salaam ...	50	35
Upkeep of Lymph Laboratory, Mpwapwa ...	50	51
Maintenance of Leprosy Patients	2,700	2,440
Maintenance of Mental Patients and Hospitals	1,600	1,529
Epidemic Outbreaks and Special Sanitary Measures	50	244
Sleeping Sickness Measures	3,700	3,556
Venereal Diseases and Yaws	25	—
Maternity and Child Welfare	1,245	1,112
Sanitary Equipment	750	748

Details of Expenditure—*contd.*

	Approved Estimates	Actual Expenditure
Other Charges—contd.	£	£
Sanitary Oils and Disinfectants	250	272
Medical and Surgical Stores	7,525	8,124
Equipment and Furniture	4,700	4,504
Microscopes and Accessories	210	113
Vaccines and Serum	250	247
Books of Reference	30	27
Periodicals	105	108
Post-mortem Fees	5	—
Electricity	1,300	1,334
Travelling Allowances	615	596
Transport Allowances	3,385	3,078
Transport	2,190	2,404
Railway Fares and Freight:		
(a) Departmental Expenditure	4,700	6,373
(b) Local Leave	500	397
Tents and Camp Equipment	100	100
Uniforms	220	175
Typewriters	80	73
Allowances to Medical Officers for Dental work	35	45
Fees, etc., of Medical Officers attending Courses of Instruction	150	430
Medical Attendance outside the Territory ...	300	481
Pauper Burials	5	2
Upkeep of Quarantine Station, Zanzibar ...	825	825
Upkeep of Motor Boats	130	126
Upkeep and Maintenance of Motor Vehicles	1,070	747
Stationery	200	209
Mass treatment of Ankylostomiasis	25	9
Bicycles	30	27
Medical Training of Native Staff outside the Territory	120	73
Contingencies	100	98
Contributions, etc.:		
Quinine for public purchase at Post Offices ...	2,500	2,452
Total Other Charges ...	49,211	50,371
Personal Emoluments ...	139,790	135,333
Total Departmental ...	189,001	185,704
Special Expenditure:		
Purchase of Motor Vehicles	900	—
Purchase of Food for Oxen	—	31
Total Medical	£189,901	£185,735

Details of Revenue.

	£
Revenue:	
From Hospital Fees, Sale of Drugs, etc.	7,318
Fees collected by Marine and Customs Departments for Bills of Health	1,064
Sale of Vaccine Lymph, etc. (Laboratory)	228
Fees for Mechanical Dental work	784
Total ...	9,394
Reimbursement by Tanganyika Railways for Medical Service	3,070
Total ...	£12,464

RAINFALL.

Total rainfall in millimetres by stations from information kindly furnished by the Director, British East African Meterological Service, Nairobi.

1936.

DISTRICTS	Stations	Feet above sea level	Rainfall in Millimetres
CENTRAL LINE AREA:			
Dar es Salaam	Dar es Salaam ...	30	1357·9
Morogoro	Morogoro	1,628	1318·5
Kilosa	Kilosa	1,606	945·7
Dodoma	Dodoma	3,675	726·4
	Manyoni	4,096	905·6
	Mpwapwa	3,700	794·2
Singida	Singida	5,233	814·4
Tabora	Tabora	4,150	1063·4
Kahama	Kahama	4,000	918·9
	Nzega	4,000	1107·3
Kigoma	Kigoma	2,562	901·9
	Kasulu	4,530	1065·0
	Kibondo	4,980	1473·8
COASTAL AREA, SOUTH:			
Lindi	Lindi	S.L.	881·6
Tunduru	Tunduru	2,300	1149·2
Masasi	Masasi Mission ...	1,500	1114·3
Mikindani	Mikindani	60	1055·0
Kilwa	Kilwa	S.L.	1434·9
Liwale	Liwale	1,500	1355·1
Rufiji	Utete	170	843·4
COASTAL AREA, NORTH:			
Tanga	Tanga	S.L.	1558·4
Usambara	Amani	2,834	2227·9
NORTHERN HINTERLAND:			
Moshi	Moshi	2,649	1191·2
Arusha	Arusha	4,416	1403·0
Mbulu	Mbulu	5,715	921·1
Mwanza	Mwanza	3,709	1273·4
Musoma	Musoma	3,760	1183·9
Bukoba	Bukoba	3,726	1837·7
Biharamulo	Biharamulo ...	4,850	1125·9
Kondoa	Kondoa-Irangi ...	4,615	726·6
Singida	Mkalama	4,235	—
SOUTHERN HINTERLAND:			
Iringa	Iringa	5,365	1100·2
Njombe	Njombe	6,400	1170·7
Ufipa	Sumbawanga ...	5,650	687·9
	Rungwe	2,900	922·3
Mbeya	Mbeya	5,995	1228·3
Rungwe	Tukuyu	5,300	3072·7
Songea	Songea	3,826	1185·0

Return of Diseases and Deaths (In-Patients) and of Diseases (Out-Patients) for the year 1936

All Races.

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly		Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
		Admissions	Deaths						
I.—Infectious and Parasitic Diseases.									
1. Typhoid fever	3	71	16	74	7	1	3	4	78
2. Paratyphoid fever	1	13	2	14	1	2	2	4	18
3. Typhus fever	...	2	...	2	...	1	...	1	3
4. Relapsing fever	11	506	7	517	3	876	346	1,222	1,739
5. Undulant fever	1	7	...	8	...	...	...	...	8
6. Smallpox	...	3	...	3	...	4	3	7	10
7. Measles	3	44	...	47	...	97	49	146	193
8. Scarlet fever	...	1	...	1	...	...	...	...	1
9. Whooping cough	...	41	2	41	8	643	669	1,312	1,353
10. Diphtheria	...	1	...	1	...	7	3	10	11
11. Influenza	20	384	7	404	1	2,139	1,202	3,341	3,745
12. Cholera	...	...	...	...	...	...	...	...	...
13. Dysentery:									
(a) Amœbic	8	180	7	188	5	254	185	439	627
(b) Bacillary	...	16	1	16	...	26	30	56	72
(c) Other or unspecified	...	181	7	181	3	598	231	829	1,010
14. Plague:									
(a) Bubonic	...	...	...	...	...	...	...	...	...
(b) Pneumonic	...	...	...	...	...	...	...	...	...
(c) Septicæmic	...	...	...	...	...	...	...	...	...
(d) Not otherwise defined	...	...	...	...	...	...	...	...	...
15. Erysipelas	1	10	...	11	...	4	4	8	19
16. Acute poliomyelitis	...	...	...	...	...	1	1	2	2
17. Encephalitis lethargica	...	...	...	...	...	...	...	...	...
18. Cerebro-spinal fever	...	33	29	33	1	...	...	...	33
20. Anthrax	...	33	4	33	2	17	5	22	55
21. Rabies	...	1	1	1	...	2	...	2	3
22. Tetanus	2	33	18	35	...	1	2	3	38
23. Tuberculosis of the respiratory system	43	386	66	429	48	811	388	1,199	1,628
24. Tuberculosis of the central nervous system	...	4	3	4	...	...	...	...	4
25. Tuberculosis of intestines and peritoneum	...	7	3	7	1	...	...	...	7

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
26. Tuberculosis of vertebral column	6	29	5	35	11	16	10	26	61
27. Tuberculosis of other bones and joints	1	23	...	24	7	20	7	27	51
28. Tuberculosis of skin and subcutaneous tissues	2	1	...	3	...	1	...	1	4
29. Tuberculosis of lymphatic system	3	40	4	43	4	184	226	410	453
30. Tuberculosis of genito-urinary system	...	3	1	3	...	...	...	...	3
31. Tuberculosis of other organs	7	39	1	46	8	237	144	381	427
32. Disseminated tuberculosis	...	2	1	2	...	1	2	3	5
33. Leprosy	25	128	...	153	9	122	48	170	323
34. Syphilis:									
(a) Congenital	1	67	7	67	2	455	320	775	842
(b) Acquired—									
1. Primary	24	524	2	548	23	5,006	3,647	8,653	9,201
2. Secondary	15	356	1	371	20	2,687	2,202	4,889	5,260
3. Tertiary	11	130	5	141	6	2,964	2,677	5,641	5,782
4. Unspecified	1	28	...	29	...	1,227	1,143	2,370	2,399
35.—1. Gonorrhœal or purulent ophthalmia	4	29	...	33	...	59	19	78	111
2. Gonorrhœa	31	814	5	845	40	7,627	1,147	8,774	9,619
3. Soft Chancre	...	107	...	107	3	1,260	791	2,051	2,158
4. Other venereal diseases	18	52	1	70	1	47	5	52	122
36.—(a) Septicæmia	1	10	11	11	...	5	2	7	18
(b) Pyæmia	...	7	2	7	1	18	10	28	35
(c) Gas gangrene	...	2	2	2	...	...	...	...	2
37. Yellow fever	...	...	...	...	...	...	...	...	...
38. Malaria:									
Tertian	...	97	1	97	...	556	306	862	959
Quartan	...	...	...	...	...	16	2	18	18
Subtertian	53	3,221	46	3,274	22	20,987	9,893	30,880	34,154
Cachexia	2	67	3	69	2	856	381	1,237	1,306
Unspecified	9	1,309	13	1,318	3	10,725	4,245	14,970	16,288
39.—1. Rat-bite fever	...	1	...	1	...	18	28	46	47
2. Trypanosomiasis	11	97	18	108	14	95	3	98	206
3. Yaws	64	1,082	4	1,146	59	40,352	29,184	69,536	70,682
4. Other diseases due to protozoa	...	1	...	1	...	67	87	154	155
40. Ankylostomiasis	85	2,115	168	2,200	123	9,388	5,967	15,355	17,555
41. Hydatid cysts	...	2	2	2	...	2	2	4	6

Diseases and Deaths (All Races)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Yearly Total: Admissions	Yearly Total: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
42.—1. Cestodes (Tæniasis)	5	221	3	226	3	12,371	5,317	17,688	17,914
2. Nematodes—Ascariasis	1	103	2	104	4	8,206	7,825	16,031	16,135
Dracontiasis (guinea worm)	...	2	...	2	...	5	...	5	7
Filarial elephantiasis	15	165	3	180	12	179	39	218	398
Filariasis	1	26	...	27	1	34	9	43	70
Oxyuris vermicularis	...	2	...	2	...	82	28	110	112
3. Trematodes: Schistosomiasis	11	456	6	467	13	2,899	407	3,306	3,773
4. Other diseases due to helminths	...	16	...	16	1	75	43	118	134
43.—1. Actinomycosis	...	...	...	...	...	2	...	2	2
2. Other mycoses	...	8	...	8	...	152	48	200	208
44.—1. Vaccinia	...	2	...	2	...	126	66	192	194
2. Other sequelæ of vaccination (infective)	...	4	...	4	...	192	23	215	219
3. Varicella (Chicken-pox)	8	199	...	207	22	457	67	524	731
4. Mumps	1	30	2	31	...	207	62	269	300
5. Blackwater fever	...	40	8	40	...	6	...	6	46
6. Dengue	...	1	...	1	...	...	...	...	1
7. Other infectious or parasitic diseases	...	7	...	7	...	13	2	15	22
II.—Cancer and Other Tumours.									
45. Cancer of the buccal cavity and pharynx	...	10	3	10	1	...	...	...	10
46. Cancer of the digestive organs and peritoneum	3	21	15	24	1	3	...	3	27
47. Cancer of the respiratory organs	...	...	...	...	...	1	1	2	2
48. Cancer of the uterus	...	5	1	5	...	...	...	...	5
49. Cancer of other female genital organs	...	3	1	3	...	...	...	...	3
50. Cancer of the breast	1	3	...	4	...	...	1	1	5
51. Cancer of the male genito-urinary organs	1	3	2	4	...	...	...	...	4
52. Cancer of the skin	...	9	...	9	...	3	3	6	15
53. Cancer of other or unspecified organs	...	20	3	20	...	2	3	5	25
54. Non-malignant tumours:									
(a) Female genital organs	...	74	6	74	8	...	7	7	81
(b) Other sites	5	136	7	141	8	30	23	53	194
55. Tumours of undetermined nature:									
(a) Female genital organs	1	10	...	11	2	...	4	4	15
(b) Other sites	2	37	4	39	5	5	6	11	50

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
III.—Rheumatism, Diseases of Nutrition and of Endocrine Glands and Other General Diseases.									
56. Rheumatic fever	3	38	...	41	1	366	230	596	637
57. Chronic rheumatism, Osteo-arthritis	15	342	...	357	7	4,218	2,145	6,363	6,720
58. Gout	...	12	...	12	...	28	23	51	63
59. Diabetes (not including Insipidus)	...	16	3	16	...	9	1	10	26
60. Scurvy	9	236	10	245	11	80	4	84	329
61. Beri-beri	1	43	3	44	1	6	...	6	50
62. Pellagra	...	1	...	1	...	...	...	...	1
63. Rickets	...	7	2	7	2	16	14	30	37
65. Diseases of the pituitary gland	...	...	...	...	...	...	...	...	...
66.—(a) Simple goitre	...	4	...	4	1	4	6	10	14
(b) Exophthalmic goitre	...	1	...	1	1	2	1	3	4
(c) Myxœdema, Cretinism	...	...	...	...	...	...	2	2	2
(d) Tetany	...	2	...	2	...	2	...	2	4
(e) Other diseases of the thyroid or parathyroid glands	...	3	...	3	1	2	5	7	10
67. Diseases of the thymus	...	...	...	...	...	1	...	1	1
68. Diseases of the adrenals (non-tuberculous)	...	...	...	...	...	...	...	...	...
69.—1. Amyloid disease of unstated origin	...	1	...	1	...	1	1	2	3
2. Other general diseases	2	35	1	37	1	174	...	174	211
IV.—Diseases of the Blood and Blood-Forming Organs.									
70. Hæmorrhagic conditions:									
(a) Purpura	...	...	...	...	...	...	1	1	1
(b) Hæmophillia	...	2	...	2	...	...	1	1	3
71.—1. Pernicious anæmia	...	5	...	5	...	91	57	148	153
2. Splenic anæmias	...	31	6	31	...	62	46	108	139
3. Other anæmias and chlorosis	3	135	4	138	8	1,650	1,114	2,764	2,902
72.—(a) Leukæmia	...	3	2	3	...	...	...	...	3
(b) Aleukæmia (Lymphadenoma)	...	5	...	5	...	3	...	3	8
73.—1. Banti's disease	...	4	2	4	...	...	...	...	4
2. Other diseases of the spleen	1	90	1	91	3	1,038	489	1,527	1,618
74. Other diseases of the blood and blood-forming organs	...	19	2	19	1	30	14	44	63

Diseases and Deaths (All Races)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospital at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
V.—Chronic Poisoning.									
75. Alcoholism (acute or chronic)	...	3	...	3	...	...	1	1	4
76. Chronic poisoning by other organic substances	...	7	...	7	...	3	1	4	11
77. Chronic poisoning by mineral substances	...	3	...	3	...	...	...	...	3
VI.—Diseases of the Nervous and Sense Organs.									
78.—(a) Cerebral abscess	...	4	2	4	...	...	...	...	4
(b) Other Encephalitis (not including Lethargica)	...	7	4	7	...	1	...	1	8
79. Meningitis	...	17	10	17	...	...	...	...	17
80. Tabes dorsalis (Locomotor ataxy)	...	5	1	5	...	1	...	1	6
81. Other diseases of the spinal cord	...	6	3	6	...	...	...	...	6
82.—(a) Cerebral hæmorrhage	1	19	13	20	...	2	...	2	22
(b) Cerebral embolism and thrombosis	...	5	3	5	...	...	...	...	5
(c) 1. Hemiplegia	3	22	5	25	...	31	9	40	65
2. Other paralyses of unstated origin	2	39	3	41	3	44	7	51	92
83. General paralysis of the insane	...	4	...	4	...	2	1	3	7
84. Other forms of insanity	3	58	4	61	2	19	4	23	84
85. Epilepsy	3	110	8	113	9	120	39	159	272
86. Infantile convulsions (under 5 years of age)	...	6	2	6	...	7	6	13	19
87.—(a) Chorea	...	8	...	8	1	20	9	29	37
(b) Neuritis, neuralgia	5	136	...	141	...	6,341	2,407	8,748	8,889
(c) Paralysis agitans	1	5	...	6	...	15	7	22	28
(d) Disseminated sclerosis	...	...	...	...	...	...	...	...	...
(e) Other diseases of the nervous system	4	88	1	92	3	492	197	689	781
88. Blepharitis	2	22	...	24	3	302	201	503	527
Cataract (all forms)	6	72	1	78	1	70	45	115	193
Conjunctivitis	9	327	...	336	10	15,659	11,569	27,228	27,564
Glaucoma	1	4	...	5	...	7	2	9	14
Iritis	1	47	...	48	4	163	59	222	270
Keratitis	4	56	...	60	1	157	53	210	270
Ophthalmia (not including Neonatorum: *see* 35 (1))	2	16	...	18	3	122	113	235	253
Optic Neuritis	...	3	...	3	...	20	2	22	25
Trachoma	4	36	...	40	3	410	209	619	659
Other diseases of the eye	5	147	...	152	3	696	212	908	1,060
89.—(a) Otitis and other diseases of the ear	1	103	...	104	2	6,520	3,395	9,915	10,019
(b) Diseases of the mastoid sinus	...	13	...	13	...	350	161	511	524

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
VII.—Diseases of the Circulatory System.									
90. Pericarditis	...	7	5	7	...	7	3	10	17
91. Acute endocarditis	...	1	...	1	...	3	2	5	6
92.—1. Aortic valve disease	...	5	2	5	...	2	2	4	9
2. Mitral valve disease	...	10	4	10	...	1	...	1	11
3. Aortic and mitral valve disease	...	4	2	4	1	36	4	40	44
4. Other or unspecified valve diseases	...	14	1	14	2	45	18	63	77
93.—(a) Acute myocarditis	...	13	3	13	1	5	...	5	18
(b) Myocardial degeneration	...	10	...	10	...	3	...	3	13
94. Diseases of the coronary arteries, Angina pectoris	...	3	...	3	...	6	5	11	14
95.—(a) Disordered action of heart	1	7	...	8	1	76	44	120	128
(b) Other diseases of the heart	...	17	...	17	1	71	54	125	142
96. Aneurysm	...	4	...	4	...	1	...	1	5
97. Arterio-sclerosis	...	7	1	7	1	2	1	3	10
98. Gangrene	1	29	13	30	...	2	2	4	34
99. Other diseases of the arteries	...	16	...	16	1	5	1	6	22
100. Hæmorrhoids	1	53	1	54	1	100	15	115	169
Varicocele	1	10	...	11	...	22	...	22	33
Varicose veins	...	7	...	7	...	26	1	27	34
Phlebitis	...	5	...	5	...	63	9	72	77
Other diseases of the veins	...	7	...	7	...	15	3	18	25
101. Lymphadenitis	8	180	...	188	10	746	214	960	1,148
Lymphangitis	1	48	...	49	...	125	31	156	205
102. Abnormalities of blood pressure	...	2	...	2	...	6	2	8	10
103. Other diseases of the circulatory system	...	19	1	19	...	21	15	36	55
VIII.—Diseases of the Respiratory System.									
104.—1. Diseases of the nose	...	172	...	172	...	6,258	2,021	8,279	8,451
2. Diseases of the accessory nasal sinuses	...	9	...	9	...	274	91	365	374
105. Diseases of the larynx	...	29	4	29	2	569	233	802	831
106. Bronchitis: (a) Acute bronchitis	13	445	3	458	11	20,993	11,857	32,850	33,308
(b) Chronic bronchitis	10	230	6	240	3	4,126	1,875	6,001	6,241
(c) Bronchitis not distinguished as acute or chronic	1	81	...	82	2	15,794	8,804	24,598	24,680
107. Broncho-pneumonia	10	283	76	293	6	166	119	285	578

Diseases and Deaths (All Races)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
108. Lobar pneumonia	27	803	157	830	24	158	85	243	1,073
109. Pneumonia (not otherwise defined)	...	31	8	31	1	12	3	15	46
110.—1. Empyema	...	15	4	15	...	1	3	4	19
2. Pleurisy	4	124	6	128	2	232	87	319	447
111. Congestion and hæmorrhagic infarct of lung, etc.	...	6	...	6	1	2	...	2	8
112. Asthma	3	131	1	134	8	721	283	1,004	1,138
113. Pulmonary emphysema	...	1	...	1	...	...	1	1	2
114. Other diseases of the respiratory system	...	19	2	19	1	314	164	478	497
IX.—Diseases of the Digestive System.									
115.—1. Diseases of the teeth and gums	4	125	1	129	3	9,909	4,933	14,842	14,971
2. Ludwig's angina	...	6	1	6	...	4	16	20	26
3. Diseases of the tonsils	1	194	1	195	1	2,387	1,456	3,843	4,038
4. Other diseases of the buccal cavity, pharynx, etc.	...	115	2	115	1	3,788	1,439	5,227	5,342
116. Diseases of the œsophagus	...	3	1	3	...	6	6	12	15
117.—(a) Ulcer of the stomach	1	15	1	16	2	17	8	25	41
(b) Ulcer of the duodenum	...	7	3	7	1	9	1	10	17
118. Other diseases of the stomach	2	76	1	78	1	1,359	757	2,116	2,194
119. Under two years (a) 1. Colitis	...	57	2	57	...	808	536	1,344	1,401
119. Under two years 2. Other diarrhœa and enteritis	2	111	10	113	2	1,816	1,175	2,991	3,104
119. Under two years (b) Ulceration of the intestines	...	6	...	6	...	5	8	13	19
120. Over two years (a) 1. Colitis	3	119	3	122	3	2,022	1,069	3,091	3,213
120. Over two years 2. Other diarrhœa and enteritis	6	548	31	554	8	4,167	1,743	5,910	6,464
120. Over two years (b) Ulceration of the intestines	...	2	...	2	...	11	17	28	30
121. Appendicitis	3	86	6	89	2	13	6	19	108
122.—(a) 1. Hernia, Strangulated	5	84	25	89	...	18	1	19	108
2. Hernia not returned as strangulated	38	697	11	735	34	135	2	137	872
(b) Intestinal obstruction	...	14	9	14	...	1	1	2	16
123.—1. Constipation, intestinal stasis	2	228	1	230	3	31,245	18,830	50,075	50,305
2. Diverticulitis	...	...	...	...	...	...	1	1	1
3. Other diseases of the intestines	2	92	2	94	4	1,176	624	1,800	1,894
124. Cirrhosis of the liver:									
(a) Alcoholic	...	5	1	5	...	12	9	21	26
(b) Not returned as alcoholic	4	48	18	52	3	7	3	10	62

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
125.—1. Acute yellow atrophy	...	2	1	2	...	6	3	9	11
2. Other diseases of the liver	7	167	13	174	4	450	232	682	856
126. Biliary calculi	...	3	1	3	...	1	...	1	4
127.—1. Cholecystitis without record of biliary calculi	...	14	1	14	...	9	5	14	28
2. Other diseases of the gall bladder and ducts	2	12	2	14	...	11	6	17	31
128. Diseases of the pancreas	...	4	1	4	...	...	...	...	4
129. Peritonitis without stated cause	...	8	5	8	...	...	...	...	8
X.—Non-venereal Diseases of the Genito-Urinary System and Annexa.									
130. Acute nephritis	1	28	7	29	1	49	12	61	90
131. Chronic nephritis	2	32	13	34	1	20	16	36	70
132. Nephritis not stated to be acute or chronic	6	7	1	13	...	13	8	21	34
133.—(a) Pyelitis	3	18	3	21	...	9	7	16	37
(b) Other diseases of the kidney and annexa	1	15	1	16	2	16	7	23	39
134.—(a) Calculi of kidney and ureter	...	8	...	8	1	...	...	...	8
(b) Calculi of the bladder	...	10	1	10	...	...	...	...	10
(c) Calculi of unstated site in urinary passages	...	10	4	10	...	1	...	1	11
135.—(a) Cystitis	4	95	11	99	1	231	90	321	420
(b) Other diseases of the bladder	2	28	4	30	...	14	3	17	47
136.—(a) Stricture of the urethra	12	172	5	184	11	56	...	56	240
(b) Other diseases of the urethra, etc.	2	84	7	86	14	125	2	127	213
137. Diseases of the prostate	...	20	...	20	1	10	...	10	30
138. Diseases of the male genital organs	47	1,443	4	1,490	77	1,485	...	1,485	2,975
139.—(a) Diseases of the ovary and fallopian tube	6	50	4	56	2	...	45	45	101
(b) Diseases of the uterus	3	68	2	71	5	...	212	212	283
(c) Diseases of the breast	3	30	...	33	1	...	447	447	480
(d) Other diseases of the female genital organs	1	32	3	33	4	...	219	219	252
XI.—Diseases of Pregnancy, Childbirth and the Puerperal State.									
140. Post-abortive sepsis	...	2	...	2	...	...	...	...	2
141.—1. Hæmorrhage following abortion	...	19	3	19	...	...	16	16	35
2. Abortion without record of hæmorrhage	2	60	...	62	1	...	23	23	85
142. Ectopic gestation	...	18	3	18	...	...	4	4	22

Diseases and Deaths (All Races)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly		Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
		Admissions	Deaths						
143. Other accidents of pregnancy	1	70	9	71	1	...	29	29	100
144.—(a) Placenta prævia	...	4	1	4	...	...	...	...	4
(b) Other puerperal hæmorrhage	...	11	...	11	1	...	5	5	16
145. Puerperal sepsis	1	15	3	16	...	...	5	5	21
146.—1. Puerperal convulsions	...	3	...	3	...	...	...	...	3
2. Puerperal albuminuria	...	2	...	2	...	...	...	...	2
147. Other toxæmias of pregnancy	1	19	1	20	1	...	41	41	61
148.—(a) Puerperal phlegmasia alba dolens	...	5	...	5	...	...	...	...	5
(b) Puerperal embolism	...	...	...	...	...	...	...	...	...
149. Other accidents of childbirth	...	124	13	124	2	...	12	12	136
150.—1. Puerperal insanity	...	3	...	3	...	...	...	...	3
2. Puerperal diseases of the breast	...	3	...	3	...	...	79	79	82
3. Childbirth (unqualified)	5	543	2	548	6	...	71	71	619
4. Other conditions of puerperal state	...	30	1	30	2	...	4	4	34
151. Carbuncle, boil	3	90	1	93	1	1,951	490	2,441	2,534
XII.—Diseases of the Skin and Cellular Tissue.									
152.—1. Cellulitis	14	474	8	488	30	2,970	952	3,922	4,410
2. Acute abscess	34	845	19	879	51	3,704	1,411	5,115	5,994
153. Eczema	2	83	...	85	7	1,713	841	2,554	2,639
Herpes	...	21	...	21	...	266	111	377	398
Impetigo	...	4	...	4	...	171	97	268	272
Pediculosis	...	...	...	...	...	32	10	42	42
Psoriasis	...	9	...	9	...	76	24	100	109
Scabies	4	127	1	131	5	9,670	4,550	14,220	14,351
Sebaceous cyst	3	11	...	14	...	135	74	209	223
Ulcers	280	4,586	39	4,866	364	44,238	13,858	58,096	62,962
Urticaria	1	29	...	30	...	432	171	603	633
Other diseases of the skin and its annexa	4	136	3	140	4	1,672	657	2,329	2,469
XIII.—Diseases of the Bones and Organs of Locomotion.									
154. Acute infective osteomyelitis and periostitis	10	69	4	79	9	59	15	74	153
155. Other diseases of the bones	13	186	9	199	17	433	210	643	842
156.—(a) Diseases of the joints	20	280	8	300	14	1,599	600	2,199	2,499
(b) Diseases of other organs of locomotion	1	334	...	335	8	9,830	3,777	13,607	13,942

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
XIV.—Congenital Malformations.									
157. Congenital malformations	...	13	3	13	...	310	94	404	417
.....									
.....									
.....									
XV.—Diseases of Early Infancy.									
158. Congenital debility	1	31	4	32	4	97	40	137	169
159. Premature birth	...	6	2	6	...	27	8	35	41
160. Injury at birth:									
(a) With mention of cæsarean section	...	1	...	1	...	8	6	14	15
(b) Without mention of cæsarean section	...	4	...	4	1	1	...	1	5
161. Other diseases peculiar to early infancy	1	11	...	12	...	3	18	21	33
XVI.—Old Age.									
162.—(a) Senile dementia	...	3	3	3	...	18	26	44	47
(b) Other forms of senile decay	1	50	20	51	5	79	42	121	172
XVII.—Affections Produced by External Causes.									
176. Attack by venomous animals	8	66	2	74	2	208	65	273	347
177. Food poisoning	...	20	...	20	...	6	5	11	31
178. Absorption of irrespirable or poisonous gas	...	...	...	...	...	...	...	...	...
179. Other acute poisoning (not by gas)	...	19	3	19	...	32	7	39	58
180. Conflagration	2	7	3	9	...	129	74	203	212
181. Burns (conflagration excepted)	13	297	28	310	24	1,766	859	2,625	2,935
184. Injury by firearms	2	40	1	42	2	9	...	9	51
185. Injury by cutting or piercing instruments	37	1,093	44	1,130	52	9,356	2,526	11,882	13,012
186. Injury by fall, crushing, etc.	72	1,049	25	1,121	63	10,567	2,481	13,048	14,169
188. Injury by animals (poisoning by venomous animals excepted)	16	182	15	198	12	357	92	449	647
189. Hunger or thirst	...	...	...	...	...	...	...	...	...

Diseases and Deaths (All Races)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Yearly Total: Admissions	Yearly Total: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
190. Excessive cold	...	...	...	...	...	...	...	...	...
191. Excessive heat	...	2	1	2	...	7	3	10	12
192. Lightning	...	...	...	...	...	...	...	...	...
193. Electricity (lightning excepted)	...	6	2	6	...	...	...	...	6
194.—1. Inattention at birth	...	...	...	...	...	2	...	2	2
2. Other forms of accidental violence	31	739	24	770	41	7,823	909	8,732	9,502
XVIII.—Ill-defined Diseases.									
200.—(a) Disease undiagnosed or ill-defined	10	417	34	427	10	2,410	589	2,999	3,426
(b) Malingering	...	48	...	48	...	64	11	75	123
Total	1,462	36,559	1,504	38,021	1,618	399,549	198,467	598,016	636,037
Total cases treated by Medical Staff on tour	...	...	...	...	...	31,612	31,345	62,957	62,957
Total cases treated by African Dispensers	244	926	52	1,170	70	70,608	43,163	113,771	114,941
Total cases treated by Missionaries supplied with Government drugs and equipment	9	126	14	135	11	...	...	35,859	35,994
Grand Total	1,715	37,611	1,570	39,326	1,699	501,769	272,975	810,603	849,929

Return of Diseases and Deaths (In-Patients) and of Diseases (Out-Patients) for the year 1936.

Europeans (Official and Non-Official).

DISEASES	In-Patients				Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
I.—Infectious and Parasitic Diseases.									
1. Typhoid fever	...	15	1	15	...	...	2	2	17
2. Paratyphoid fever	1	3	...	4	...	...	...	...	4
3. Typhus fever	...	1	...	1	...	1	...	1	2
4. Relapsing fever	...	3	...	3	...	2	...	2	5
5. Undulant fever	...	...	...	...	...	...	...	...	...
6. Smallpox	...	...	...	...	...	...	...	...	...
7. Measles	...	5	...	5	...	1	2	3	8
8. Scarlet fever	...	1	...	1	...	...	...	...	1
9. Whooping cough	...	6	1	6	...	5	5	10	16
10. Diphtheria	...	1	...	1	...	...	...	...	1
11. Influenza	1	58	...	59	...	32	17	49	108
12. Cholera	...	...	...	...	...	...	...	...	...
13. Dysentery:									
(a) Amœbic	...	25	...	25	...	16	4	20	45
(b) Bacillary	...	2	...	2	...	...	...	...	2
(c) Other or unspecified	...	16	...	16	...	11	1	12	28
14. Plague:									
(a) Bubonic	...	...	...	...	...	...	...	...	...
(b) Pneumonic	...	...	...	...	...	...	...	...	...
(c) Septicæmic	...	...	...	...	...	...	...	...	...
(d) Not otherwise defined	...	...	...	...	...	...	...	...	...
15. Erysipelas	...	3	...	3	...	...	...	...	3
16. Acute poliomyelitis	...	...	...	...	...	...	...	...	...
17. Encephalitis lethargica	...	...	...	...	...	...	...	...	...
18. Cerebro-spinal fever	...	...	...	...	...	...	...	...	...
20. Anthrax	...	...	...	...	...	...	...	...	...
21. Rabies	...	...	...	...	...	...	...	...	...
22. Tetanus	...	...	...	...	...	...	...	...	...
23. Tuberculosis of the respiratory system	1	6	...	7	1	1	1	2	9
24. Tuberculosis of the central nervous system	...	...	...	...	...	...	...	...	...
25. Tuberculosis of intestines and peritoneum	...	...	...	...	...	...	...	...	...

Diseases and Deaths (Europeans)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
26. Tuberculosis of vertebral column	1	...	...	1	...	...	...	...	1
27. Tuberculosis of other bones and joints	...	...	...	...	...	...	...	...	...
28. Tuberculosis of skin and subcutaneous tissues	...	...	...	...	...	...	...	...	...
29. Tuberculosis of lymphatic system	...	...	...	...	...	...	...	...	...
30. Tuberculosis of genito-urinary system	...	...	...	...	...	2	...	2	2
31. Tuberculosis of other organs	...	...	...	...	...	1	...	1	1
32. Disseminated tuberculosis	...	...	...	...	...	...	...	...	...
33. Leprosy	...	...	...	...	...	...	...	...	...
34. Syphilis:									
(a) Congenital	...	...	...	...	...	...	...	...	...
(b) Acquired:									
1. Primary	...	3	...	3	...	11	...	11	14
2. Secondary	...	...	...	...	...	...	...	...	...
3. Tertiary	...	...	...	...	...	...	1	1	1
4. Unspecified	...	...	...	...	...	2	...	2	2
35.—1. Gonorrhœal or purulent ophthalmia	...	...	...	...	...	...	...	...	...
2. Gonorrhœa	...	9	...	9	...	31	...	31	40
3. Soft Chancre	...	2	...	2	...	2	...	2	4
4. Other venereal diseases	...	1	...	1	1	...	...	...	1
36.—(a) Septicæmia	...	1	1	1	...	1	...	1	2
(b) Pyæmia	...	...	...	...	...	...	...	...	...
(c) Gas gangrene	...	...	...	...	...	...	...	...	...
37. Yellow fever	...	...	...	...	...	...	...	...	...
38. Malaria:									
Tertian	...	14	...	14	...	8	2	10	24
Quartan	...	...	...	...	...	...	...	...	...
Subtertian	1	417	2	418	1	133	113	246	664
Cachexia	...	3	...	3	...	18	4	22	25
Unspecified	...	107	...	107	...	53	32	85	192
39.—1. Rat-bite fever	...	...	...	...	...	...	...	...	...
2. Trypanosomiasis	...	1	...	1	...	...	...	...	1
3. Yaws	...	...	...	...	...	...	...	...	...
4. Other diseases due to protozoa	...	1	...	1	...	1	1	2	3
40. Ankylostomiasis	...	2	...	2	...	4	1	5	7
41. Hydatid cysts	...	...	...	...	...	...	...	...	...

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
42.—1. Cestodes (Tæniasis)	...	1	...	1	...	10	6	16	17
2. Nematodes—Ascariasis	...	3	...	3	...	2	1	3	6
Dracontiasis (guinea worm)	...	...	...	...	...	...	...	...	...
Filarial elephantiasis	...	...	...	...	...	...	...	...	...
Filariasis	...	...	...	...	...	...	...	...	...
Oxyuris vermicularis	...	...	...	...	...	...	2	2	2
3. Trematodes: Schistosomiasis	...	3	...	3	...	1	1	2	5
4. Other diseases due to helminths	...	...	...	...	...	11	7	18	18
43.—1. Actinomycosis	...	...	...	...	...	...	...	...	...
2. Other mycoses	...	3	...	3	...	6	1	7	10
44.—1. Vaccinia	...	...	...	...	...	...	8	8	8
2. Other sequelæ of vaccination (infective)	...	1	...	1	...	3	4	7	8
3. Varicella (Chicken-pox)	...	2	...	2	...	...	2	2	4
4. Mumps	...	...	...	...	...	...	...	...	...
5. Blackwater fever	...	9	...	9	...	2	...	2	11
6. Dengue	...	1	...	1	...	...	...	...	1
7. Other infectious or parasitic diseases	...	3	...	3	...	1	...	1	4
II.—Cancer and Other Tumours.									
45. Cancer of the buccal cavity and pharynx	...	...	...	...	...	...	...	...	...
46. Cancer of the digestive organs and peritoneum	...	2	...	2	1	3	...	3	5
47. Cancer of the respiratory organs	...	...	...	...	...	...	1	1	1
48. Cancer of the uterus	...	...	...	...	...	...	...	...	...
49. Cancer of other female genital organs	...	...	...	...	...	...	...	...	...
50. Cancer of the breast	...	...	...	...	...	...	...	...	...
51. Cancer of the male genito-urinary organs	...	...	...	...	...	...	...	...	...
52. Cancer of the skin	...	1	...	1	...	...	...	...	1
53. Cancer of other or unspecified organs	...	2	...	2	...	1	1	2	4
54. Non-malignant tumours: (a) Female genital organs	...	...	...	...	...	...	2	2	2
(b) Other sites	...	4	...	4	...	...	7	7	11
55. Tumours of undetermined nature: (a) Female genital organs	...	1	...	1	...	...	...	...	1
(b) Other sites	...	...	...	...	...	2	1	3	3

Diseases and Deaths (Europeans)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
III.—Rheumatism, Diseases of Nutrition and of Endocrine Glands and Other General Diseases.									
56. Rheumatic fever	...	3	...	3	...	...	...	...	3
57. Chronic rheumatism, Osteo-arthritis	...	7	...	7	...	30	18	48	55
58. Gout	...	...	...	...	...	1	1	2	2
59. Diabetes (not including Insipidus)	...	3	...	3	...	3	...	3	6
60. Scurvy	...	...	...	...	...	...	...	...	...
61. Beri-beri	...	...	...	...	...	...	...	...	...
62. Pellagra	...	...	...	...	...	...	...	...	...
63. Rickets	...	...	...	...	...	...	...	...	...
65. Diseases of the pituitary gland	...	...	...	...	...	...	...	...	...
66.—(a) Simple goitre	...	...	...	...	...	...	...	...	...
(b) Exophthalmic goitre	...	...	...	...	...	1	...	1	1
(c) Myxœdema, Cretinism	...	...	...	...	...	...	1	1	1
(d) Tetany	...	...	...	...	...	...	...	...	...
(e) Other diseases of the thyroid or parathyroid glands	...	1	...	1	...	1	5	6	7
67. Diseases of the thymus	...	...	...	...	...	...	...	...	...
68. Diseases of the adrenals (non-tuberculous)	...	...	...	...	...	...	...	...	...
69.—1. Amyloid disease of unstated origin	...	1	...	1	...	1	1	2	3
2. Other general diseases	...	...	...	...	...	3	3	6	6
IV.—Diseases of the Blood and Blood-Forming Organs.									
70. Hæmorrhagic conditions:									
(a) Purpura	...	...	...	...	...	1	...	1	1
(b) Hæmophilia	...	...	...	...	...	...	...	...	...
71.—1. Pernicious anæmia	...	...	...	...	...	...	...	...	...
2. Splenic anæmias	...	...	...	...	...	1	6	7	7
3. Other anæmias and chlorosis	...	3	...	3	...	2	5	7	10
72.—(a) Leukæmia	...	...	...	...	...	...	...	...	...
(b) Aleukæmia (Lymphadenoma)	...	...	...	...	...	...	...	...	...
73.—1. Banti's disease	...	1	...	1	...	...	...	...	1
2. Other diseases of the spleen	...	1	...	1	...	2	...	2	3
74. Other diseases of the blood and blood-forming organs	...	2	...	2	...	...	1	1	3

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
V.—Chronic Poisoning.									
75. Alcoholism (acute or chronic)	...	1	...	1	...	...	...	...	1
76. Chronic poisoning by other organic substances	...	1	...	1	...	1	1	2	3
77. Chronic poisoning by mineral substances	...	1	...	1	...	...	...	...	1
VI.—Diseases of the Nervous and Sense Organs.									
78.—(a) Cerebral abscess	...	...	...	...	...	...	...	...	...
(b) Other Encephalites (not including Lethargica)	...	1	...	1	...	...	...	...	1
79. Meningitis	...	...	...	...	...	...	...	...	...
80. Tabes dorsalis (Locomotor ataxy)	...	1	...	1	...	1	...	1	2
81. Other diseases of spinal cord	...	...	...	...	...	...	...	...	...
82.—(a) Cerebral hæmorrhage	...	2	2	2	...	1	...	1	3
(b) Cerebral embolism and thrombosis	...	...	...	...	...	...	1	1	1
(c) 1. Hemiplegia	...	...	...	...	...	...	...	...	...
2. Other paralyses of unstated origin	...	...	...	...	...	...	...	...	...
83. General paralysis of the insane	...	...	...	...	...	...	...	...	...
84. Other forms of insanity	...	1	...	1	...	1	...	1	2
85. Epilepsy	...	...	...	...	...	...	...	...	...
86. Infantile convulsions (under 5 years of age)	...	2	...	2	...	1	1	2	4
87.—(a) Chorea	...	...	...	...	...	1	...	1	1
(b) Neuritis, neuralgia	1	8	...	9	...	35	23	58	67
(c) Paralysis agitans	...	...	...	...	...	...	4	4	4
(d) Disseminated sclerosis	...	...	...	...	...	...	...	...	...
(e) Other diseases of the nervous system	...	24	...	24	...	20	11	31	55
88. Blepharitis	...	...	...	...	...	4	...	4	4
Cataract (all forms)	...	1	...	1	...	...	...	...	1
Conjunctivitis	...	7	...	7	...	30	11	41	48
Glaucoma	...	...	...	...	...	...	...	...	...
Iritis	...	2	...	2	...	2	...	2	4
Keratitis	...	1	...	1	...	...	3	3	4
Ophthalmia (not including Neonatorum: *see* 35 (1))	...	...	...	...	...	...	...	...	...
Optic Neuritis	...	...	...	...	...	...	...	...	...
Trachoma	...	1	...	1	...	2	...	2	3
Other diseases of the eye	...	2	...	2	...	32	14	46	48
89.—(a) Otitis and other diseases of the ear	...	11	...	11	...	77	36	113	124
(b) Diseases of the mastoid sinus	...	2	...	2	...	20	8	28	30

Diseases and Deaths (Europeans)—*contd.*

Diseases	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
VII.—Diseases of the Circulatory System.									
90. Pericarditis	...	...	...	...	...	4	2	6	6
91. Acute endocarditis	...	...	...	...	...	...	...	...	...
92.—1. Aortic valve disease	...	...	...	...	...	1	...	1	1
2. Mitral valve disease	...	...	...	...	...	...	...	...	...
3. Aortic and mitral valve disease	...	...	...	...	...	...	...	...	...
4. Other or unspecified valve diseases	...	...	...	...	...	...	1	1	1
93.—(a) Acute myocarditis	...	...	...	...	...	...	...	...	...
(b) Myocardial degeneration	...	2	...	2	...	...	...	...	2
94. Diseases of the coronary arteries, Angina pectoris	...	...	...	...	...	6	...	6	6
95.—(a) Disordered action of heart	...	1	...	1	...	12	7	19	20
(b) Other diseases of the heart	...	1	...	1	...	...	1	1	2
96. Aneurysm	...	...	...	...	...	...	...	...	...
97. Arterio-sclerosis	...	...	...	...	...	1	1	2	2
98. Gangrene	...	...	...	...	...	...	...	...	...
99. Other diseases of the arteries	...	...	...	...	...	2	1	3	3
100. Hæmorrhoids	...	9	...	9	...	16	4	20	29
Varicocele	...	...	...	...	...	...	...	...	...
Varicose veins	...	2	...	2	...	3	1	4	6
Phlebitis	...	2	...	2	...	2	...	2	4
Other diseases of the veins	...	1	...	1	...	1	...	1	2
101. Lymphadenitis	...	7	...	7	...	8	1	9	16
Lymphangitis	...	1	...	1	...	1	1	2	3
102. Abnormalities of blood pressure	...	...	...	...	...	5	1	6	6
103. Other diseases of the circulatory system	...	2	...	2	...	1	...	1	3
VIII.—Diseases of the Respiratory System.									
104.—1. Diseases of the nose	...	13	...	13	...	42	29	71	84
2. Diseases of the accessory nasal sinuses	...	3	...	3	...	7	...	7	10
105. Diseases of the larynx	...	1	...	1	...	1	...	1	2
106. Bronchitis: (a) Acute	...	8	1	8	...	38	4	42	50
(b) Chronic	...	6	...	6	...	6	5	11	17
(c) Not distinguished as acute or chronic	...	7	...	7	...	19	18	37	44
107. Broncho-pneumonia	...	2	1	2	...	...	...	...	2

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
108. Lobar pneumonia	1	2	1	3	...	...	1	1	4
109. Pneumonia (not otherwise defined)	...	1	...	1	...	...	...	...	1
110.—1. Empyema	...	...	...	...	...	...	...	...	...
2. Pleurisy	...	4	...	4	1	3	2	5	9
111. Congestion and hæmorrhagic infarct of lung, etc.	...	1	...	1	...	...	...	...	1
112. Asthma	...	8	...	8	1	17	9	26	34
113. Pulmonary emphysema	...	...	...	...	...	...	1	1	1
114. Other diseases of the respiratory system	...	3	...	3	...	11	1	12	15
IX.—Diseases of the Digestive System.									
115.—1. Diseases of the teeth and gums	...	9	...	9	...	79	34	113	122
2. Ludwig's angina	...	...	...	...	...	1	1	2	2
3. Diseases of the tonsils	...	60	...	60	...	39	46	85	140
4. Other diseases of the buccal cavity, pharynx, etc.	...	18	...	18	...	52	22	74	92
116. Diseases of the œsophagus	...	2	...	2	...	1	...	1	3
117.—(a) Ulcer of the stomach	1	5	...	6	...	3	3	6	13
(b) Ulcer of the duodenum	...	2	1	2	...	3	...	3	5
118. Other diseases of the stomach	...	11	...	11	...	67	48	115	126
119. Under two years (a) 1. Colitis	...	5	...	5	...	10	2	12	17
2. Other diarrhœa and enteritis	...	21	...	21	...	13	23	36	57
(b) Ulceration of the intestines	...	6	...	6	...	...	...	...	6
120. Over two years (a) 1. Colitis	...	5	...	5	...	8	3	11	16
2. Other diarrhœa and enteritis	...	38	...	38	...	59	18	77	115
(b) Ulceration of the intestines	...	...	...	...	...	2	2	4	4
121. Appendicitis	1	35	1	36	2	7	6	13	49
122.—(a) 1. Hernia, strangulated	...	...	...	...	...	1	...	1	1
2. Hernia not returned as strangulated	...	3	...	3	...	4	2	6	9
(b) Intestinal obstruction	...	...	...	...	...	1	...	1	1
123.—1. Constipation, intestinal stasis	...	3	...	3	...	16	15	31	34
2. Diverticulitis	...	...	...	...	...	...	1	1	1
3. Other diseases of the intestines	...	6	...	6	...	5	11	16	22
124. Cirrhosis of the liver:									
(a) Alcoholic	...	...	...	...	...	...	...	...	...
(b) Not returned as alcoholic	...	...	...	...	...	...	...	...	...
125.—1. Acute yellow atrophy	...	...	...	...	...	...	...	...	...
2. Other diseases of the liver	...	9	1	9	...	8	8	16	25

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly		Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
		Admissions	Deaths						
126. Biliary calculi	...	1	1	1	...	1	...	1	2
127.—1. Cholecystitis without record of biliary calculi	...	2	...	2	...	1	2	3	5
2. Other diseases of the gall bladder and ducts	...	3	...	3	...	...	...	...	3
128. Diseases of the pancreas	...	2	1	2	...	...	...	...	2
129. Peritonitis without stated cause	...	1	...	1	...	...	...	...	1
X.—Non-venereal Diseases of the Genito-Urinary System and Annexa.									
130. Acute nephritis	...	...	...	...	...	...	...	...	...
131. Chronic nephritis	...	3	2	3	...	2	...	2	5
132. Nephritis not stated to be acute or chronic	...	1	...	1	...	1	...	1	2
133.—(a) Pyelitis	...	8	...	8	...	4	6	10	18
(b) Other diseases of the kidney and annexa	...	2	...	2	...	1	3	4	6
134.—(a) Calculi of kidney and ureter	...	3	...	3	1	...	...	...	3
(b) Calculi of the bladder	...	1	...	1	...	...	...	...	1
(c) Calculi of unstated site in urinary passages	...	2	...	2	...	...	...	...	2
135.—(a) Cystitis	2	9	...	11	...	13	19	32	43
(b) Other diseases of the bladder	...	...	...	...	...	...	1	1	1
136.—(a) Stricture of the urethra	...	1	...	1	...	5	...	5	6
(b) Other diseases of the urethra, etc.	...	5	...	5	...	3	2	5	10
137. Diseases of the prostate	...	2	...	2	...	6	...	6	8
138. Diseases of the male genital organs	...	8	...	8	...	17	...	17	25
139.—(a) Diseases of the ovary and Fallopian tube	...	5	...	5	...	...	1	1	6
(b) Diseases of the uterus	...	15	...	15	1	...	25	25	40
(c) Diseases of the breast	...	2	...	2	...	...	7	7	9
(d) Other diseases of the female genital organs	...	8	...	8	...	...	33	33	41
XI.—Diseases of Pregnancy, Childbirth and the Puerperal State.									
140. Post-abortive sepsis	...	...	...	...	...	...	...	...	...
141.—1. Hæmorrhage following abortion	...	4	...	4	...	...	...	...	4
2. Abortion without record of hæmorrhage	...	7	...	7	...	...	3	3	10
142. Ectopic gestation	...	1	...	1	...	...	...	...	1
143. Other accidents of pregnancy	...	8	1	8	1	...	9	9	17
144.—(a) Placenta prævia	...	...	...	...	...	...	...	...	...
(b) Other puerperal hæmorrhage	...	...	...	...	...	...	...	...	...

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly Admissions	Total Yearly Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
145. Puerperal sepsis	...	...	...	...	...	...	...	...	...
146.—1. Puerperal convulsions	...	...	...	...	...	...	...	...	...
2. Puerperal albuminuria	...	5	...	5	...	...	29	29	4
147. Other toxæmias of pregnancy	...	...	...	...	...	...	...	...	...
148.—(a) Puerperal phlegmasia alba dolens	...	...	...	...	...	...	...	...	...
(b) Puerperal embolism	...	...	...	...	...	...	...	...	...
149. Other accidents of childbirth	...	...	...	...	...	...	1	1	1
150.—1. Puerperal insanity	...	...	...	...	...	...	...	...	...
2. Puerperal diseases of the breast	...	...	...	...	...	...	...	...	...
3. Childbirth (unqualified)	2	85	...	87	1	...	23	23	110
4. Other conditions of the puerperal state	...	...	...	...	...	...	...	...	...
XII.—Diseases of the Skin and Cellular Tissue.									
151. Carbuncle, boil	...	10	...	10	...	74	24	98	108
152.—1. Cellulitis	...	21	...	21	...	...	12	12	33
2. Acute abscess	...	24	...	24	2	22	13	35	59
153. Eczema	...	3	...	3	...	12	4	16	19
Herpes	...	...	...	...	...	8	4	12	12
Impetigo	...	...	...	...	...	5	4	9	9
Pediculosis	...	...	...	...	...	2	...	2	2
Psoriasis	...	1	...	1	...	3	2	5	6
Scabies	...	...	...	...	...	16	9	25	25
Sebaceous cyst	...	1	...	1	...	13	...	13	14
Ulcers	...	16	...	16	...	81	49	130	146
Urticaria	...	3	...	3	...	13	11	24	27
Other diseases of the skin and its annexa	...	15	...	15	...	32	9	41	56
XIII.—Diseases of the Bones and Organs of Locomotion.									
154. Acute infective osteomyelitis and periostitis	...	1	...	1	...	...	...	...	1
155. Other diseases of the bones	...	1	...	1	...	6	3	9	10
156.—(a) Diseases of the joints	...	5	...	5	...	13	5	18	23
(b) Diseases of other organs of locomotion	...	12	...	12	...	29	3	32	44

Diseases and Deaths (Europeans)—*contd.*

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly: Admissions	Total Yearly: Deaths	Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
XIV.—Congenital Malformations.									
157. Congenital malformations	...	...	...	...	...	...	...	...	...
.....									
.....									
.....									
XV.—Diseases of Early Infancy.									
158. Congenital debility	...	1	...	1	1	...	...	...	1
159. Premature birth	...	...	...	...	...	...	...	...	...
160. Injury at birth: (a) With mention of cæsarean section ...	...	...	...	...	...	...	...	...	...
(b) Without mention of cæsarean section ...	...	...	...	...	...	...	...	...	...
161. Other diseases peculiar to early infancy	...	2	...	2	...	3	16	19	21
XVI.—Old Age.									
162.—(a) Senile dementia	...	...	...	...	...	...	1	1	1
(b) Other forms of senile decay	...	1	...	1	...	...	...	...	1
XVII.—Affections Produced by External Causes.									
176. Attack by venomous animals	...	1	...	1	...	10	1	11	12
177. Food poisoning	...	4	...	4	...	2	1	3	7
178. Absorption of irrespirable or poisonous gas	...	...	...	...	...	...	...	...	...
179. Other acute poisoning (not by gas)...	...	1	...	1	...	1	...	1	2
180. Conflagration	...	...	...	...	...	2	1	3	3
181. Burns (conflagration excepted)	...	6	...	6	...	7	...	7	13
184. Injury by firearms	...	...	...	...	...	...	...	...	...
185. Injury by cutting or piercing instruments	...	15	...	15	1	70	18	88	103
186. Injury by fall, crushing, etc.	...	24	2	24	...	53	20	73	97
188. Injury by animals (poisoning by venomous animals excepted)	...	1	...	1	...	18	3	21	22

DISEASES	In-Patients					Out-Patients			Total Cases In- and Out-Patients
	Remaining in Hospitals at end of 1935	Total Yearly		Total Cases Treated	Remaining in Hospitals at end of 1936	Males	Females	Total	
		Admissions	Deaths						
189. Hunger or thirst	...	...	...	...	...	...	...	...	...
190. Excessive cold	...	...	...	...	...	...	...	...	...
191. Excessive heat	...	2	1	2	...	1	3	4	6
192. Lightning	...	...	...	...	...	...	...	...	...
193. Electricity (lightning excepted)	...	...	...	...	...	...	...	...	...
194.—1. Inattention at birth	...	...	...	...	...	2	...	2	2
2. Other forms of accidental violence	...	20	...	20	...	45	5	50	70
XVIII.—Ill-defined Diseases.									
200.—(a) Diseases undiagnosed or ill-defined	1	52	...	53	1	95	73	168	221
(b) Malingering	...	...	...	...	...	...	...	...	...
Total ...	14	1,595	21	1,609	17	1,930	1,178	3,108	4,717

Annual Report of the Laboratory and Research Division 1936

Introduction.

This report covers the activities of the laboratory and research division for the year ended the 31st December 1936. The year has seen an extension of the activities inaugurated in 1935, and at the close of the year, arrangements were made for the opening of a branch clinical laboratory in Tanga. There are thus four separate laboratory units functioning within this division of the department.

Staff.

Dr H. J. O'D Burke-Gaffney, Assistant Bacteriologist, who had acted as Deputy Director of Laboratory Service since August 1932 was appointed Senior Pathologist on the 1st January 1936. Dr D. E. Wilson proceeded on leave on the 5th September 1936. Dr D. A. Skan relieved Dr Wilson in Mpwapwa on the 14th October 1936. Mr W. D. Raymond, Analytical Chemist, was appointed Government Analyst on the 1st January 1936. Mr Raymond returned from leave on the 30th June 1936.

The staff of the division during the year consisted of the following:—

Senior Pathologist: H. J. O'D. Burke-Gaffney, B.A., M.D., B.Ch.

Medical Officers (seconded): D. A. Skan, M.R.C.S., L.R.C.P., D.T.M., D.T.H.; D. E. Wilson, M.B., B.Ch.

Government Analyst: W. D. Raymond, B.Sc., A.I.C.

Laboratory Assistant: H. Hammond.

Clerks: Amar Singh; Maharage Juma.

Laboratory Attendants: Yohana Mkande; John Robert; Mesheck Ndlwana; Zebron Nicodemus; Alexander Kanyamala; Augustine Sendeu.

Microscopist: Samuel Kilimali and nine subordinates.

Financial.

	Shs	Cts
Expenditure:		
Upkeep of Laboratory	746	12
Upkeep of Lymph Institute	1,012	49
Total ...	1,758	61
Revenue:		
Laboratory fees	2,230	85
Sale of Lymph to other Governments	1,800	00
Sale of Vaccines and Sera	529	52
Total ...	4,560	37

This is not a true financial statement, as other items are shown under departmental accounts.

Buildings and Equipment.

The extension to the laboratory, Dar es Salaam, and the renovation of the animal houses were again deferred, and the problem of accommodation is now more acute than ever. Existing space is quite inadequate and unsuitable for the continuance of satisfactory work. Some improvement to the main buildings was effected by the painting and decorating of the interior during the year.

Museum and Library.

These have now been accommodated in the former hospital dispensary, which makes a convenient situation for the purpose. The room has been fitted with facilities for reading and writing and is at the disposal of departmental officers who wish to work there. Additions to the museum continue to be made.

Instructional Courses for African Assistants.

The formal courses in chemistry, physics and pathology given by members of the laboratory staff in the Sewa Hadji hospital medical school were continued during the year. A small teaching laboratory has now been fitted in the medical school, and each student is provided with his own reagents.

A text-book of clinical pathology for African Medical assistants, produced by the senior pathologist was published by the Government Press during the year and issued to each African dispenser and student. A number of copies were also supplied to other governments.

Candidates from St Andrew's College, Minaki, were examined in clinical pathology at the main laboratory during the year.

In addition to students attending the formal courses, two African dispensers, three hospital orderlies, and two veterinary guards were seconded to the main laboratory for "refresher" courses at different periods of the year.

Microscopes.

This organization has now been taken over completely by the division. An attempt to obtain records of each microscope in the department was made at the close of the year. This branch of the work included choosing and ordering microscopes for native authorities; fitting these with locally made mechanical stages; and examining, and repairing where possible, microscopes belonging to the department. All departmental microscopes are now issued from the main laboratory and are inspected or overhauled by the qualified staff before issue.

Co-operation.

Co-operation was effected and mutual advice and assistance in common problems exchanged as heretofore with the laboratories in Kenya, Uganda, Zanzibar and the Sudan.

Grateful acknowledgement is made to the following for their helpful advice in a number of problems: Professor Girard (Madagascar), Dr Grasset S.A.I.M.R., Johannesburg), Dr Stuart (Palestine) and Dr. Vint (Nairobi).

During the year the laboratory was visited by the following: Dr James Fenton, Chairman, Royal Sanitary Institute; Dr I. Dudley Robinson, Secretary, Royal Sanitary Institute, Professor Gerhard Rose, Robert Koch Institute, Berlin.

Co-operation was also effected closely with other government departments. Particularly gratitude is due to the Director of Veterinary Services and to Mr. M. H. French, Veterinary Chemist, who kindly undertook a number of analytical investigations, and paid several visits to Dar es Salaam for the purpose, during Mr Raymond's leave.

Burke-Gaffney, H. J. O'D. :

An Outline of Clinical Pathology for African Medical Assistants. *Government Press, Dar es Salaam.*

Wilson, D. E. and Hari Singh :

A case of human rabies in the Central Province of Tanganyika. *East African Medical Journal*, September 185.

Wilson, D. E. and Evans, S. A. :

The passage of human and monkey strains of *Br. melitensis* through pregnant heifers. (In the press.)

Raymond, W. D. :

Native Materia Medicâ II. *Tanganyika Notes and Records* 2, 50.

WORK OF THE DIVISION.

There was a large increase in the routine work undertaken which amounted to 28,647 specimens as compared with 21,600 in 1935. Research was again reduced to a minimum, since the routine work had increased, and no corresponding staff increase was possible.

The Mpwapwa laboratory was re-opened in February, and a complete year's work was undertaken in the clinical laboratory of the Sewa Hadji hospital. A considerable portion of the routine chemical work was continued during the analyst's leave and preparations were made to open the clinical laboratory in Tanga early in 1937. The division was thus operating in full for the greater part of the year.

The report is divided into the following sections :—

Part I.—Pathological Section :
- (a) Main laboratory.
- (b) Clinical laboratory, Sewa Hadji hospital.
- (c) Laboratory, Mpwapwa.

,, II.—Lymph Production.
,, III.—Chemical Section.
,, IV.—Special Investigations.
,, V.—Appendices.

PART I.—PATHOLOGICAL SECTION.

(a) MAIN LABORATORY, DAR ES SALAAM.

This part of the report is presented under the following headings :—

1. Parasitology,
2. Serology,
3. Other blood examinations,
4. General examinations,
5. Bacteriology,
6. Public Health examinations,
7. Medico-legal examinations,
8. Pathological examinations.

(1) PARASITOLOGY.

(a) *Blood films.*—Two thousand four hundred and thirty-nine were examined.

	Europeans	Asians	Africans	Total
Plasmodium	151	247	148	546
Mf. bancrofti	—	—	4	4
B. duttoni	—	—	2	2
Total positive ...	151	247	154	552
Total negative ...	623	920	344	1,887
Total films	774	1,167	498	2,439

(b) *Fæces.*—Six hundred and eighty-six were examined.

	Europeans	Asians	Africans	Total
Ova of *Ankylostoma* ...	1	4	266	271
,, *Ascaris*	—	—	14	14
,, *Trichuris* ...	—	1	1	2
,, *Oxyuris*	2	—	2	4
,, *Tænia*	1	—	—	1
,, *S. mansoni* ...	—	—	3	3
,, *S. hæmatobium* ...	—	—	2	2
Larva of *Strongyloides*	—	—	3	3
E. histolytica	3	—	1	4
Flagellates	1	—	1	2
Total positive ...	8	5	293	306
Total negative ...	182	51	147	380
Total fæces	190	56	440	686

(c) *Urine.*—One hundred and sixty-six specimens were examined for ova.

	Europeans	Asians	Africans	Total
Sch. hæmatobium ova present	—	—	120	120
,, ,, absent	2	10	34	46
Total urine	2	10	154	166

(2) SEROLOGY.

Two thousand four hundred and fifty specimens of serum were received, an increase of four hundred and fifty over the previous year.

(a) *The Wassermann test.*—One thousand and ninety specimens were received.

	Europeans	Asians	Africans	Total
Blood sera.				
Positive	24	16	294	334
Doubtful	3	6	33	42
Negative	116	66	437	619
Anti-complementary ...	1	4	28	33
Contaminated	6	2	38	46
Total	150	94	830	1,074

Cerebro-spinal fluid :—sixteen specimens.

Positive	—	—	4	4
Anti-complementary ...	—	—	2	2
Negative	1	—	9	10
Total	1	—	15	16

(b) *The Kahn test.*—One thousand and seventy-four specimens were examined.

	Europeans	Asians	Africans	Total
Positive	25 ...	21 ...	314 ...	360
Doubtful	10 ...	10 ...	59 ...	79
Negative	101 ...	61 ...	396 ...	558
Contaminated	5 ...	7 ...	65 ...	77
Total	141 ...	99 ...	834 ...	1,074

(c) *Agglutination tests.*—Two hundred and eighty-six sera were examined, of which two hundred and eighteen were from humans and sixty-eight from cattle. The latter were sent by the Senior Veterinary Officer, Eastern province, for examination for the presence of *Brucella* agglutinins.

	Europeans	Asians	Africans	Total
Human sera.				
Bact. typhosum	9 ...	18 ...	35 ...	62
Bact. typhosum and *Bact. para.* A and B ...	21 ...	— ...	2 ...	23
,, ,, ,, A	5 ...	1 ...	7 ...	13
,, ,, ,, B	3 ...	— ...	4 ...	7
,, ,, and *Brucella*	— ...	1 ...	— ...	1
,, *para.* A and *para.* B and *Brucella* ...	1 ...	— ...	1 ...	2
,, ,, A and *Brucella*	— ...	— ...	1 ...	1
,, ,, A	— ...	— ...	4 ...	4
,, ,, B	1 ...	— ...	— ...	1
Brucella	— ...	— ...	4 ...	4
Total positive	40 ...	20 ...	58 ...	118
Total negative	21 ...	21 ...	58 ...	100
Total sera	61 ...	41 ...	116 ...	218

Sera from Cattle.—Agglutinated *Br. abortus* 17 ; negative 51.

The principal districts from which the typhoid-agglutinating sera were received were Dar es Salaam 25, Morogoro 23, Mwanza 15, Mbeya 13, Tanga 13, Tabora 12.

It will be noted that eight sera agglutinated the *Brucella* group, both *Br. melitensis* and *Br. abortus* being agglutinated in each case.

Blood Grouping.—Only six individuals volunteered for blood grouping during the year. As a result, a circular has been issued to various government departments and public bodies, inviting individuals to volunteer in order that a transfusion service may be established.

(3) OTHER BLOOD EXAMINATIONS.

(a) *Blood cultures.*—Thirty were carried out.

	Europeans	Asians	Africans	Total
Bact. typhosus	1 ...	3 ...	2 ...	6
Alkaligenes fæcalis	1 ...	— ...	1 ...	2
Bact. coli	1 ...	— ...	2 ...	3
Total positive	3 ...	3 ...	5 ...	11
Total negative	9 ...	2 ...	8 ...	19
Total blood cultures	12 ...	5 ...	13 ...	30

(b) *Total blood counts.*—Fourteen complete counts were made. Two estimations of cells only, and seven estimations of hæmoglobin only were carried out.

(c) *Differential counts.*—Eighty-one were carried out, 49 in Europeans, 25 in Asians and 7 in Africans. In addition, 8 polynuclear counts were made.

(4) GENERAL EXAMINATIONS.

(a) *Fæces.*—General microscopic examination of fæces was made with 686 specimens. Nothing requiring special record was found.

(b) *Urine.*—Six hundred and twenty-three specimens were examined for the presence of glucose, albumin and abnormal deposits. Albumin was found in 31 samples, casts in 8 and glucose in 9. Pus and blood cells were found in forty samples.

(5) BACTERIOLOGY.

(a) *Fæces.*—Seventy-six stools were plated. *Alkaligenes fæcalis* was the only pathogenic micro-organism isolated.

(b) *Urine.*—One hundred and fifty-three specimens were examined, as under :—

	Europeans	Asians	Africans	Total
Bact. coli	31	13	2	46
Bact. ærogenes	5	1	2	8
Alkaligenes fæcalis	4	1	—	5
Gonococci	1	—	1	2
P. pyocyaneum	—	—	1	1
Staphylococci	17	6	—	23
Total positive	58	21	6	85
Negative	33	22	13	68
Total	91	43	19	153

(c) *Sputum.*—Eight hundred specimens were examined.

	Europeans	Asians	Africans	Total
M. tuberculosis	1	17	412	430
Pneumococci	—	1	—	1
Total positive	1	18	412	431
Total negative	64	167	138	369
Total specimens	65	185	550	800

The number of positive specimens in Africans was proportionally higher than in 1935.

(d) *Nasal and skin smears.*—Three hundred and sixty-two specimens were examined, all from Africans. *M. lepræ* was found in two hundred and five.

(e) *Throat swabs.*—One hundred and twenty-two were examined.

	Europeans	Asians	Africans	Total
C. diphtheriæ	—	6	—	6
Streptococci	4	—	—	4
Monilia	—	1	—	1
Negative	36	69	6	111
Total	40	76	6	122

This is the first occasion on which *C. diphtheriæ* has been isolated in Dar es Salaam since 1929. Six cases were identified at two distinct periods with a few months between each outbreak. All contacts were swabbed and no active carriers were found.

(f) *Urethral and vaginal smears.*—Thirty-six were examined.

	Europeans	Asians	Africans	Total
Gonococci present	9	3	2	14
Negative	14	4	4	22
Total	23	7	6	36

(g) *Pus from abscesses, etc.*—Thirty-two specimens were examined.

	Europeans	Asians	Africans	Total
Pyogenic cocci	8	1	10	19
Ducrey's bacillus	—	2	—	2
Fusifom bacilli	—	—	1	1
Diphtheroid bacilli	—	—	1	1
Negative	2	1	6	9
Total	10	4	18	32

(h) *Body fluids.*—Twenty-three specimens were examined.

	Europeans	Asians	Africans	Total
Meningococci	—	—	2	2
Pneumococci	—	—	2	2
Pyogenic cocci	—	—	4	4
P. pestis	—	—	1	1
Bact. typhosus	1	—	—	1
Negative	1	4	8	13
Total	2	4	17	23

Trypanosomes were found in the ascitic fluid of an African youth. This is referred to under special investigations (Part IV, page 114).

(i) *Vaccines.*—Thirty-seven autogenous vaccines were prepared.

Staphylococci	16
Mixed cattarrhal	9
Bact. coli	6
Bact. ærogenes	2
P. pyocyaneum	1
A. fæcalis	1
Streptococci	1
Pneumococci	1
Total ...	37

The following quantities of stock vaccines and sera were issued :—

Anti-meningococcal Serum (25cc.)	39 phials
Anti-streptococcal ,, ...	23 ,,
Diphtheria antitoxin (4,000 units)	12 ,,
,, ,, (8,000 ,,)	12 ,,
Plague vaccine (25cc.)	96 bottles
Gonococcal vaccine (1cc.)	13 phials
T.A.B. vaccine (25cc.)	68 bottles
,, ,, (sets)	55 sets
Tetanus antitoxin (1,500 units)	43 phials
,, ,, (8,000 ,,)	45 ,,
Anti-venene serum (10cc.)	2 ,,

(j) *Miscellaneous.*—Twenty-five specimens.

The following specimens were examined for the Veterinary Officer, Dar es Salaam : Blood from oxen 3, blood from dogs 4, pus from dogs 4, gland from goat 1, tissues from various carcasses 3.

Findings included *T. congolense* in two specimens of blood from dogs, and *Cysticercus bovis* in tissues from oxen.

In addition to the veterinary specimens, ten ticks were examined for infectivity with negative results.

(6) PUBLIC HEALTH EXAMINATIONS.

(a) *Water examinations.*—Bacteriological examinations of the public water supply in Dar es Salaam were made weekly as usual. One hundred and fourteen samples were examined. During the month of September it was noted that signs suggestive of bacterial pollution had appeared in the samples and the matter was immediately and satisfactorily investigated and adjusted. The subject is discussed in Part IV (page 112) of this report. Four samples from Government House were examined and found free from pollution. Sixty-one samples from shallow wells were examined and showed considerable contamination. One hundred and thirty-eight cultures obtained from a survey of Morogoro water supply undertaken by Dr Skan of the Mpwapwa laboratory were investigated in this laboratory. These are also discussed in Part IV (page 113). Detailed results of water examinations are shown in Appendices I and II.

(b) *Rats.*—Two thousand, eight hundred and twenty-two rat spleens were examined for the presence of *P. pestis*. All were negative.

(c) *Snails.*—Twelve snails from Bagamoyo were examined for cercariæ. All were negative.

(d) *Specimens of polluted sand from beaches.*—One hundred were examined. These are discussed in Part IV (page 112).

(e) *Katathermometer readings.*—Katathermometer readings were made on two hundred and eighty-two days. The results are shown in Appendix III.

(7) MEDICO-LEGAL EXAMINATIONS.

Fifty-four exhibits. For blood stains, 26 (8 positive). For gonococci and spermatozoa, 5 positive gonococci : 2 positive spermatozoa. Bones for identification, 1. Shirt for nature of stain, 1.

(8) PATHOLOGICAL EXAMINATIONS.

(a) *Autopsies.*—Thirty-five were performed as under : Europeans.—Ruptured aortic aneurysm 1; Asians.—Stab wound of chest 1, poisoning by cyanide 1, ruptured spleen 1 ; Africans—Drowning 5, hanging 3, *death from electricity 6, ruptured spleen 1, meningitis 1, toxæmia 1, carcinoma of stomach 1, fractured skull (motor car accident) 1, fractured skull (homicidal) 4, asphyxia (crushing accident) 1, asphyxia (falling of sand) 1, gas gangrene 1, multiple injuries 1, arsenical poisoning 3, stabbing 1.

(b) *Morbid histology.*—One hundred and seventy-nine pieces of tissue were received from 162 individuals.

(1) European : (a) *Neoplasms.*—Benign : Papilloma, face 1, papilloma, buttock 1, papilloma, lip 1, adenoma, breast 1, cervical polyp 1; Malignant : Duct carcinoma breast 1. (b) *Other conditions.*—Normal tissue 5, endometritis 2, abortion 1, tubal pregnancy 1, creeping eruption 1, broncho-pneumonia 1, hæmorrhoids 1, appendicitis 4.

*Six house-servants accidentally killed through contact with a wire fence which was electrified by main wires, due to a coconut tree having fallen upon them during a storm.

(2) Asian : (a) *Neoplasms.*—Benign : Nil; Malignant : carcinoma cervix 1. (b) *Other conditions.*—Normal tissue 3, adenitis, tubercular 1, appendicitis 6, ulcers 1, tuberculosis of cerebellum 1.

(3) African : (a) *Neoplasms.*—Benign : Papilloma, jaw 1, chondroma, maxilla 1, fibromyoma, uterus 4, fibroma, groin 1, fibroma, unstated 1, fibroma, jaw 1, lipoma, hand 1, lipoma, shoulder 1, angioma, foot 1, dermoid cysts 2.

Malignant : Carcinoma.—Squamous carcinoma, foot 2, squamous carcinoma, leg 2, squamous carcinoma, penis 2, squamous carcinoma, cervix 1, squamous carcinoma, vulva 1, squamous carcinoma, scalp 2, squamous carcinoma, neck 1, squamous carcinoma, eye 2, squamous carcinoma, lip 1, squamous carcinoma, inguinal region 1, carcinoma, breast 2, adenocarcinoma, ovary 1, carcinoma, stomach 2, carcinoma, liver-celled 1, epithelial odontome 1.

Sarcoma.—Round-celled, knee 1, round-celled, foot 1, round-celled, eye 1, round-celled, femur 2, round-celled, forearm muscle 1, melanoma, popliteal space 1, melanoma foot 2, polymorphic sarcoma, eye 1, giant-celled sarcoma, jaw 1, lymphosarcoma, intestine 1, lymphosarcoma, gland 1, mixed-celled sarcoma, leg 1, mixed-celled submaxillary gland 1, fibrosarcoma, abdominal wall 1, myeloma, ganglion 1.

Other neoplasms : Ovarian cysts 2, mixed parotid tumours 2, adamantinoma, jaw 3, endothelioma cord 1, endothelioma ear 1, endothelioma ganglion 1.

(b) *Other conditions.*—Normal tissues 11, toxæmia 6, orchitis 10, endometritis 1, adenitis simple 3, adenitis tubercular 1, dysentery 1, tuberculosis, generalized 2, filariasis 3, abortion 2, typhoid fever 2, leukæmia 1, bronchopneumonia 2, peritonitis 1, ulcers 1, schistosomiasis 1, lymphadenoma 3, lobar pneumonia 1, meningitis, simple 1, meningitis, tubercular 1, yaws 1, duodenal ulcer 1, liver abscess 1, malaria 2, rabies 1.

Summary : Neoplasms.—Benign 20, malignant 51, other conditions 91.

Summary of Examinations.

Parasitological	3,291
Serological	2,456
Other blood examinations	142
General examinations	1,309
Bacteriological	1,669
Public Health	3,481
Medico-legal	54
Pathological	214
Total	12,616

(b) Clinical Laboratory, Sewa Hadji Hospital, Dar es Salaam.

Dr D. E. Wilson supervised the work of the laboratory until his departure to Mpwapwa in February, after which it was under the personal supervision of the Senior Pathologist. African dispensers Alexander Kanyamala and Donald Mandaah were on duty at different periods of the year. Clinical Assistant Augustine Sendeu was attached permanently to this laboratory towards the end of the year. The following specimens were dealt with :—

(1) PARASITOLOGY.

(a) *Blood films.*

Malaria parasites	2,014
B. duttoni	18
Microfilariæ	73
T. rhodesiense	1
Total positive	2,106
Negative	4,375
Total films	6,481

(b) *Fæces.*

Ova of *Ankylostoma*	1,325
,, *Ascaris*	22
,, *Trichuris*	28
,, Tænia	46
Larvæ of *Strongyloides*	14
Ova of *Sch. mansoni*	7
Flagellates	3
Total positive	1,445
Negative	1,515
Total fæces	2,960

(c) *Urine.*

Ova of *Sch. hæmatobium*	228

(2) SEROLOGY.

All sera were examined at the main laboratory.

(3) OTHER BLOOD EXAMINATIONS.

Total counts	11
Estimation of hæmoglobin	103
Differential counts	258
Total examinations	372

(4) GENERAL EXAMINATIONS.

Urine.—2,419 were examined

Albumin was found in 75, casts in 65, pus and blood cells in 739 and glucose in 69.

(5) BACTERIOLOGY.

Urine.—Micro-organisms were found in 53 specimens. None of these require special mention.

Sputum.

M. tuberculosis	63
Pneumococci only	26
Negative	566
Total	655

Nasal smears.

M. lepræ	4
Negative	15
Total	19

Urethral smears.

Gonococci	69
Coliform bacteria	34
Negative	143
Total	246

Pus smears.

B. anthracis	2
Ducrey's bacillus	6
Staphylococci	5
Negative	18
Total	31

Cerebro-spinal fluid.

T. rhodesiense	1
Negative	3
Total	4

The increase in material examined and the convenience of the laboratory to the clinicians have been very gratifying.

Summary of Examinations.

Parasitological	9,669
Other blood examinations	372
General examinations	2,419
Bacteriological	1,008
Total	13,468

(c) MEDICAL LABORATORY, MPWAPWA.

An increasing number of specimens of a routine nature were undertaken by Drs Wilson and Skan, but owing to the lack of permanency due to staff movements, it has not yet been possible to make this unit an actively functioning clinical laboratory for the Central line, as was intended, and as it is still hoped to do. Dr Wilson continued his work on *Brucella* and has contributed a number of papers to scientific journals. The following examinations were undertaken.

(1) PARASITOLOGY.

(a) *Blood films.*

Malaria parasites	346
B. duttoni	46
Negative	446
Total	838

(b) *Fæces.*

Ova of *Ankylostoma*	2
Larvæ of *Strongyloides*	1
E. histolytica	1
Negative	40
Total	44

(c) *Urine.*

Sch. haematobium	3

(2) SEROLOGY.

(a) *Agglutinations.*

Brucella group	6
Negative	214
Total	220

The titre varied from 1/250 to 1/50. Five individuals were from Mpwapwa and one from Morogoro.

(b) *Wassermann test.*

Blood sera.

+ + ...	18
+	5
+ −	2
Negative	19
Total	44

Cerebro-spinal fluids.—Thirty-nine were examined as part of a special investigation which is referred to in Part IV of this report.

(c) *Kahn test.*

Positive	10
Doubtful	12
Negative	1
Total	23

(3) OTHER BLOOD EXAMINATIONS.

Total counts	4
Estimation of hæmoglobin	4
Total	8

(4) GENERAL EXAMINATIONS.

Urine.—Seventy-two were examined : Albumin 10, glucose 1, lactose 1.

The pH under alkaline treatment was undertaken in one case and urea concentration test in another.

(5) BACTERIOLOGY.

Sputum.

M. tuberculosis	4
Negative	32
Total	36

Urethral smears.

Gonococci	1
Negative	1
Total	2

A case of human rabies occurred in a native veterinary guard in June of this year. The native was bitten by a dog which had previously shown no signs of disease. The dog was later killed in the bush by natives and the body thrown away. The bite healed rapidly. Thirty days later the veterinary guard died in the native hospital with a diagnosis of pneumonia. The veterinary research officer, however, recollected that the deceased was the boy who had been bitten a month previously and accordingly the medical officer, assisted by the veterinary research officer, performed a post-mortem at the Church Missionary Society hospital where the boy had been prepared for burial. Brain sections were sent to the veterinary laboratory at Kabete where a diagnosis of rabies was made.

Summary of Examinations.

Parasitological	885
Serological	326
Other blood examinations	8
General examinations	74
Bacteriological	38
Total	1,331

Total Examinations.—Pathological Section.

Parasitological	13,845
Serological	2,782
Other blood examinations	522
General examinations	3,802
Bacteriological examinations ...	2,715
Public Health examinations	3,481
Medico-legal examinations	54
Pathological examinations	214
Total	27,415

Part II.—Lymph Production, Mpwapwa Laboratory, 1936.

After being closed since the 7th July 1935 the laboratory was reopened on the 15th February 1936, Dr D. E. Wilson, Pathologist, being in charge from this date until he proceeded on leave on the 4th September. Dr D. A. Skan, Medical Officer, arrived on the 14th October and remained in charge until the end of the year.

The African staff remained unchanged. One African dispenser was assisted by three orderlies and from four to six outside labourers.

The manufacture and distribution of vaccine lymph was the chief function of the laboratory, details being as follows :—

	1934	1935	1936
Calves vaccinated ...	115	56	129
Total pulp in grams ...	3,198	1,657	4,843
Average yield per calf	27·8	19·6	37·5
Minimum yield ...	2·9	12·5	3·3
Maximum yield ...	65·8	56·4	73·7

One calf dislocated its hip-joint and was destroyed.

Issues and Distribution.

During 1936, 939,950 doses were issued as compared with 962,650 in 1935 and 833,860 in 1934 and distributed as shown in the accompanying table :—

Vaccine Lymph Return.

Provinces	Population	Density of population	District or Station	SMALLPOX		Doses of lymph Issued	
				Cases	Deaths	District	Total for Province
Central	579,712	15·5	Dodoma ...	—	—	12,000	
			Singida ...	—	—	6,000	
			Kondoa ...	—	—	4,800	
			Mkalama ...	—	—	7,950	
			Manyoni ...	—	—	6,000	
			Mpwapwa ...	—	—	1,300	38,050
Tanga	355,914	22·1	Tanga ...	—	—		
			Pangani ...	—	—		
			Handeni ...	—	—		
			Usambara ...	—	—	Issued	
			Pare	—	—	from	
Northern	344,198	10·8	Arusha ...	—	—	Moshi	
			Moshi	—	—		
			Masai	—	—		
			Mbulu	—	—		24,800
Eastern	619,191	14·6	Dar es Salaam	—	—	8,700	
			Rufiji	—	—	1,200	
			Bagamoyo ...	—	—	2,400	
			Morogoro ...	—	—	25,000	
			Kilosa	—	—	12,000	
			Mahenge ...	—	—	10,900	60,200
Southern	543,413	9·3	Lindi	1,417	39	200,000	
			Kilwa	137	—	20,200	
			Mikindani ...	12	6	25,000	
			Masasi	70	3	—	
			Newala ...	4	2	—	
			Tunduru ...	—	—	14,400	
			Songea ...	—	—	12,200	271,800
Carried forward	2,442,423	—		1,640	50	370,050	394,850

Vaccine Lymph Return—contd.

Provinces	Population	Density of population	District or Station	SMALLPOX		Doses of lymph Issued	
				Cases	Deaths	District	Total for Province
Brought forward	2,442,428	—		1,640	50	370,050	394,850
Southern Highlands ...	491,911	12·8	Iringa	—	—	11,600	
			Njombe ...	—	—	48,000	
			Rungwe ...	7	—	—	
			Mbeya... ...	—	—	36,600	
			Tukuyu ...	—	—	60,000	
			Malangali ...	—	—	1,600	
			Chunya ...	—	—	6,200	164,000
Lake	1,390,609	32·6	Bukoba ...	—	—	23,500	
			Biharamulo ...	—	—	7,500	
			Mwanza ...	—	—	78,000	
			Maswa... ...	—	—	—	
			Musoma ...	—	—	31,500	
			Kwimba ...	—	—	—	
			Shanwa ...	—	—	13,200	
			Sanza	—	—	200	
			Shinyanga ...	—	—	3,600	157,500
Western	697,692	7·0	Tabora ...	—	—	16,500	
			Nzega	—	—	12,000	
			Kahama ...	—	—	3,600	
			Kigoma ...	—	—	18,700	
			Ufipa	—	—	39,800	90,600
	5,022,640	13·7		1,647	50	782,150	806,950
						Entebbe	100,000
						Zanzibar	18,000
						Total	924,950

Part III.—Chemical Section.

During the year 1,232 samples were examined. The activities of the chemical section were reduced during the absence of the analyst for almost six months of the year, thus the figures compare favourably with those for 1935 (=1,475). Through the courtesy of the Director of Veterinary Services his chemist, Mr French, carried out certain work of a more urgent nature during the analyst's absence and gave general supervision to the laboratory during this period.

The samples examined can be classified thus : Milk 784, condensed milk 48, maize meal 7, clarified butter 2, *pombe* (native beer) 70, other alcoholic liquids 11, water 31, poison and viscera 34, drugs 19, local medicines 31, bloodstained articles 4, urine (biochemical) 48, blood (biochemical) 86, miscellaneous (biochemical) 2, palm oil 3, liver for vitamin assay 21, miscellaneous 31, total 1,232; and were received from the following departments : Administration, Agriculture, Customs, Medical, Police, Public Works, Railways and Veterinary. Advice was also tendered to the Legal Department.

The latter part of the year was occupied mainly in overtaking arrears of routine and in consequence little investigational work has to be recorded. It will be convenient in this report to summarize various routine work that has extended over more than one year.

FOODSTUFFS.

The quality of milk supplied in Dar es Salaam is now good. Thus of 279 samples examined, seventeen were below the prescribed standards and only six were below 8·2 per cent non-fatty solid content. At certain periods of the year genuine milk from herds may fall as low as 8·2 per cent so that the percentage of presumed adulterated samples examined during 1936 was 2·1 per cent. In 1926 of 121 samples collected at random in the town, 17·4 per cent were below the 8·5 per cent non-fatty solid standard and a further 4·1 per cent, whilst passing this standard, showed a fat figure below 3 per cent. The figures for 1929 included a number of milks collected under supervision. The figures for other years since the formation of a separate chemical unit are given below :—

	Number of samples	Percentage falling below 8·5% non-fatty solids
1928	Not stated	30
1930	85	21·5
1931	106	5·6
1932	197	3·5
1933	187	2·7
1934	162	6·2
1935	266	5·6
1936	279	*6·1

The number of samples taken in Dar es Salaam per 100,000 population (say 32,000) is high but the supply now compares favourably with those in England. Thus for the period 1925-29 West Ham with a sampling rate of 439 per 100,000 population showed 3·3 per cent adulterated milks. On the other hand Durham with a sampling rate of 183 showed 20·4 per cent. From the large number of genuine milks examined in Tanganyika it is concluded that

*Presumed adultered 2·1 per cent.

those containing less than 3·5 per cent of fat and/or 8·2 per cent of non-fatty solids may be presumed to be adulterated. At present the township rules specify 3·0 per cent fat and 8·5 per cent non-fatty solids. Samples taken in Dar es Salaam seldom fall below the fat standard. Those falling below the non-fatty solid standard are either slightly or considerably low, the two sharply divided classes supporting the explanation here advanced. When milk falls slightly below the 8·5 per cent standard the vendor is informed but prosecution is not recommended. The legal limits should be reviewed when the subject of food legislation is considered.

The only up-country station regularly submitting samples of milk is Tabora. Of sixty-nine samples examined during 1936, twenty-four were below the prescribed standards and all these were presumed to be adulterated (often grossly). This leads one to conclude that milk supplies in the larger towns (Dar es Salaam excepted) are poor. Further it is questionable whether the action taken in Tabora is adequate to stop the adulteration practised there.

It is hoped that food legislation to control foodstuffs other than milk will receive attention.

WATERS.

During the year samples from various water supplies have been examined. The Iringa, Dodoma and Arusha supplies now appear to be satisfactory. Monthly analyses of the Dar es Salaam supply have been made since 1934 and certain alterations in composition will be reviewed here.

The Dar es Salaam supply is piped from ten boreholes (average depth one hundred feet), pumped into storage tanks and supplied by gravity to the town. The general trend of the monthly analyses has been a slow but gradual increase in the chlorides. The figures for hardness have shown erratic variations but whilst the alkalinity or temporary hardness has been fairly constant the permanent hardness has increased. The most likely explanation appears to be contamination with sea water. These results have been presented in the form of a graph (*see* page 116). Three full analyses of the town supply made at different dates are given below :—

	Parts per 100,000		
	December 1932	April 1934	October 1936
Al_2O_3, Fe_2O_3	1·1	traces	0·4
Calcium (Ca)	9·2	8·6	10·0
Magnesium (Mg) ...	1·3	1·1	2·1
Sodium (Na)	22·5*	28·1*	... 25·9
Potassium (K)			... 5·1
Silica (SiO_2)	4·8	3·4	4·0
Nitrate (NO_3)	n.d.	0·2	n.d.
Sulphate (SO_4)	5·6	6·6	8·3
Chloride (Cl)	31·3	35·8	41·3
Carbonate (CO_3) ...	17·3	16·3	16·9
Analyst	Whitley	Raymond	Oates

Although the boreholes are close together and apparently cut the same geological strata there are variations in the composition of the waters obtained at the different bores. Not only do the amounts of the individual constituents differ (e.g., chlorides in samples taken at the same time in bore No. 1, 38·2; No. 2, 44·6; No. 3, 38·9; No. 4, 32·9) but the ratio of the constituents in

*Calculated as sodium.

the waters varies from bore to bore. It is only by reviewing the routine figures that these alterations and differences in composition have been revealed. Arrangements will be made to carry out extended examinations of the Dar es Salaam supply in 1937.

The black and brown deposits described in a previous annual report are still under study with a view to providing remedial measures. Work on this problem has not reached the stage when it can be usefully summarized.

Pombe (LOCAL BEER).

The brewery decided to terminate their contract for making the local beer and this is now manufactured by several African brewers. Samples taken during the year showed the following composition : Alcohol by weight : mean 4·7 per cent, maximum 5·9 per cent, minimum 3·6 per cent. These figures show a higher mean alcohol content than the *pombe* supplied previously by the brewery.

A sample of distilled African liquor known as *moshi* (Kiswahili : *Moshi*= Steam) was examined (20°U.P.) and found to be stronger than whisky. Other samples of this beverage were suspected of being fortified by the addition of methylated spirit but no such addition was detected.

DRUGS AND DISPENSING.

A few samples of quinine mixtures have been submitted for check analyses and although the majority were correctly dispensed a few showed considerable errors. The most remarkable mixture was one of atropine sulphate which was thirteen times the supposed strength. At present there is no routine control of dispensing and the institution of control is recommended.

A sample of cod-liver oil from stock and a sample of rectified spirit from Uganda failed to comply with the requirements of the British Pharmacopœia, 1932.

BEESWAX.

The Tanganyika beeswax industry was discussed with a broker in London. As a result of these discussions the question of grading and periodical analyses of exports was raised but the proposals made were not accepted. Up to the present no complaints of adulteration have been received.

AFRICAN NUTRITION.

The work of examining livers post-mortem has continued and although final figures are not yet available they seem to indicate a deficiency in vitamin A. Various samples of palm oil have been assayed for their carotene content. A number of notes have been prepared dealing with the laboratory aspects of nutrition including suggestions for dealing with the scurvy reported from the Lupa area.

MEDICO-LEGAL CASES.

Exhibits covering fourteen deaths were received and can be classified thus :—

Non-Native (2).—One cyanide. One no poison detected on examination some days after death but the history suggested cyanide poisoning.

Native (12).—In four cases arsenic was found in amounts suggesting acute arsenical poisoning. In another case (part of a group some of whom showed symptoms of chronic arsenical poisoning but did not die) the finding suggested chronic arsenical poisoning. One case showed a small trace of arsenic, the significance of which was unexplained. One case had a history of drinking

a quantity of petrol stated to be about 400 grams. One case of arrow-poisoning was submitted for examination.

An unspecified number of deaths, conveniently counted as one, were reported to have been caused by a person practising witchcraft. Several ornamental vessels made of horn and the like were submitted for examination. Apparently the person was using, with the avowed intention of the smelling-out of witchcraft, a mixture of crude castor oil and a carbonized mass—probably a supposed magical ingredient known as the *chingira*. No ingredient capable of causing death was discovered but the symptoms of vomiting and purgation described were satisfactorily explained. The terrifying appearance of the exhibits was so realistic that one messenger fled on sighting them in the laboratory. Three cases were examined with negative findings.

Attention may be directed to the increasing percentage of cases of arsenical poisoning due in part perhaps to the growing appreciation by Africans of the efficacy of this poison compared with African ones.

The organs of one fowl were examined for strychnine with negative results.

The remaining medico-legal exhibits examined concerned bloodstains, drinking methylated spirit, smoking opium and hemp. One lot of counterfeit coins and a few examples of altered documents were also examined.

NATIVE POISONS AND MEDICINES.

When a mother is unable to suckle her own child it is a common African custom for some other person, often the grandmother, to undertake the task. A supply of milk is induced by massage and the application of external and internal medicaments. One sample of milk from such artificially-induced lactation was received from Mr A. T. Culwick and gave the following figures on analysis: Fat 8·88 per cent, non-fatty solids 7·02 per cent, ash 0·18 per cent, total solids 15·90 per cent.

The sample was too small in quantity to permit a fuller examination but the difficulty in obtaining and transporting samples adds interest to these figures. The bark of various species of wild fig (*Figus* sp.) appear to be popular for the purpose of inducing lactation but whether any specific action is obtained or whether the mechanical treatment alone is sufficient to produce the observed results is unknown. A certain interest attaches to these reports in view of recent work in Europe on the hormones.

Agauria salicifolia Hook f.—Several native reports have been received concerning the toxicity of the leaves of this plant, especially as regarding stock poisoning. The fresh leaves are said to be mixed with milk and used for poisoning cockroaches. The charcoal derived from the tree is used as an antidote for arrow poisoning.

Extracts from the leaves proved fatal to mice, frogs and monkeys. Thirty grams of the leaves or aqueous extracts therefrom drenched to goats caused non-fatal symptoms of poisoning. A quantity of the dried leaves of this plant was taken to England by the analyst and chemical examination of these leaves carried out under direction in the Organic Chemistry Department of the Royal College of Science. Preliminary experiments showed that the toxicity of the leaves had been retained during transit but the isolation of the toxic principle proved unexpectedly difficult. An impure form of a glucoside, a pale yellow deliquescent amorphous powder was obtained. This was poisonous to mice. On hydrolysis a black coloured solid, probably the aglucone, was obtained but all attempts to prepare this or the glucoside in a crystalline state failed.

MISCELLANEOUS.

Various miscellaneous problems dealt with during the year do not call for comment. The failure of a brown paint, submitted by the Railways, is probably due to the growth of a mould. The matter was taken up with the manufacturers.

A course of lectures on elementary science was delivered to student dispensers. One African was trained in general milk analysis for the Veterinary Department.

PART IV.—SPECIAL INVESTIGATIONS.

BRUCELLOSIS.

Dr Wilson continued his work on Brucellosis until the time of his departure on leave. The work has been published elsewhere, but the following points which have arisen are of interest.

The local strain of bovine *Br. abortus* was little, if at all, pathogenic for a local species of monkey, whilst a human *Br. melitensis* was virulent for such animals. Both *Br. melitensis* and *Br. abortus* types of undulant fever exist in the territory. The human strain of *Br. abortus* required no increased CO_2 tension for primary isolation. No specific treatment was found for human Brucellosis, the best results having been obtained with intravenous "T.A.B." shock therapy. A most interesting observation, as yet uncompletely solved, was the apparent change in type of a *Br. melitensis* to *Br. abortus* when passed through a pregnant heifer.

ANKYLOSTOME INFESTATION OF BEACHES.

In continuation of the work reported last year, an important practical experiment was carried out in conjunction with the Medical Officer of Health, Dar es Salaam. Specimens of fæces which had been proved to contain ankylostome ova were mixed with sea-sand free from infection and allowed to stand in conditions as nearly as possible approaching to the normal. After standing for three weeks, the sand was examined for the presence of living larvæ, with the following results: Number of specimens examined, 100; number containing ankylostome ova after three weeks, 96; number containing active ankylostome larvæ after three weeks, 1.

Dead larvæ were found in seven specimens. This series of specimens although small would seem to suggest that whilst larvæ can develop under the conditions met with on the beaches, they have not commonly done so.

DAR ES SALAAM WATER SUPPLY.

Reference to the appendices of previous annual reports will show that the bacteriological results of the analysis of the local water supply have been consistently satisfactory. In the twelve years of the writer's experience, and in the reports of his predecessors, excretal *B. coli* has never been found in dangerous quantities in the deep borings which supply the town. Indeed, lactose fermenters are rarely found in less than 25c.c., a satisfactory result for a tropical water supply, the common organism being the ubiquitous *P. pyocyaneum*.

It was with some concern, therefore, that the presence of true *B. coli* of excretal origin was detected in 10c.c. of the weekly sample from the pump-house in September, and from 25c.c. of the control sample from a tap in the town. The works were, therefore, inspected by the Senior Pathologist with

the Medical Officer of Health, Water Engineer and Water Supply Superintendent. The sanitary aspects of the matter are dealt with elsewhere by the Medical Officer of Health and it suffices to say here that as a result of twenty series of tests from different parts of the supply, *B. coli* was found in samples from (1) the pump-house (2) the elevated distribution tanks. Further investigations proved that one tank showed evidence of bird droppings, whilst the sump immediately before the pumping system contained two dead frogs. Thorough cleansing and chlorination was carried out, and for the remainder of the year no further evidence of *B. coli* was found in the supply.

References to Appendices I and II will, however, show that the matter cannot be regarded as being solved by the finding of animal pollution in parts of the system and the disappearance for the time being of harmful indicator organisms.

It will be seen in Appendix I that lactose fermenting bacteria have since been found more regularly in 10c.c. than in 25c.c., both in the sample from the water works and from the control tap in the town. Since the end of the year, bacteria of the so-called "intermediate group"—which are commonly regarded as representing remote and therefore harmless fæcal pollution—have been found as low as 1c.c.

Added to this is the fact that during the September-October investigations, nitrites were present in unusually large quantities in samples from several sources including at least one deep bore itself. This is not necessarily of grave sanitary import of itself but it is evidence of a change, however temporary, and it has not been a common finding in the past.

More significant is the graph prepared by the Government Analyst (Appendix II) in which there can be seen a gradual but definite rise in the content of chlorine expressed as chlorides by some 30 per cent during the last seven years, and this shows a remarkable relation to the output of water from the supply.

The immediate reaction to these facts, in so far as it concerns the water analyst, is that in addition to weekly samples from the pump-house, samples from the gauge, representing the collected water from all the bores, are now being examined. What further steps should be taken is not for the writer to say, but it is felt that available evidence does go to suggest a change, geological, chemical and bacteriological, in the nature of the water supply; and since change is the essence of all potential pollution, these findings should be regarded as a warning not lightly to be ignored.

MOROGORO WATER SUPPLY.

The occurrence of an increasing number of cases of enteric disease in Morogoro during the year suggested that an epidemiological survey, involving the bacteriological examination of samples from different sources, might throw some light on the origin of the outbreak.

Accordingly Dr Skan from the Mpwapwa Laboratory proceeded to Morogoro in December, equipped with the necessary material for a preliminary bacteriological survey. He obtained samples and isolated pure cultures of bacteria from possible sources of infection, and despatched the cultures to Dar es Salaam where they were finally identified. Samples were taken from the following:—

Fæces.—Six hospital orderlies, two typhoid cases, five milkers from Lusangasanga, seven milkers from the Agricultural Department and one milker from a private dairy.

Milk.—Three samples.

Cesspits.—One from the Agricultural Department latrine, one from Ruvu Street public latrine, one from soil near Ruvu Street public latrine, one from hospital latrine inside, one from hospital latrine outside and one from the police lines' latrine.

Waters.—(a) Sample from the Prison tap, (b) sample from railway standpipe, (c) sample from river at township bridge, (d) sample from settling tank, main supply and (e) sample from Kikundi stream.

Lactose fermenting organisms were found in 1·0c.c. of numbers (a) and (d) and from 0·1c.c. of numbers (b), (c) and (e).

One hundred and thirty-eight cultures received.—(1) No pathogenic bacteria were isolated from any of the typhoid cases, the milkers or the healthy hospital dressers (eighty-four cultures).

(2) Bacteria of the "intermediate" coli-ærogenes group were isolated from the Agricultural latrine, Ruvu Street latrine and soil near the latter (twelve cultures). These bacteria were also isolated from the Agricultural Department milk and from the five water samples (twenty-four cultures).

(3) Typical *B. coli* was isolated from Korakis' milk, and from the hospital and police latrines (fourteen cultures). No pathogenic bacteria were found in the milk from Lusangasanga (four cultures). The fact that intermediate group bacteria of the indol-forming type were present in soil, latrines and all waters is significant and suggests fairly frequent pollution. It is probable that daily water examinations would reveal the presence of true *B. coli* in the water supplies. The significance of this would naturally depend upon the volume of water in which such bacteria were found.

TRYPANOSOMES IN ASCITIC FLUID.

An unusual case was met with in October. A native child of about fourteen years was admitted to the Sewa Hadji hospital suffering from ascites and enlarged glands in the neck. During the course of a routine examination of his blood, a number of trypanosomes were found. The subsequent history and examination proved the case to be one of *rhodesiense* sleeping sickness. The child received appropriate treatment, but unfortunately died from intercurrent disease two months later.

The unusual feature from the protozoological point of view, was the finding of living and active trypanosomes in enormous numbers in the ascitic fluid. A single drop of the fluid without centrifuging was found to swarm with them. The deposit, stained and unstained, was highly cellular, the predominant cell being of the lymphoid or mononucular type. A number of large mulberry-shaped cells appeared to resemble what is described as the "morular" cell. On the second day after the fluid had been aspirated, the trypanosomes were still alive and very active, but, curiously, did not show in a stained and fixed film. Although the fluid was kept in a flask on the bench at room temperature (29°C.) and not treated in any special way, the trypanosomes remained alive in it for four and a half days.

White rats were inoculated with the fluid and with the patient's blood, but in no case did trypanosomes develop in the rats. A further feature was that on the third day, in addition to trypanosomes, a single *Mf. bancrofti* was found in the fluid. It is probable that this was primarily in the ascitic fluid and that the trypanosomes appeared there mechanically.

CHEMICAL INVESTIGATIONS.

The various special investigations undertaken by the Government Analyst are referred to in his report.

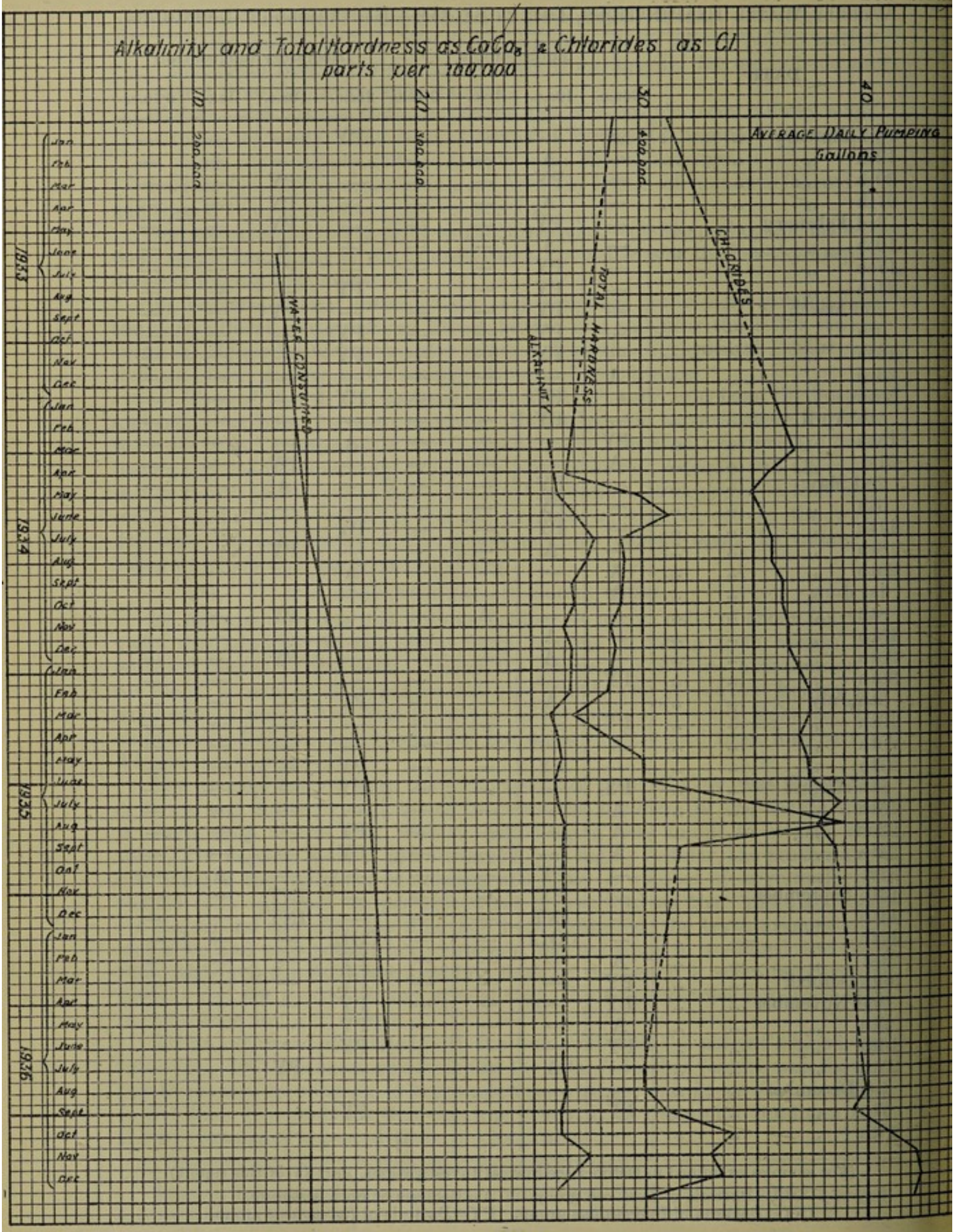
APPENDIX I.

Weekly Water Examinations, Dar es Salaam—Bacteriological findings.

DATE	Public supply				Laboratory tap (control)			
	25c.c.	10c.c.	1c.c.	0·1c.c.	25c.c.	10c.c.	1c.c.	0·1c.c.
10th January	A	—	—	—	PY	—	—	—
13th ,, ...	—	A	—	—	—	—	—	—
20th ,, ...	—	PY	—	—	—	PY	—	—
27th ,, ...	—	A	—	—	—	PY	—	—
3rd February	—	PY	—	—	—	PY	—	—
10th ,, ...	—	A	—	—	—	A	—	—
17th ,, ...	—	PY	—	—	—	PY	—	—
24th ,, ...	—	PY	—	—	PY	—	—	—
2nd March	—	PY	—	—	—	PY	—	—
9th ,, ...	—	PY	—	—	PY	—	—	—
16th ,, ...	—	PY	—	—	PY	—	—	—
23rd ,, ...	A	—	—	—	—	—	—	—
30th ,, ...	—	PY	—	—	PY	—	—	—
6th April	—	PY	—	—	—	—	—	—
13th ,, ...	PY	—	—	—	A	—	—	—
21st ,, ...	A	—	—	—	—	PY	—	—
2nd May	—	PY	—	—	—	A	—	—
5th ,, ...	—	PY	—	—	—	—	—	—
11th ,, ...	—	PY	—	—	PY	—	—	—
18th ,, ...	—	A	—	—	—	PY	—	—
26th ,, ...	A	—	—	—	A	—	—	—
1st June	A	—	—	—	—	—	—	—
8th ,, ...	—	—	A	—	—	PY	—	—
15th ,, ...	—	A	—	—	—	—	—	—
25th ,, ...	—	A	—	—	—	PY	—	—
30th ,, ...	PY	—	—	—	—	—	—	—
9th July	—	A	—	—	PY	—	—	—
13th ,, ...	PY	—	—	—	—	—	—	—
20th ,, ...	A	—	—	—	—	—	—	—
27th ,, ...	—	PY	—	—	PY	—	—	—
8th August	PY	—	—	—	PY	—	—	—
15th ,, ...	A	—	—	—	—	—	—	—
22nd ,, ...	A	—	—	—	PY	—	—	—
24th ,, ...	A	—	—	—	PY	—	—	—
31st ,, ...	—	PY	—	—	—	—	A	—
14th September	—	PY	—	—	—	INT	—	—
14th ,, ...	—	INT	—	—	—	INT	—	—
17th ,, ...	—	COLI	—	—	COLI	—	—	—
21st ,, ...	A	—	—	—	PY	—	—	—
30th October	PY	—	—	—	PY	—	—	—
2nd November	PY	—	—	—	PY	—	—	—
9th ,, ...	A	—	—	—	PY	—	—	—
16th ,, ...	PY	—	—	—	PY	—	—	—
25th ,, ...	—	A	—	—	—	PY	—	—
1st December	—	—	—	—	—	—	—	—
7th ,, ...	PY	—	—	—	PY	—	—	—
28th ,, ...	—	—	—	—	—	—	—	—

(For samples examined in October see Special Investigations, Part IV of this report)

COLI = Bacteria of *Bact. coli* group. A = Bacteria of *Bact. aerogenes*.
INT = Bacteria of *Intermediate* group. PY = Bacteria of *Pyocyaneus* group.


Alkalinity and Totalhardness as CaCO3 & Chlorides as Cl
parts per 100.000
10
200.000
20
300.000
30
400.000
40
Average Daily Pumping
Gallons
1933
1934
1935
1936
Jan
Feb
Mar
Apr
May
June
July
Aug
Sept
Oct
Nov
Dec
Water consumed
Total Hardness
Alkalinity
Chlorides

APPENDIX III.

KATATHERMOMETER READINGS, DAR ES SALAAM. *Taken daily at 9 a.m. in a laboratory room under constant conditions.*

MONTHS	Highest Kata	Air Temp. °C.	DATE	Lowest Kata	Air Temp. °C.	DATE	Mean Kata	Mean Air Temp. °C.
January	9·4	27·0	23rd	6·0	30·0	6th	7·2	29·8
February	8·8	27·0	11th	5·4	29·7	21st	6·7	29·0
March	8·5	28·0	27th	4·8	29·2	9th	6·3	29·2
April	9·2	26·0	30th	7·3	28·7	6th	7·4	27·3
May	10·5	26·0	20th	7·5	27·0	4th	8·6	26·5
June	11·0	25·0	2nd	6·9	27·5	13th	8·6	22·3
July	9·6	25·2	23rd	6·8	27·0	1st	8·4	25·8
August	10·2	28·2	1st	7·2	26·0	15th	8·2	25·7
September	11·8	26·0	15th	6·1	28·0	22nd	8·2	26·4
October	8·6	28·0	6th	5·0	29·5	31st	6·3	29·4
November	7·6	29·5	11th	4·8	31·0	20th	5·8	29·7
December	9·4	29·0	22nd	6·0	31·1	29th	7·1	30·5

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