Annual medical report / Colony and Protectorate of Kenya.

COLONY AND PROTECTORATE OF KENYA

MEDICAL DEPARTMENT
ANNUAL REPORT
1953

1954
PRINTED BY THE GOVERNMENT PRINTER, NAIROBI
Price: Sh. 4

16th June, 1954.

THE MINISTER FOR LOCAL GOVERNMENT,
HEALTH AND HOUSING, NAIROBI

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 Conditions of the Colony and Protectorate of Kenya for the year 1953, together with the Returns, etc., appended thereto.

I have the honour to be,
Sir,
Your obedient servant,

E. A. TRIM,
Acting Director of Medical Services.

The delay in the publication of this report is regretted. It is due very largely to the Emergency, coupled with other factors, which have made heavy calls upon the Department and necessitated an unusual number of staff changes at Medical Headquarters.

CONTENTS

MEDICAL DEPARTMENT ANNUAL REPORT, 1953

INTRODUCTION

The year 1953 has been marked by no major outbreaks of disease. There was less malaria than usual and the major convention diseases did not occur except for a few sporadic cases of plague. Kala azar which broke out in epidemic form in the previous year was brought under control. The only other epidemics of importance were typhoid and poliomyelitis, both of which occurred in the latter part of the year.

The expansion of the Medical Department which had progressed steadily for the last few years once more received a severe setback owing to the state of Emergency which obtained in the Kikuyu country. Although the greater part of the country was not directly affected by the *Mau Mau* disturbance, the financial drain on the resources of the country as a whole of necessity caused a financial stringency which was felt everywhere. As a result, the expansion of medical services to meet the growing needs of the country had to be curtailed.

During the year there has been a steady increase in the strength of the Police and Kenya Police Reserve who are entitled to free medical attention. There has also been a great expansion in the Prison Service and in the number and size of prisons and detention camps and in the number of prisoners and detainees. This has increased the responsibilities of the Medical Department which is responsible for the treatment of the sick amongst the staff and inmates, as well as advising on the sanitation of these institutions. The treatment of casualties, and medico-legal and court work have also increased the responsibilities and duties of the medical staff.

In the disturbed areas it has been our endeavour to maintain normal services as far as possible, but restriction on the movement of the Kikuyu in their own country and in the neighbourhood of Nairobi has resulted in some decrease in hospital attendances. The branch of medical work which has suffered most has been maternity service as it is difficult for the women to reach hospital for their confinements. There has been some improvement in this respect in the latter half of the year but the number of cases attending maternity hospitals has been considerably below the pre-Emergency figure.

Even in the disturbed areas it has been the practice throughout the year for Medical staff to visit dispensaries in the outlying parts of their districts. It has however been impossible, for security reasons, for them to spend as many nights in the reserve as is desirable. In most districts Nursing Sisters have continued to hold ante-natal clinics in the reserves, but in the latter part of the year this had to be curtailed as the *Mau Mau* started the practice of ambushing roads.

Elsewhere throughout the country the demand for hospital beds and for out-patient facilities has continued to increase. As already explained, limitations of finance and staff have not allowed of any, or at most only a moderate, expansion of such services to take place.

STAFF

There were no changes amongst the senior Medical Administrative Officers during the year. The Administrative Secretary was transferred on promotion to another Department and was replaced by the posting to this Department of the Assistant Secretary for Health. During the year the Accountant left on transfer to Uganda and was replaced by promotion of the Assistant Accountant. By the close of the year the post of Assistant Accountant had not been filled substantively.

In the 1953 Estimates provision was made for one additional European clerk, two extra Asian clerks and one extra African telephone operator, and all of these posts were filled.

At the beginning of 1953 one Senior Medical Officer post was vacant but was later filled by the promotion of a Medical Officer from this Colony. Another vacancy occurred later in the year owing to retirement of the most senior of the Senior Medical Officers. This post was also filled by the promotion of a Medical Officer.

Amongst the Specialists two additional surgical and one additional medical post were created and were filled respectively by the promotion of two Medical Officers Special Grade and the transfer of a Medical Specialist from Fiji.

A new post approved under the 1953 Estimates which was necessary as a direct outcome of the greatly increased amount of medico-legal work brought about by the *Mau Mau* Emergency was that of Police Surgeon. This post was filled from the Colony's Medical Officer ranks.

The establishment in Medical Officers remained, as in 1952, at 65. At the beginning of the year there were eight vacancies. At the end of the year, in spite of considerable losses from resignations, retirement, transfers, promotion and death, there were only nine vacancies. In the first part of the year, owing probably to the Emergency and the exaggerated reports on conditions in Kenya which received undue prominence in the British Press, recruitment of medical officers reached a very low ebb and caused no little concern. In the last quarter, after considerable efforts in advertisement and publicity on the part of the Colonial Office and of medical officers on leave in the United Kingdom, recruitment recovered reasonably well. However, the fact that supply was unequal to demand made it necessary to fill the vacancies for the time being with locally engaged Temporary Medical Officers.

One complicating factor resulting directly from the Emergency has been the shortage in housing accommodation for married officers in the Emergency areas due to the influx into these areas of large numbers of security forces with their administrative staffs.

Now that the King George VI Hospital, Nairobi, has been recognized and approved by most of the medical schools in the United Kingdom for the purpose of the one year's postgraduate internship now required under the Medical Act of the United Kingdom, four European Resident Medical Officer (Intern) posts have been created. These posts offer a great opportunity to young newly-qualified men to see at first hand something of the work in the Colonies, and it is hoped that some of those taking up the posts will be sufficiently impressed with life there to want to enter the Colonial Medical Service as Medical Officers. Unfortunately, probably owing to the newness of these posts and the comparative lack of publicity

given them, considerable difficulty has been experienced so far in filling them. However, every endeavour has been made to give them the additional publicity required and it is hoped that matters have now been rectified. At the beginning of the year three of the four posts were filled, but as the holders of these posts completed their periods of internship and were appointed to be Medical Officers, and as suitable new candidates could not be found the year ended with there being three vacancies.

Recruitment of Nursing Sisters has been on the whole reasonably satisfactory and it is anticipated that with the closure of the Government European Hospital early in 1954, with the resultant availability for posting elsewhere of a number of Nursing Sisters, the position will still further improve. Resignations on account of marriage as usual continued to take a heavy toll. During the year there were 29 resignations of permanent, temporary and honorarium part-time staff and 21 new sisters were appointed. There is no doubt that the Emergency also has had an adverse effect on recruitment of Nursing Sisters.

The European Health Inspectorate staff began the year with two vacancies and at the end of the year there were four. The greatest difficulty has and still is being experienced in obtaining suitable recruits.

All vacancies in respect of Physiotherapists, Radiographers (one a temporary officer), Pharmacists, Laboratory Technologists, and Orthopædic Technicians are now filled.

Amongst the Asian staff, there are no vacancies in either Medical Officer or Assistant Surgeon posts. Indeed, the supply here exceeds the demand. Now that the standard of training of doctors in the Medical Schools in India has so greatly improved, Assistant Surgeons are no longer being passed out by the Indian Medical Schools and all doctors who have completed their training in India now possess university degrees, though in the United Kingdom and in this country, which follows the practice in the United Kindom, the degrees of certain universities only are registrable. All candidates holding registrable degrees are recruited as Asian Medical Officers on a higher salary scale than that of the Assistant Surgeons. As a result of this an ever increasing number of our Asistant Surgeons are taking lengthy study courses followed by the necessary examination to make them registrable. The present establishment in Asian Medical Officers is seven and that of Assistant Surgeons remains at 33.

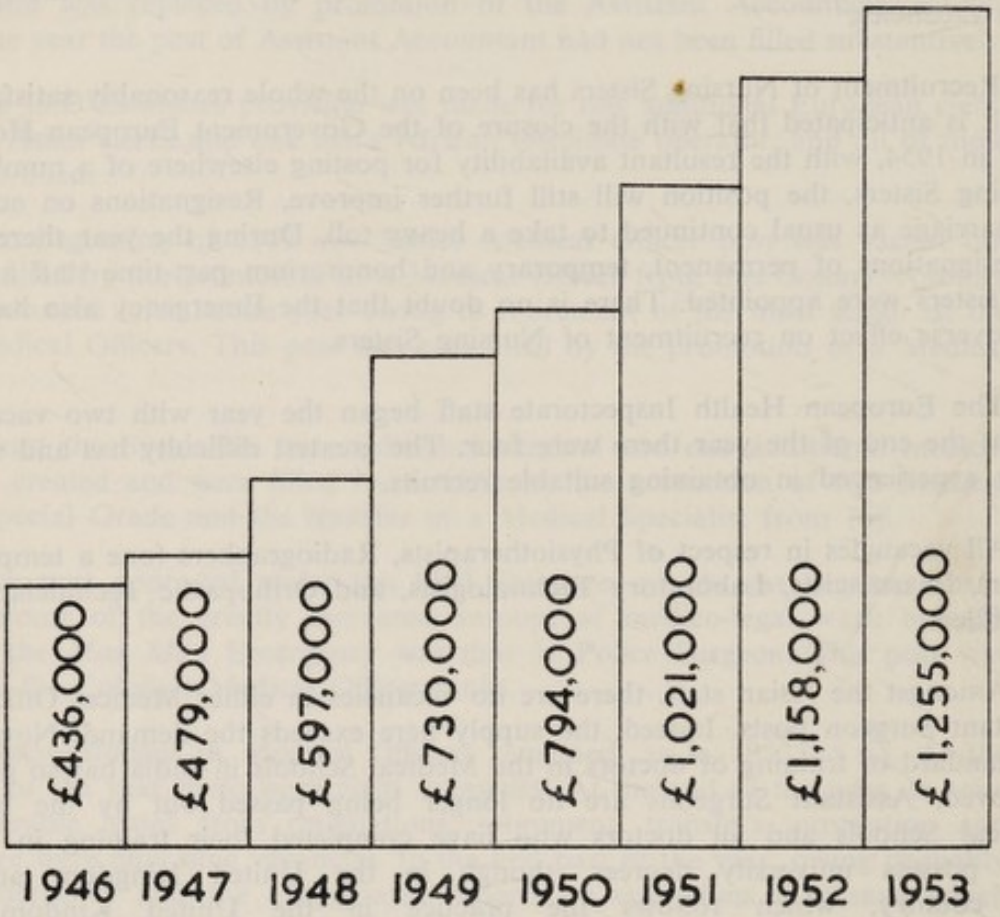
Two African Assistant Medical Officers completed their training at Makerere College during the year and were accepted. At the end of the year one vacancy remained. This category of medical staff is a very valuable contribution to the Colony's Medical Services and it is hoped that in the future far more will become available.

Towards the end of the year increasingly heavy demands began to be made on the African auxiliary Medical and Health staffs for duty at the various prison, detention and works camps being established all over the country in connexion with the Emergency. We found it impossible adequately to meet the demand without depleting the normal staffs of the non-Emergency areas. To cope with this we found it necessary to institute a short and intensive system of training of staff for these duties. It is hoped that the best of these will later be recruited into the permanent establishment at the conclusion of the Emergency.

FINANCE

Expenditure for the year under review amounted to £1,254,711 and some idea of the financial expansion of the Department will be gathered from this graphic indication of post-war increases:—

Medical Department—Total Expenditure



Staff salaries and allowances amounted to 55 per cent of the total expenditure, i.e. £690,593. A comparison of the various Vote Heads is given—

	Per cent		£
Personal Emoluments	55.04	..	690,593
Medical and Surgical Stores and Equipment	17.88	..	224,438
Maintenance and Upkeep of Medical Establishments ..	10.89	..	136,621
Travelling Expenses	4.06	..	50,987
Grants in Aid, etc.	1.95	..	24,455
Non-recurrent Items	4.23	..	53,048
Miscellaneous Items	5.95	..	74,569
	100.00		£1,254,711

Precise costings of the actual services provided have not been worked out in detail but it is estimated that some 70 per cent of the work of the Department is concerned with direct hospital and ancillary services to African patients.

The Department earned £147,697 in revenue during 1953, i.e. some 11.76 per cent of the total expenditure. These revenue items are as follows:—

	£
Hospital and Other Fees	70,667
Sale of Vaccines and Medical Laboratory Products	12,633
Sale of Medical Stores and Equipment	21,850
Sale of Artificial Limbs	1,411
Reimbursements from High Commission, Railways, Posts and Telegraphs, etc., for Medical Services	33,779
Sundry	7,357
Total ..	147,697

TRAINING

The new tuition block at the Medical Training School in Nairobi was completed during the year. This contained the administrative offices, practical room, four lecture rooms and the library. This is the first permanent building which the school has ever had, and it has had a stimulating effect on the morale of trainees and staff alike.

Thirty-three hospital assistants, four compounders, five laboratory assistants and one orthopædic assistant qualified during the year. Forty new male students entered the school in 1953.

The year was notable in that a start was made with the training of Asian girls to the standard of Kenya Registered Nurse, a qualification equivalent to that of State Registered Nurse in the United Kingdom.

Eleven girls were in training in the Assistant Nurse, Grade I, course and 16 girls were in training for the second-year Assistant Nurse, Grade II, course. This includes a Pokomo girl from Tana River district, the first girl from the Coast to come into nurse training: a great achievement. One Assistant Nurse, Grade I, girl finished her midwifery course in August, and another of the same category started her year's midwifery course in April, together with three Assistant Nurses, Grade II. The girls are showing that they have a sense of responsibility towards their patients and their work which is very encouraging.

The systematic training of dressers to a standard recognized by the Nurses and Midwives Council of Kenya is an innovation which was introduced just over two years ago. The first candidates to complete the two years' course of training sat their examination during the year and seven out of twelve were successful.

The first midwifery training school to be run under Government auspices at Kisumu continued the second year of its existence and a second midwifery school was opened at Fort Hall. This is a new venture in so far as Government is concerned, as hitherto the training of midwives has been confined to Municipal and Mission maternity hospitals.

The small school for health visitors at Kisumu which was started there last year was continued and the building of a second one was started at Embu in the Central Province. The new venture has had a number of difficulties to surmount, one of which is that the girls are too young after they have completed two years of training to have much influence on the married women whom they are supposed to advise. We are now proposing, as soon as it is practicable, to confine this training to girls who have qualified as nurses.

Hygiene training is carried out in two grades. The senior classes comprise African Health Inspectors in training. There were 18 in training during the year at the School of Hygiene at Jeanes School, Kabete, and five passed the final examination.

The training of the subordinate grade of Health Assistant was continued. Students from Nyanza Province received their training at Siriba in Nyanza Province, and those from the rest of the country were trained at the Hygiene School, Kabete. In this last group, a new method of training was tried, whereby they do a three months' theoretical course at the school, after which they are sent to their districts for practical training under the Health Inspector. The object of this method of training is to produce a Health Assistant who has a sound working knowledge of and experience in practical work.

BUILDINGS

In 1953 some £387,000 were available from both Development and Reconstruction Authority and Colonial Development and Welfare Funds. In 1952 the ceiling to the amount of works completed and undertaken was a financial one, but in 1953, owing to the impact of the *Mau Mau* Emergency, the ceiling imposed was not monetary but constructional capability. The vast amount of building work which had to be undertaken by the Public Works Department with the highest priority resulted in other projects being relegated to the background.

The most important works undertaken were:—

Extensions to the Medical Training School—completed.
First phase of the Asian Hospital, Kisumu—completed.
Asian Ward, Kitale—completed.
Improvements to Lodwar Hospital—continuing.
Improvements and extensions to Nakuru Hospital—completed.
Isolation Ward, Kisumu Hospital—nearing completion.
Molo Hospital sanitation—completed.
Asian theatre and administrative block, Asian Wing, King George VI Hospital, Nairobi—completed.
African kitchen, King George VI Hospital, Nairobi—nearing completion.
Kabiyet Locational Health Centre—completed.
Kangema Locational Health Centre—under construction by African District Council with assistance of grant-in-aid from Government.
Bondo Locational Health Centre—completed by African District Council with grant-in-aid from Government.
Ahero Locational Health Centre—completed by African District Council with grant-in-aid from Government.
Masii Locational Health Centre—completed by African District Council with grant-in-aid from Government.
Embu Chief Health Centre—under construction.
Meru Chief Health Centre—under construction.
First phase of new Infectious Diseases Hospital, Nairobi—three-quarter completed.
First phase of new General Hospital, Mombasa, started.

The Leprosarium at Itesio has made good progress during the year, European staff housing, administrative block and treatment centre having been completed, whilst patients' housing and farm development are well under way.

In addition, a very considerable amount of housing, amounting to some £90,000-worth, was constructed which has gone a long way towards remedying the arrears in the provision of satisfactory housing accommodation for staff of all races. There still, however, remains much more in this respect to be done.

HOSPITALS

The new European Hospital in Nairobi which is being built by the European Hospital Association with financial assistance from the Government was almost completed by the end of the year. When finished it will be managed by the Association and will be independent of Government.

The foundation stone of a new Asian Hospital in Nairobi, to be managed by the Indian Social Service League, was laid, but no further developments took place during the year.

King George VI Hospital, Nairobi

This modern and up-to-date hospital consists of 255 medical beds and 79 children's cots, and 281 surgical beds with 46 cots. The medical and surgical wings each consist of two blocks, each block containing six wards, giving a total of 24 wards with a number of side wards on each floor. There are six operating theatres, and an up-to-date diagnostic X-ray department. There is in addition an Asian Wing with 123 beds and an operating theatre. The theatre had not been opened by the end of the year owing to lack of equipment and of staff. It will be opened early in the new year.

The hospital is administered by a Senior Medical Officer who is also in charge of all Government medical services in Nairobi. He is assisted by a Hospital Secretary.

The Specialist staff consists of the following:—

Surgical—

Senior Surgical Specialist.
Surgical Specialist (General).
Surgical Specialist (Ear, Nose and Throat).
Surgical Specialist (Orthopædics).
Ophthalmic Specialist.
Specialist Anæsthetist.
Medical Officer (Gynæcology).

Medical—

Medical Specialist.
Medical Specialist.
Medical Officer (Pediatrics).

They are assisted by Medical Officers and resident interns.

A number of the Surgical Specialists and the Senior Medical Specialist listed above are also engaged in part-time duties at the European Hospital. The second Medical Specialist was added to the establishment during the year.

At the beginning of the year an innovation was introduced whereby a number of medical men of consultant status who are engaged in private practice in Nairobi were appointed as honorary physicians and surgeons. Nine in all were appointed, a few of whom were allotted a few beds each while the remainder were available in a consulting capacity but were not given the care of beds. This arrangement has worked well and has done much to foster a spirit of professional co-operation between the Medical Service and private practitioners.

There is a Staff Meeting on the first Monday of each month. The Surgeons hold a clinical conference on the second, third and fourth Mondays of each month. The Physicians hold a similar meeting on the first, second and third Wednesdays of each month. There is a demonstration of medical cases on the last Wednesday of each month to which general practitioners are invited. A Chest conference is held on alternate Thursdays, at 12 noon in the X-ray department. Diagnosis and treatment, whether surgical or medical, are discussed with considerable advantage to all concerned. A great variety of X-ray films are demonstrated, touching all manner of pulmonary conditions.

In September, the Hospital Assistants' Meetings were revived. The attraction of these has been increased by short lectures from various members of the Specialist staff on matters of importance.

In January, the Matron opened a canteen for unmarried, ungraded dressers. It is very popular.

The ward sweepers were taken off bed-pan duties during the year, a few only have been retained and they now perform the function of scrubbers. Bed-pans are now handled and cleaned entirely by staff in training. This is a major advance in the training of hospital staff, as it has meant that long-standing prejudices had to be overcome in order to achieve it.

The Emergency as it has Affected the Hospital

One of the major incidents in the Emergency was the Lari massacre, the victims of which were treated at the King George VI Hospital. The Senior Medical Officer in Charge described it and other work connected with the Emergency as follows:—

> "This unpleasant incident occurred late in March. Forty-three patients, mostly women and children, were admitted, with *panga* wounds inflicted by the terrorists and loss of blood, from the Lari Location of Kiambu District on 27th of March. The majority were transferred for security reasons from Kiambu and Tigoni Hospitals after having had their wounds surtured. Twelve were submitted to operation in this hospital. Two of the 43 died. Seventeen patients were transfused with blood. A total of 30 donors was forthcoming, 20 from among the pupils of the Alliance High School and nine from among the pupils of the Medical Training School. Many had most extensive wounds, with the loss of a limb or exposure of the spinal cord and brain. A further 12 men suffering from exhaustion and some with bruises were admitted on 28th March.
>
> A list of casualties up till the end of August, 1953, showed 149 male and 30 female patients. Twenty-seven were fatal. Gunshot wounds predominated. They were dealt with mainly by the Surgical Specialists, one of whom has published a series of 60 gunshot wounds. He retransfused blood from the abdominal cavity in one case of gunshot wound of abdomen with two pints known to be fæcal-contaminated owing to wounds of the large gut being present. Following the advice of Hamilton Bailey (latest edition), it was filtered through 12 thicknesses of gauze. No ill-effect followed, though a specimen of the blood transfused was subsequently found to grow *B. coli* on culture. Surely an experiment in the tradition of Hunter and Paré. Other wounds included *panga*, stab, multiple wounds and few burns. There were cases memorable for devotion of staff to duty—for instance, a gunshot wound

of the abdomen, the operation lasting from 10 a.m. to 3 p.m., to stop bleeding. Then there was the daily visit at 5 p.m. of our honorary dental surgeons to give skilled attention to a woman with fractured jaw, slashed about the face. There were, too, cases memorable for the horror of their injuries, such as the child victims of Lari. The Lari casualties arrived on 27th March, 1953.

Following the murder of the Kikuyu Chief Hinga at Kiambu Hospital, the Chief Secretary issued a directive that the upper floor of King George VI Hospital was the safest place in the country for the treatment of security patients. This has thrown greatly increased responsibility on the hospital staff. Two wards on the upper surgical side were sealed off by doors in the communicating passage and *askaris* were posted. At first, security patients were kept in one ward and prisoners of various categories and detainees in the opposite ward. Fortunately, no gun duels have resulted largely owing to extreme vigilance on the part of the nursing staff and the restriction of visitors.

Emergency Regulations have affected ordinary Africans as patients. Under the Emergency Regulations, for instance, Kikuyu, Embu and Meru Africans require passes. This has caused some difficulty for out-patients attending refill clinics at this hospital, if they are living at places like Kabete or Kikuyu."

The staff have from time to time suffered considerable intimidation from the terrorists and a few African members of the staff have had to be transferred for their own safety. To combat this, the African staff quarters have been surrounded by a security barbed-wire fence. At the same time a homeguard on a voluntary basis was organized amongst the staff, which carries out nightly patrols.

Provincial Hospitals

It has been our policy in recent years to develop the four Provincial Hospitals, namely, those at Mombasa, Kisumu, Nakuru and Nyeri, so that they should have certain Specialist facilities which are not available at District Hospital level. X-ray departments and laboratories under European supervision are now available at all four. For some time past, it has been the practice to appoint full-time Surgeons at these hospitals, and more recently Physicians, able to carry out full-time medical work, have been made available. African Orthopædic Assistants, able to do plaster work and massage and physiotherapy, have now been posted to these hospitals.

District Hospitals

Improvements and extensions have been carried out in district hospitals as and when funds have become available from the development plan. We are also indebted to the Public Works Department for internal decorations up to a considerably higher standard than formerly. A routine issue of red blankets is now replacing the old and rather drab grey blankets, and these factors together have done much to brighten up the wards, an improvement which is appreciated by both patients and staff.

With the exception of a few old hospitals, which are to be replaced shortly, we now have a chain of district hospitals throughout the country of which this country has every reason to be proud.

SPECIAL HOSPITALS

Mathari Mental Hospital

NUMBER OF PATIENTS TREATED

During 1953, 61 more patients received in-patient treatment than in 1952 (1,147 against 1,086). There was an unexpected reduction in the number of European and Asian admissions. There were 536 admissions (550 in 1952); of these 45 were European, 37 Asian and 454 African, and 11½ per cent were voluntary, 24 per cent temporary and 64½ per cent on Reception Orders. About 70 per cent of new admissions were males.

401 patients were discharged during the year (426 in 1952). Of these 42 were European, 35 Asian and 324 African; 80 per cent had recovered, 16 per cent were improved and 4 per cent had shown no change. Out of the total discharged, 68 per cent were males.

127 patients died; this was 11.07 per cent of the total number treated (eight European and 119 African), 96 males and 31 females.

The average daily number of patients in hospital was 597. In January there were 611 and in December 619.

135 (European 75, Asian 46 and African 14) patients were dealt with by the Out-Patient department. The large majority received active treatment necessitating two or more visits.

ACCOMMODATION

No new accommodation for patients was made available during the year but a programme of new building and alterations of existing buildings, designed to alleviate overcrowding in the Asian and African male sections of the hospital, was approved and will be started shortly. The new project visualizes an expenditure of some £12,000–£15,000. On completion it will provide—

(*a*) a new 12-bedded ward for European females;

(*b*) twelve additional beds for Asian males, obtained by taking over with alterations the present Asian female ward (Asian females taking over old European female ward); and

(*c*) about 40 new beds for African males by taking over old Asian male ward.

PHYSICAL HEALTH

The death rate was 11.07 per cent of patients treated. The previous highest was 9.2 per cent recorded in 1947.

Of the causes of death, tuberculosis (19 per cent), enteritis, etc. (14 per cent) and cardiac conditions (17 per cent) were the chief killing agents.

The marked improvement of the high pellagra incidence noted last year was probably due to the introduction into the diet early in the year of brewers yeast. This was obtained gratis from the East African Brewery and provided about a teaspoonful per patient. Of use also in this regard was the replacement of vegetable ghee with a vitaminized cotton seed oil.

PATIENTS' OCCUPATIONS, RECREATION AND WELFARE

An average of 58 per cent of males and 52 per cent of females were daily occupied either in the occupational therapy department or in essential hospital work. This is about the same number of males as in previous years but an increased number of females.

Welfare work continues in the main as in previous years. The Visiting Committee members showed themselves alive to the need for recreations and entertainment of patients by encouraging voluntary organizations to interest themselves in the hospital, particularly in regard to the provision of the comforts and amenities additional to those normally supplied by Government.

THERAPEUTICS

(*a*) *Occupational Therapy.*—The occupational therapy department under the control of a qualified occupational therapist was opened in January. The new department filled a serious gap which had existed in the therapeutic armamentarium and has helped to bring the hospital into line with the better hospitals at home. Together with the school which has been in existence for some years, the department provided not only occupation and training but also a means of assessing the progress of convalescents and of finding the best means of employing individual chronic patients.

(*b*) *Electro-Convulsant Treatment.*—This treatment continued to be used on a large scale, with flaxedil in a proportion of cases and latterly with scoline. The following table shows the number of patients treated and the results obtained:—

	EUROPEAN		ASIAN		AFRICAN		OUT-PATIENTS	TOTAL
	M.	F.	M.	F.	M.	F.		
1953								
No. Treated ..	3	10	14	10	140	82	36	295
Discharged ..	3	9	9	6	58	19	—	104
Died ..	—	—	—	—	10	1	—	11

More patients therefore had E.C.T. than in 1952 and the results were just as satisfactory.

(*c*) *Insulin.*—Only five patients underwent insulin therapy during the year because of shortage of European nursing staff. As none of them was able to complete the full course the results are difficult to judge. One of these had insulin in conjunction with E.C.T. and was discharged recovered; two others were discharged before the insulin had produced coma and the remaining case continues under treatment into 1954.

Port Reitz Chest Hospital

The official number of beds at this special hospital for pulmonary tuberculosis is 102.

An increasing number of patients attended as out-patients and there were 2,283 attendances during the year. These patients attended for screening and refills for artificial pneumothorax and pneumoperitoneum.

One hundred and ninety-eight patients who had been in hospital for more than one month were discharged. Of these one died (five who died a few days after admission are not included in this total). The results of treatment in these 198 cases are summarized as follows:—

	Per cent
Group A.—One hundred and seventy-six rendered not infective, quiescent and fit for work	89.00
Group B.—Three cases, outcome not known ..	1.50
Group C.—Fourteen cases considered as failures ..	7.00
Group D.—Five cases, no evidence of tuberculosis ..	2.50

The length of time spent in hospital of those who were discharged was:—

	Months (average)
Discharged quiescent, relapsed, readmitted	5.2
Discharged quiescent for routine follow up	6.1
Discharged quiescent to continue collapse therapy ..	9.1

The Tuberculosis Officer comments as follows:—

"It is hoped that a further reduction in treatment time may be possible by introducing chemotherapy into the district hospitals. If P.A.S. and Isoniazid are available as a routine treatment, this would cost slightly over 50 cents per day, and if this treatment is well tolerated it should be possible to give this for one or two months in the district hospitals in suitable cases before admission here. Patients will then come here to receive collapse therapy and when this is stabilized they could be discharged to continue as out-patients. A trial is to be undertaken at once of this method, which would merely have the effect of giving the preliminary chemotherapy, necessary in almost every case, outside this hospital rather than in it.

During the year, a waiting list of patients both in Mombasa and in district hospitals was started. These patients were sometimes kept in their own homes and less frequently admitted for bed rest to district hospitals to await admission here. However, it was found that in most cases a fairly rapid deterioration occurred even if the patient was in hospital and presumably on strict bed rest. There were few notable exceptions to this and two of three cases improved prior to admission here. However, this shows that in the acute type of tuberculosis prevalent in Africans, chemotherapy must be resorted to at once and without this it is useless to keep patients awaiting admission."

This clearly demonstrates the need for as many beds for pulmonary tuberculosis as the Colony can afford.

SPECIALIST SERVICES

The number of specialist posts was increased by three, namely, a second Medical Specialist, an Orthopædic Specialist and an Ear, Nose and Throat Specialist.

The complete cadre of Specialists is now composed of—

One Senior Surgical Specialist.
Two Medical Specialists.
One Surgical Specialist.
One Ophthalmic Specialist.
One Ear, Nose and Throat Specialist.
One Anæsthetist Specialist.
One Psychiatrist Specialist.
One Orthopædic Specialist.
One Parasitologist Specialist.
One Tuberculosis Officer.

Brief extracts from the various specialist departments reflect the wide range of routine and research work undertaken:—

SURGICAL

"A paper has been written on gunshot wounds of the abdomen and chest describing 46 of these cases dealt with by the Surgical Unit in Nairobi since the Emergency began. Four others have since been dealt with—the last 18 have all survived.

The following figures are given for chest operations:—

Nine thoracoplasties for pulmonary tuberculosis.

One thoracoplasty for tuberculous empyma.

One lobectomy for lung abscess.

One mitral valvotomy.

One drainage operation for chronic lung abscess.

One abscess with broncho-pleural fistula.

Following the Lari massacre, approximately 60 cases of *panga* wounds were dealt with, three theatres being occupied simultaneously."

EAR, NOSE AND THROAT

"The number of attendances at the Clinic for treatment of discharging ears was 4,605.

An increasing number of neuro-surgical cases are being treated. Two cases of large brain abscesses following penetrating wounds were treated, with recovery in both cases. Ventriculography is being used increasingly as a diagnostic procedure in cases of space-occupying lesions and gives most useful information in many cases. Gunshot wounds of the head and face continue to be unpleasantly common."

ORTHOPÆDIC

"We have been attempting several new methods:—

(1) Decompression for Pott's Paraplegia, with very gratifying results so far.

(2) A new method of anterior spinal grafting with encouraging results.

(3) A new operation to shorten the length of treatment of Perthes diseases of the hip: so far the results are encouraging.

(4) Reconstruction of severely damaged joints by the use of whale cartilage. The results of this have not so far been successful, but we intend to pursue this line of research."

GYNÆCOLOGICAL

"In the out-patient clinic, 524 African and 150 Asian women have been seen. Seven hundred and forty-eight new cases have been admitted to the wards.

Routine gynæcological conditions account for the majority of the material; 200 of the admissions were concerned with abortion and 60 with Pelvic inflammatory disease.

The King George VI Hospital continues to act as a centre for the treatment of Vaginal Fistulæ, and the results of local repair for this condition continue to be satisfactory."

ANÆSTHETICS

"During the year, it has become evident that African anæsthetists posted to Provincial Hospitals, where there is no adequate supervision, are not altogether satisfactory. An attempt has been made to overcome this by bringing them back for an annual refresher course of four months."

MEDICAL

"The returns of diseases given in Appendix 'C' indicate something of the volume and variety of clinical material reaching hospitals and dispensaries. These patients make our hospital a clinician's paradise—only pressure on beds and diverse calls on the physician's time and resources limit the amount of medical research and treatment which can be undertaken. To supply all hospitals and dispensaries with adequate quantities of drugs is a formidable task and the more expensive drugs, such as chloramphenical and cortisone, can only be provided for the most necessitous patients. Similarly the inadequacy of hospital beds and the cost of anti-tuberculous drugs enable only a fraction of the patients suffering from pulmonary tuberculosis to receive adequate modern treatment by prolonged collapse of pulmonary cavities and chemotherapy.

Nearly all the important tropical diseases with the exception of cholera and classical yellow fever occur in Kenya—cases of leptospirosis were suspected during the year but have not yet been confirmed. In addition, nearly all the diseases of temperate climates occur and although that distressing symptom-complex of the nervous system, disseminated sclerosis, remains rare, a few cases were diagnosed during the year in Africans who had not been out of Kenya.

The physician in the tropics must practise clinical medicine, but particularly as resources are limited and he has to select the most suitable patients for beneficial treatment he must also practise social medicine, considering the probable implications of his treatment on the community as well as on the individual. Similarly, the investigation of disease which necessitates the utilization of laboratory and radiological techniques has to be equated with its probable value to the individual, to the assistance it may give to public health policy and to the furtherance of medical knowledge for the benefit of East Africa or mankind in general. That these aspects have not been obliterated in the day-to-day treatment of disease can be appreciated by the record of medical publications given under Articles Published but in addition a continually increasing store of knowledge is being accumulated although in many cases, not yet published.

Some degree of co-ordination of effort has been achieved by the Medical Specialist advising the Director of Medical Services, Provincial Medical Officers in Committee and by serving on the Medical Stores Advisory Committee. In turn, the Medical Specialist is educated by tours of the districts consulting with Medical Officers as to their problems. The appointment of a second Medical Specialist in the last quarter of the year will make this programme easier to fulfil in the future."

The work of the Psychiatrist Specialist, the Specialist Parasitologist and the Tuberculosis Officer are reported under the heading of the institution or division of which they are in charge.

HEALTH CENTRES

The policy of developing rural health centres in the native land units which was introduced some three years ago has been continued. It has now been in operation long enough for us to assess the results, and there can be no doubt that it has paid dividends.

One of the several objectives of the health centre has been to provide better treatment, including domiciliary visiting, so that short-term fevers, such as pneumonia, can be treated in the home and therefore the patient need not go to hospital. It has been our policy to place experienced hospital assistants in charge of these centres and they are becoming, in default of qualified doctors, the general practitioners in the area. The health centres are very popular with the people they serve as is shown by the large attendances, and there is an insistent demand for more health centres to be built.

The integration of preventive and promotive services with curative medicine is being achieved by posting a health assistant, health visitor and midwife to the centres. In some districts where the health centre is equipped with transport, the whole team together pays regular visits to different places in the orbit of the health centre to hold clinics and to give lectures and demonstrations.

There can be no doubt that future development will necessitate the provision of increasing numbers of these units. There are unfortunately two limiting factors.

The first is finance; health centres are financed by African District Councils, many of which are too poor to afford more than one health centre. The financial responsibilities of Central and Local Government bodies are now being considered by Government, as a result it may be hoped that further finance may be available by means of grants-in-aid from Government sources which will facilitate the further development of these important ancillary services.

An even more important limiting factor is shortage of trained staff. It must be realized that it takes four years to train a hospital assistant and many more years before he has gained enough experience to be put in charge of a health centre. With the additional calls on trained staff resulting from the Emergency, it is becoming increasingly difficult to find the necessary staff for future developments.

COMMUNICABLE DISEASES

There were no serious outbreaks of any of the five convention diseases. As in the previous year, there were no cases of smallpox, cholera, yellow fever or louse borne typhus. There were only nine cases of plague.

Malaria

In 1953, as in 1952, there was a low rainfall over the greater part of the country, though by contrast the Coastal belt had a higher rainfall than usual. The incidence of seasonal malaria was in consequence fairly low except at the Coast where there was a sharp increase during the months of May, June and July. At Mombasa, the peri-urban area subject to malaria control was extended during the year. The new measure has, however, not been in operation long enough for its effect to be reflected in the incidence of malaria in the town.

An interesting attempt was made in May to influence the course of seasonal malaria in a rural area. It has previously been found at Makueni in the Machakos District that the administration of 50 mgms., that is to say, two tablets of Daraprim, had the effect of reducing substantially the proportion of people having parasites in their blood.

It was accordingly decided to select a fairly large populated area which was subject to seasonal malaria and to administer to the whole population two tablets or less of Daraprim at the commencement of the transmission season. For this purpose, the Nandi reserve with a population of 80,000 and the Turbo/Kipkarren settled area with a population of 15,000 was chosen. Although this was primarily a control measure rather than an experiment, care was taken to assess the results of the measure as far as possible and two untreated areas were chosen as controls.

The results of this measure in the Nandi area may be summarized as follows:—

In the South Nandi area the parasite rate was reduced from an average of 23 per cent in all age groups, on the day of dosing, to a figure of 2.3 per cent after two weeks. The parasite rate then rose gradually to 3.3 per cent after six weeks and 10 per cent after 12 weeks and 4 per cent after 24 weeks.

In the North Nandi area, there was at the outset less malaria and the results are less striking. The parasite rate was 6.6 per cent when dosing commenced and fell to 4.66 per cent after four weeks.

In the control area by contrast, the parasite rate rose from 37.6 per cent at the start of the operation to 39.5 per cent after two weeks, 42.6 per cent at six weeks and 50.7 per cent at twelve weeks.

In the neighbouring European farming district of Turbo, a similar procedure was carried out and the parasite rate which was 7 per cent at the start of the transmission season was only 5 per cent six weeks later.

Although it is difficult to be certain whether a malaria epidemic was prevented, the results are very striking. The parasite rate fell dramatically after the mass dosing in South Nandi and remained low during the ensuing months. During the same period, the parasite rate in the controlled area showed a considerable rise. The measure is to be repeated in 1954.

Tuberculosis

It is becoming increasingly evident that tuberculosis constitutes one of the most important as well as perhaps the most intractable public health problem in the country. The introduction of the new chemotherapeutic agents such as Streptomycin, Isoniazid and P.A.S., have quickly been recognized by the African as an advance on previous methods. In consequence, patients suffering from active pulmonary tuberculosis are presenting themselves in increasing numbers and demanding treatment. There are many aspects of the problem of tuberculosis including the provision of better housing, particularly in the towns, the prophylactic use of B.C.G., the isolation of the open case, its treatment, and the after-care of the successfully treated case.

The provision of adequate African housing in towns is very much in the mind of planning authorities of both Government and Municipalities and the City of Nairobi has a £2,250,000 housing scheme for the period of 1954 to 1958. The smaller Municipalities are also pushing ahead with their own housing programmes. Improved housing in the African land units is also being encouraged by the Administration under the guidance of the Medical Department and, notably in Kiambu District, has been very successful.

B.C.G. prophylaxis has not been employed on a large scale as preliminary trials which have been carried out locally have shown rather equivocal results.

We are now faced with the difficult problem, which we share to some extent with more developed countries, of trying to find hospital beds for the increasing number of cases which require treatment. With only one special hospital for tuberculosis, we are able to treat only a fraction of our cases. We are investigating the possibility of cutting down the period spent in hospital to a shorter period than the six to nine months which is usually thought to be necessary, and continuing with ambulatory after-treatment.

Although there has been no increase during the year in the number of tuberculosis beds available in special hospitals, the number of patients treated in hospitals throughout the country has shown a considerable increase. This has been made possible because Medical Officers have made available additional beds in their hospitals for the treatment of the disease. This has come about partly because the demands for treatment are becoming more insistent and because the treatment of acute infections and venereal disease by antibiotics has shortened the length of time spent in hospital by such cases.

Leprosy

The building of the new leprosarium at Itesio in North Nyanza progressed rather slowly during the year, and the farm in connexion with it was further developed. Since a Medical Officer was posted to Itesio, the out-patient attendance has greatly increased and by the end of the year 2,571 ambulant patients were under treatment. At Msambweni, at the Coast, where there is a small leprosarium under Government control, the accommodation for patients was increased to a small extent.

Elsewhere the treatment of leprosy organized on a clinic basis for the treatment of lepers as out-patients has been continued with varying success in different districts. In some districts, notably Kilifi, the treatment is popular and appears to be successful.

Kala Azar

The first outbreak of Kala Azar to occur in epidemic form in Kenya was described in the Annual Report for 1952. The epidemic continued into 1953 reaching its maximum incidence in April. In the last week of April 125 cases were notified, the highest total of any single week. This was followed by a gradual decline and, by December, the weekly average was fifteen. By the end of the year, the total number of cases treated since the beginning of the epidemic was 2,156.

The practical difficulty of dealing with this epidemic, in such a remote part of the country as the northern and eastern part of Kitui District, was described in the 1952 Report. The emergency arrangements which were made for the treatment of cases in improvised bush hospitals worked admirably. The population, which had previously had little experience of European doctors quickly gained confidence in the treatment and it is probable that most of the sufferers from the disease presented themselves for treatment.

A great deal of investigational work has been carried out in an endeavour to discover which species of sandfly may be incriminated as the vector in this particular area. An account of these investigations is given in the report of the Parasitologist in charge of the Insect Borne Diseases Division.

Typhoid

Our experience with typhoid in 1953 has not been happy. Ordinarily, typhoid is expected to occur sporadically with the greatest incidence following upon the main rains and receding in July. The theory was that pollution was washed from the banks into the sluggishly moving stream and that matters righted themselves when the banks and streams had become flushed by spates. In 1953, the typhoid incidence curve rose to about three times the expected height and continued unabated beyond the time when the incidence should have fallen. All places in the Colony reported abnormal outbreaks, so Emergency conditions could not be held solely to blame. There were 1,226 reported cases with 98 deaths and even in Nairobi City numbers rose, notwithstanding the universal provision of piped water supplies. The County Council district was also severely affected and it must be borne in mind that there is much coming and going between these local authority areas and the African lands centred on Kiambu.

Investigations have not been easy, but one or two important observations must be noted. Firstly, the rains were insufficient to flush the rivers properly and many water sources dried up to leave the remaining and unprotected sources in a most unhygienic condition. Large-scale T.A.B. inoculations in Nairobi had no apparent effect on the disease compared with other areas not so treated and, finally, a sample stool examination at an institution showed that 10 per cent of the apparently healthy African staff were excreting *S. typhi.*

The pattern of the outbreak seems to be that there must have been a widespread typhoid infection amongst the African population, due to polluted and unprotected water supplies of almost pandemic proportions. The African is probably naturally so highly immune to this disease that he only succumbs to it with clinical signs when he has received an overwhelming infection, or some super-added infection has been enough to break down this resistance.

On this basis the control of the disease must be through the improvement of rural water supplies until there is no source that has not been protected. In the meantime the African and all of us must learn to boil our drinking water when it has not been obtained from some impeccable source. T.A.B. inoculation among the indigenous population probably has little value until general sanitary measures have so improved matters that it is not possible to develop a high and costly natural resistance.

Europeans and Asians escaped the effects of this year's outbreak, indicating the eminently preventible nature of this disease by simple measures in the home alone.

Poliomyelitis

Poliomyelitis has always been with us in the old Infantile Paralysis form, but in November it was clear that its habits had changed for the worse. Adult European cases started to occur and the incidence was confined to Mombasa and and the North Coastal district, together with the Nairobi area. Up to the end of the year 55 cases had occurred with four deaths, but 20 of them could be ascribed to the older type endemic disease which has always been thought to be due to the Lancing strain, though no sound information on this point is available. A Brunhilde strain has been isolated in the present outbreak. Up to the end of the year the numbers of reported cases continued to grow and a peculiar distribution became evident. Africans and Asians were not affected. Cases in European adults were greatly in excess and there were only two cases in the six years to 21 years age group and 12 European infants in the under six years age group. At the very end of the year, cases of the disease in African children under three years began to appear, but no African adult case was reported.

All precautions, as advised by the World Health Organization Expert Committee, were taken against the outbreak and all doctors and the public were warned and instructed accordingly.

Venereal Diseases

The only measure for the control of venereal diseases which has been adopted is the treatment of the infective case. The treatment has become largely an out-patient treatment by means of a one-shot injection of 400,000 units of penicillin in syphilitis and 100,000 units in gonorrhoea. One effect of this has been to release hospital beds, formerly occupied by venereal disease cases, for other purposes. With the reduction in the price of penicillin and its more ready availability, a great increase in the number of cases has been made possible, and large numbers can now be treated in rural clinics.

Other Communicable Diseases

Measures for the control of trypanosomiasis were continued during the year. No special measures for the control of schistosomiasis were instituted during the year but experiments have been started at Kisumu into the possibility of using snail-eating fish in the control of this disease.

Other observations on the control of communicable diseases are contained in the report of the Insect Borne Diseases Division below.

PUBLIC HEALTH AND ENVIRONMENTAL SANITATION

General and Staff

Apart from the larger municipalities, the Medical Department has to find and post the staff for the supervision and promotion of general public health measures in the rest of the Colony. The number of established posts for European Health Inspectors in the Department is insufficient to cover the growing commitments and the matter is made worse by our inability to recruit staff to fill the vacancies caused by retirement and resignation. At the end of the year we were four short on the sanctioned establishment, there having been only one recruit to join the Service during the year. Even in the United Kingdom, local authorities are finding it very hard to keep their Sanitary Inspectorate up to strength, as so few men qualify after their long period of training and the very stiff examination at the end. The solution of this problem seems to lie with the training authorities in England.

The position with regard to African Health Inspectors who are locally trained and sit a locally set examination of the Royal Sanitary Institute is different. Men from tribes other than from the Central Province however are still required to fill the potential posts open to them in the Nyanza, Coast and Rift Valley Provinces. Last year it was decided that the African Health Inspector should be given more complete, but limited responsibility, by putting him in charge of a division of an African District Council authority. Results cannot yet be assessed and the trial must continue until, besides achieving a technical correctness in the routine day-to-day business, the man can show those powers of initiative and enterprise which will fit him to take his proper place in the divisional organization. For some little time to come it will be necessary for the Medical Department to train and supply this grade of officer for duty with the African District Councils.

The African District Councils directly employ African Health Assistants in large numbers who are not as highly educated, exhaustively trained and as highly paid as the African Health Inspector. This man is usually set to work in a location and is a most useful person as he is practically minded and works in a sufficiently narrow ambit to know all the people in his location. The Department gives these men a practical training at Government expense lasting over a period of two years, during which time they receive much instruction on an apprenticeship basis in actual work in the rural districts. There were three training schools working on the instruction of Health Assistants during the year, but European staff shortages have compelled retrenchment and there is now only one permanent school at the Jeanes School and a temporary school left at Kapsabet for training men from the more remote districts, whose acceptance into the Nairobi School would be undesirable.

African District Councils

Many African District Councils can be classed amongst the more advanced local health authorities in the Colony. Albeit they receive Government help only from the services of the Medical Officer of Health, the Health Inspectors and the Health Visitors, they have built and are maintaining on an ever larger scale health centres, maternity services, dispensary services and a complete sanitation inspectorate, equipped to deal with epidemic emergencies. The African District

Council health organization has been the subject of close scrutiny from the technical officers of the World Health Organization and the United Nations International Children's Emergency Fund with a view to their aiding the work, already started, with grants-in-aid. The health centre system has been selected for special help. The reasons for the comparatively advanced state of the African District Councils' health services are that they have been content to allow the Department to develop them as our expert knowledge of the local conditions dictated. They would probably never have reached the same stage if they had attempted the task themselves.

Progress in the year can again be reported even in the Central Province where the Emergency has hit hardest. The old problems are still with us and new developments such as the building of improved rural housing and homesteads, following enclosure of land, can be applauded. There is a tendency for a greater concentration of the country population as the older peasant holding disappears and this will lead to fresh public health problems. They will however be possibly easier of solution as the more compact units will corporately be able to afford a higher standard of services.

Municipalities

The Municipalities of Nairobi, Mombasa, Kisumu and Eldoret have continued to run their own public health services satisfactorily with appropriate assistance from the Government either in the form of grants or by the secondment of expert staff from the departmental cadre. This year the accent has been on Town Planning and the building of more and improved housing for African town dwellers. The two new Municipalities who have assumed public health responsibilities at Nakuru and Kitale also joined in.

The assumption of public health responsibilities by a local authority implies that they will establish a system of clinics and dispensaries within their area. In the larger municipalities the financial burden will be heavy and much detailed financial negotiation has been the order of the day between local health authorities and the Government on this matter. Mombasa has already made a start in establishing a municipal dispensary at Kisauni and would have had a tuberculosis clinic in operation by now if the Medical Department had been able to vacate a suitable building in the centre of Mombasa in favour of the Municipality. A gratifying extension of maternity and child welfare clinics on the already established scale in all urban local authorities has been possible, but this service in Nairobi has suffered some setbacks due entirely to the unsettled and insecure conditions in the town brought about by the Emergency.

Anti-malarial measures outside the boundaries of a municipality to reinforce and complete the protection afforded by the measures taken within the boundaries are an obvious necessity, but it had never been entirely clear as to who should be responsible for the work outside the municipal boundary. A satisfactory settlement has now been worked out in which the urban authority perform the work for a reasonable distance outside their area and get reimbursed half the cost by the Government, until such time that a neighbouring local authority can be formed to share in the cost of the extended control and, incidentally, to benefit from it.

County Councils

The County Councils of Nairobi, Nakuru and Naivasha can be welcomed to the ranks of future and potential public health authorities. The signs are that a great advance in the scope and quality of local public health services is to be expected as the financial support from the local revenues makes itself felt.

The year was one of preparation and planning. This is especially necessary for the County areas outside the larger towns where development may, without p'an, proceed apace and pose impossible problems for posterity. The statutory

Planning Authorities and the Division of Lands Board earn for themselves some odium from persons who cannot perceive that their individual plans for development on lands quite unequipped with even rudimentary sanitary services, or virtually devoid of a water supply, will create a rural slum, a focus of disease and a blot on the fair face of the land. One of Kenya's hidden exports is the attraction of persons with capital or pensions to settle here in fair conditions of climate, health and quietness which their possession of means entitles them to expect. Should the County Council areas be irretrievably spoilt by unwise development, apart from conditions of political tranquillity, then this country will have lost a great exportable asset. It has been the Department's endeavour to support the work of the Planning Authorities and the Division of Lands Board to the utmost. They however lack an inspectorate and executive staff to ensure that their decisions and plans are not flouted and brought to nought. The Department's own staff has striven to fill the deficiency.

Many County Councils have active plans afoot for the extension of dispensary and ambulance services. These services are designed to be self-supporting in great measure from direct fees which are to be collected from the individual for the services rendered. In this way an expansion of services can be rapidly provided to those areas where there is the greatest call, without awaiting the provision of a tardy support from public finance. There will, however, still be a need for services in places where they can never be run on an economic basis and here the public purse must generously provide the means for their establishment, having been relieved of the burden to a large extent by the fees collected from the better endowed areas.

Health Education

The greatest emphasis in public health work in the African areas is now being placed on health education, for it is not the publicly organized sanitary service in these regions which is the weakest link, but the Africans' own inability to grasp and practise the elementary principles of personal hygiene which time and time again can be blamed for the incidence of preventible disease that come to the notice of the doctor. The lesson of self-help and self-protection has to be driven home. An example of a decision that had to be made this year will serve to illustrate this point. In a wide area in Nyanza, there was a sharp outbreak of typhoid and a suggestion was made, other considerations apart, to mount a mass T.A.B. inoculation campaign. Now this campaign was never executed, since it would have interfered with the main effort against the disease which was to constrain all the inhabitants to improve their sanitary arrangements, protect their water supplies and to boil their water and milk. The outbreak came to an end, but if inoculations had been given on a large scale, we knew that the attitude would have been that "the magical protective injection had been given, so what need now to do those other irksome things that the doctor is advising us to do?"

This is why health education is so necessary and, be it admitted, the attitude as described above is detectable in large measure among other communities who sometimes pride themselves on their knowledge and practice of personal habits of hygiene.

A special Health Education Division has been created within the department which is now under the charge of a carefully selected officer. He works in Nairobi at the departmental Graphic Museum which has workshops and stores attached to it. This central organization prepares and directs all the campaigns of health education which we carry out in the outlying areas of the Colony. Money is strictly limited which in turn governs the scope of operations, but the United Nations International Children's Emergency Fund has again stepped in with the most valuable aid which we expect in 1954.

Workers at the Graphic Museum prepared a large model of Onchocerciasis control for the Rhodes Centenary Exhibition at Bulawayo and many other models showing improved housing and village layouts for use in the local agricultural shows in the Colony. Now that the organization has got into its swing, the output of all kinds of material for both physical and mental health education should rise to a startling degree.

Housing

The Medical Department is represented on the Central Housing Board and on the Technical Sub-committee of the Central Housing Board. The Board is concerned with African housing and has wisely determined to plan for the future whilst fulfilling its function of supplying housing for present-day needs. The Board's rule is that it will not assist any housing scheme unless it is planned to provide a better house than hitherto for the African which will fulfil his needs for greater amenity and for housing his family. It has not been easy to meet these requisites whilst keeping the cost within economic bounds, but several answers to the problems have been found.

Some appalling conditions of African urban overcrowding have been found, especially in the illegal peri-urban villages which have had to be cleared from the vicinity of Nairobi. The difficulty has been to know what the business of all these inhabitants of these shanty towns was. The answer seems to be that they had none, other than battening upon each other and the legitimate workers in the towns. Their population seemed to consist of a floating mass, chiefly male, who had come in from their rural retreats, being not prepared to work on the land and who thought there may be the possibility of picking up an easy livelihood in the big city. They only succeeded in being a heartache to the public health authorities and by they themselves picking up venereal disease and tuberculosis.

These settlements must never be re-established and the authorities must find some useful profitable outlet for the work potential of these rudderless beings. The African housing problem may have been represented in darker tones in the past than it need have been. The problem is to provide decent housing for the genuine permanent worker, but not housing for all the hordes of self-unemployed males who drift to the towns as well.

Cases of overcrowding and insanitary housing conditions have also been noted within the Asian and European communities. Here the question of economics does not loom so large: it is often simply a question of finding and building sufficient accommodation for an expanding and fluctuating population. The existing subsidiary legislation relating to housing is usually sufficient to ensure an amelioration of unsatisfactory conditions when found. Much attention has been paid to the improvement of hotel standards with the co-operation of the Hotels Control Board in order to forestall any temptation offered by a relative housing shortage to profit from those who have little choice to accept anything but temporary accommodation. The influx of Forces' families into the country has brought this matter very much to the fore.

Food and Water Supplies

The usual careful precautions to maintain the safety of food and water supplies in the more organized centres of population have been maintained. Indeed, a more vigorous campaign for the protection of food and the detection of disease carriers amongst food handlers was put into operation in Nairobi to safeguard the larger numbers of the city's inhabitants who take their meals in public restaurants and the like.

Many consignments of apples and pears imported from Europe were found to be contaminated with traces of arsenic. Consignments were stopped and not released until it was certain that dangerous quantities were not present, but the

public were warned to wash the fruit. The foreign exporters and local importers have been told very clearly what will happen to any consignment found to contain dangerous amounts of this poisonous metal and warned that it would be in their best interests not to offer any fruit that contained any trace of arsenic. It should be quite unnecessary these days, when efficient substitutes are available, to have to spray fruit trees with arsenic to protect against insect infestation.

In the middle of the year, a most unsatisfactory vinegar was found on retail sale, being only a quarter of the strength it should have been, but otherwise wholesome. The local producer was forbidden to make any more vinegar until he had overhauled his process and was able to make an article of the proper strength. Dirty sugar was not so evident on the market as in previous years as a means was found of stopping soiled shipments at the source and arranging for reprocessing and refining. It must be remembered that the unrefined sugar whose import has been forced on us through local shortage inevitably contains dross which need not be harmful, as it can be seen and removed, and sugar, in any case, is essentially a self-sterilizing food and a preservative in itself.

The Kenya Meat Commission abattoir continued its operations on an ever-widening scale. This concern, together with the Uplands Bacon Factory and some others, would be capable of meeting a considerable export demand for their products. A system of very careful meat inspection has been designed and put into operation at the bigger factories to ensure the superior quality of the products and to satisfy the importing countries that no sub-standard or disease-infected product is offered to them in sale.

A Biochemist took up his duties at the Medical Research Laboratory after the lapse of over a year when the post was vacant. One man is far from being sufficient to tackle the enormous nutritional problems which need solution in Kenya. The elucidation of the tropical ulcer riddle, which accounts for thousands of lost man hours a year, should merit the attention of a special research team. On top of this, there is the general investigation of the effects of a widespread protein lack in the African diet and the search for alternative sources of this food factor which can be obtained in abundance and in an acceptable form. Fish ponds have been established by the Department on an experimental basis at Kisumu to try out one possible line of approach. Quite apart from the foregoing, there is the question of the mineral constitution of all foodstuffs consumed in Kenya by all races. Calcium is evidently on the borderline as a deficient mineral in the diet, nothwithstanding that it can be so easily be added to both maize and wheat flour in order to fortify the daily intake of this element. A large wheat miller in the Colony is to add calcium to some of his products and it will rest with the public to take sufficient interest in its own health to demand that particular flour in the bread that it buys.

When one hears of the enormous sums of money spent by oil companies in developing premium motor fuels to improve the effieciency of the petrol engine, one wonders why only a small amount cannot be spent, by the same token, on investigating food supplies to improve the efficiency of the human machine.

It is a pleasure to report the continued improvement of small township water supplies that have been put in hand by the Hydraulic Division of the Public Works Department. Rules have also been drawn up to regulate the purity and sources of privately-owned and limited public supplies. This Department has also investigated ways and means of removing excessive fluorine on a domestic scale from drinking water. A chemical process has been discovered which should, with a little organization and trouble on the householder's part, be a practical proposition. Some finishing touches to the investigation are still required.

Schools

The School Medical Officer had to be transferred during the year to man a district which had been deprived of its Medical Officer due to the general medical staff deficiency. Thus ended the effort to operate a School Medical Service from a central bureau in Nairobi. The experiment was not very successful as one Medical Officer could never hope to cover all schools and to examine every pupil as should have been done throughout the Colony. The only way in which her services could be equitably distributed everywhere was for certain specialized surveys to be undertaken and for her to concentrate her attention on certain sample schools only. The dental fluorosis survey of 1952 was an example of the former activity.

Clearly a proper School Medical Service must be based on the local Medical Officer of Health, if he can be given the staff to do the work. This is now the case in theory, at least, but a lot more money and staff must be available to him if one can say that the idea is really working in practice. For the time being, the Medical Officer of Health carries on, having been stimulated by the enthusiasm of the two holders of the post of School Medical Officer. Two useful legacies from the régime have been the increased interest in simple hygiene education to the pupils (and to the teachers themselves when the occasion offers), and the very easily-applied soap and B.H.C. treatment of scabies which has been popularized in all schools.

One of the last investigations undertaken by the Central School Health Service was to try out the Mepacrin treatment of tapeworm infestation.

The future with regard to retaining a central bureau for the School Health Service is not entirely clear. A service of this description, besides concerning itself with the general health of the children and the hygienic standards of the school premises, must be also deeply concerned with the nutrition and health education of our future citizens. Therefore, if the staff position ever improves, the appointment may be made to cover the School Medical Service, health education and field nutrition. In short, this officer should be an exponent of promotive public health.

MEDICAL STORES

The sum voted for medical stores and equipment for the year was £230,000. This was adequate to provide for the needs of Government and Mission Hospitals and, to a limited extent, to meet the requirements of African District Councils. The only exception to this general statement is that the more expensive antibiotics, such as streptomycin and chloramphenicol, could not be purchased in sufficient quantity to supply all the demands for these products.

The stock position at the commencement of the year was greatly improved. This had been possible by a lessening of shipping difficulties and better inflow of supplies towards the end of 1952. Supply from overseas was steady and regular during the year and it was possible to maintain stocks at a satisfactory level.

The system of staggered half-yearly indents by stations, introduced in 1952, continued satisfactorily throughout the year. Demands for stores were met in full with few exceptions.

Stores handling increased during the year with the opening up of new stations, particularly those due to the Emergency—transit and detention camps and first aid posts. This is seen from the following comparative table:—

	1952	*1953*
Issue and Receipt Vouchers	4,830	5,440
Railway Wararnts	700	1,150

Sterile Preparation Unit

The Unit, an important adjunct of Medical Stores, situated at the King George VI Hospital, Nairobi, under the care of the Pharmacist at the Hospital dispensary, prepared during the year 27,108 containers of various solutions for intravenous and intramuscular injection for Colony-wide distribution.

The Unit worked to capacity during the year but, with the introduction of more modern equipment and improved techniques, it is hoped that the increasing demands on the Unit's services can be met satisfactorily.

EXTRA DEPARTMENTAL ACTIVITIES

Medical Practitioners and Dentists Board

The Board has registered 39 new practitioners and licensed 10 during the year, including 26 Europeans and 23 Asians. The number of Medical Practitioners registered now stands at 866, of which 65 are in the Government Service. Two disciplinary cases were dealt with by the Board.

Pharmacy and Poisons Board

The Board has been active during the year and has dealt with a large amount of business. It has been concerned with the drafting of the New Pharmacy and Poisons Ordinance which has involved lengthy negotiations with neighbouring territories with a view to achieving uniformity in legislation. The Board has appointed a sub-committee, consisting of Pharmacists, which is charged with the duty of carrying out much of the detailed work of the Board.

The Board met three times and the sub-committee seven.

An Inspector of Drugs was engaged during the year whose duty is to administer the Pharmacy and Poisons Ordinance. This new appointment has been amply justified by the large number of abuses and irregularities which have been uncovered and to some extent rectified. Forty cases have been taken to Court and 36 convictions have been obtained.

Emergency Regulations were introduced during the year, the object of which was to tighten the control over the antibiotics and the sulphonomide group of drugs to prevent these falling into the hands of the terrorists.

Nurses and Midwives Council

Six meetings of the Council were held during the year. The work of the Council has increased greatly during the second year of its existence. Much progress was made in the registration and enrolment of midwives. The total number registered and enrolled by the end of the year was as follows:—

Registered Nurses	368
Registered Midwives	264
Enrolled Nurses	26
Enrolled Midwives	16
Fever Nurses	9
Mental Nurses	15
Children's Nurses	5
Assistant Enrolled Midwives	184
Assistant Enrolled Nurses, Grade I	201
Assistant Enrolled Nurses, Grade II	421

The Council is also responsible for the conduct of all nursing and midwifery examinations. The number of candidates examined in the various categories was as follows:—

	Passed	*Failed*	*Total*
Kenya Registered Nurse ..	2	—	2
Asst. Nurse, Grade I	34	3	37
Asst. Nurse Grade I (Preliminary)	48	4	52
Asst. Nurse, Grade II	35	21	56
Asst. Midwives	42	23	65

Joint Advisory Council of the Kenya Branch of the St. John Ambulance Association and the Kenya Branch of the Red Cross Society

The Joint Council holds quarterly meetings under the Chairmanship of the Director of Medical Services at which matters of interest to the two voluntary bodies are discussed. Both organizations have rendered valuable help in the Emergency and the assistance which they have given is gratefully acknowledged.

The Kenya Branch of the Red Cross Society continued to operate a blood bank which is rendering invaluable service to the community. Five hundred and twenty-nine donors gave their blood and 500 blood transfusions were administered.

British Empire Society for the Blind

The Society, with some financial assistance from Government, has fitted out a Mobile Unit in order to carry out a two-years' programme of survey work and treatment. At the request of the Society, the Unit is managed by the Medical Department. The Society was fortunate in obtaining the services of an Ophthalmologist who has had experience of conditions in Kenya. The objects of the Unit are, firstly, to make a survey of eye diseases in each district of the country; secondly, to start to compile a register of blind persons; thirdly, to carry out treatment, including surgical treatment; and, lastly, in collaboration with district Medical Officers, to institute a permanent system of eye clinics. Experience has shown that this latter objective can best be met by arranging facilities for the treatment of trachoma in schools.

The Unit, which is equipped with a specially-fitted treatment van and a Land Rover, commenced operations in the Machakos district at the beginning of October, Kitui in November and Kericho in December. On these tours, the Unit has accomplished a great deal of work. In Machakos District alone, in three weeks, 1,036 cases were seen, and 67 cataract operations, 59 iridectomies and 153 Snellens operations for entropion were performed. During the same period, 1,651 school children were examined and 131 cases of trachoma were discovered.

Division of Insect-borne Diseases

In addition to its normal routine duties in connexion with the identification and dissection of insects of different varieties, the carrying out of malaria, bilharzia, onchocerciasis and other surveys, yellow fever control, the planning and supervision of campaigns for the control of such diseases as malaria, plague and onchocerciasis, this Division has been heavily engaged in various research projects, the most notable and baffling of which has been that into the causation and mode of transmission of kala azar in the Kitui District.

Much useful information has also been obtained by field investigations and research into malaria, the bionomics of mosquitoes, tick-borne relapsing fever and control of malaria by residual insecticides and drug treatment.

Valuable assistance has been provided by continual liaison with the East Africa Malaria Unit, the London School of Hygiene and Tropical Medicine, the World Health Organization and the United Nations International Children's Emergency Fund.

The investigation into the transmission of plague in Kenya, which was undertaken in detail in the Rongai District of the Rift Valley Province, was completed early in the year. The conclusion reached was that in this part of Kenya at any rate, wild rodents and not *Rattus* are the true reservoir.

Human trypanosomiasis which was at one time prevalent in Nyanza Province appears to have been almost eradicated by the combined efforts of the East African Tsetse and Trypanosomiasis Research and Reclamation Organization and the Kenya Veterinary Department.

S. neavei eradication in the control of onchocerciasis has been vigorously carried out in the Kericho and Kisii Districts of Nyanza Province, and following detailed riverine surveys in the Mount Elgon area an extensive river dosing campaign was planned and will be undertaken at a later date.

Fish ponds have been in course of construction at Kisumu where it is intended to breed various species of mosquito larvæ-, snail- and weed-eating fish with which dams will in time be stocked in the campaign against bilharzia.

Further details regarding the various activities of the Division will be found in Appendix A.

LABORATORY SERVICES

By the end of the year, for the first time since 1951, as a result of the recruitment of a Biochemist and of new Technologists, the Laboratory Division was up to the full strength of its establishment except as regards European Learners, for whom there were still two vacancies. It would seem that the salaries paid during apprenticeship are not high enough under present conditions to attract boys and girls who have just left school. Final prospects in other branches of Government Service are more inviting also and some are deterred by the relatively low final salary which they can at present expect as their maximum.

During the year two Pathologists, half the total qualified staff, were away on vacation leave, one having had to go on urgent private affairs soon after the first had left in the ordinary course of events. This accentuated the problems already brought by the Emergency in the great increase of medico-legal work asked for, especially in demands by the Police for post-mortem examinations on the victims of many murders in and around Nairobi and by the middle of the year assistance in this work became essential. A Medical Officer was appointed on secondment to the Police Department as Police Surgeon and was posted to the Laboratory. He performed the bulk of this work from then on, working in consultation with one of the Pathologists in obscure or important cases.

At the Medical Research Laboratory, Nairobi, except for the filling of the staff vacancies already referred to, there were no changes in organization or personnel. No new buildings were put up but the open runs attached to the animal house were roofed over with corrugated aluminium as it had been found that animals kept in them suffered from heat from the sun in the afternoons. The work of the Laboratory, the centre of the Pathological Service for Kenya and of vaccine production for East Africa, is summarized in the reports of its various sections. (*See* Appendix B.)

VISITORS

The following visitors from overseas were shown various aspects of the Department's work during the year:—

Dr. J. C. R. Buchanan, C.M.G., Principal Medical Officer, Colonial Office.

Dr. E. R. Cullinan, M.D., F.R.C.P., Nuffield Consultant in Medicine.

Professor Stanley Davidson, M.D., F.R.C.P., Department of Medicine, Edinburgh University.

Major General Drummond, Director of Medical Services, Middle East Forces.

Professor A. C. Frazer, Colonial Medical Research Council.

Professor P. C. C. Garnham, Colonial Medical Research Council.

Lady Grey, President of the Northumberland Branch of the British Red Cross.

Dr. K. W. C. Sinclair-Loutit, World Health Organization/United Nations International Children's Emergency Fund Medical Adviser.

Dr. G. A. MacGregor, Director of Medical Services, Aden.

Miss J. McLarty, Nursing Consultant to the World Health Organization.

Sir Clutha Mackenzie of the British Empire Society for the Blind.

Dr. R. Marti, Chief U.N.I.C.E.F. Representative for Africa South of the Sahara, United Nations International Children's Emergency Fund.

Dr. J. H. Middlemiss, D.M.R.D., Nuffield Consultant in Radiology.

Mr. J. H. Peel, F.R.C.S., F.R.C.O.G., Nuffield Consultant in Obstetrics and Gynæcology.

Miss Rendle Short, Professor of Gynæcology at Makerere College.

Dr. H. Richards, Director of Medical Services, Sudan.

Dr. N. Lloyd Rusby, M.A., D.M., F.R.C.P. Nuffield Consultant in Tuberculosis.

Miss F. N. Udell, Chief Nursing Officer, Colonial Office.

Sir Harold Whittingham, Adviser to B.O.A.C.

Dr. E. B. Woolf, of the Executive Committee of Transvaal Provincial Council, South Africa.

Rt. Hon. George Brown, P.C., M.P.

Mr. C. R. Hobson, M.P.

ARTICLES PUBLISHED

The following articles were published during the year by members of the Department:—

Avery Jones, S.—"Response of Proguanil-resistant Strains of *P. falciparum* to Pyrimethamine." (*B.M.J.* I, p. 977, May, 1953.)

Blomfield, D. M.—"Observations upon Yaws and its Treatment in Embu District." (*E.A.M.J.*, vol. 30, p. 323, August, 1953.)

Carswell, J.—"Kala Azar at Kitui." (*E.A.M.J.*, vol. 30, p. 287, July, 1953.)

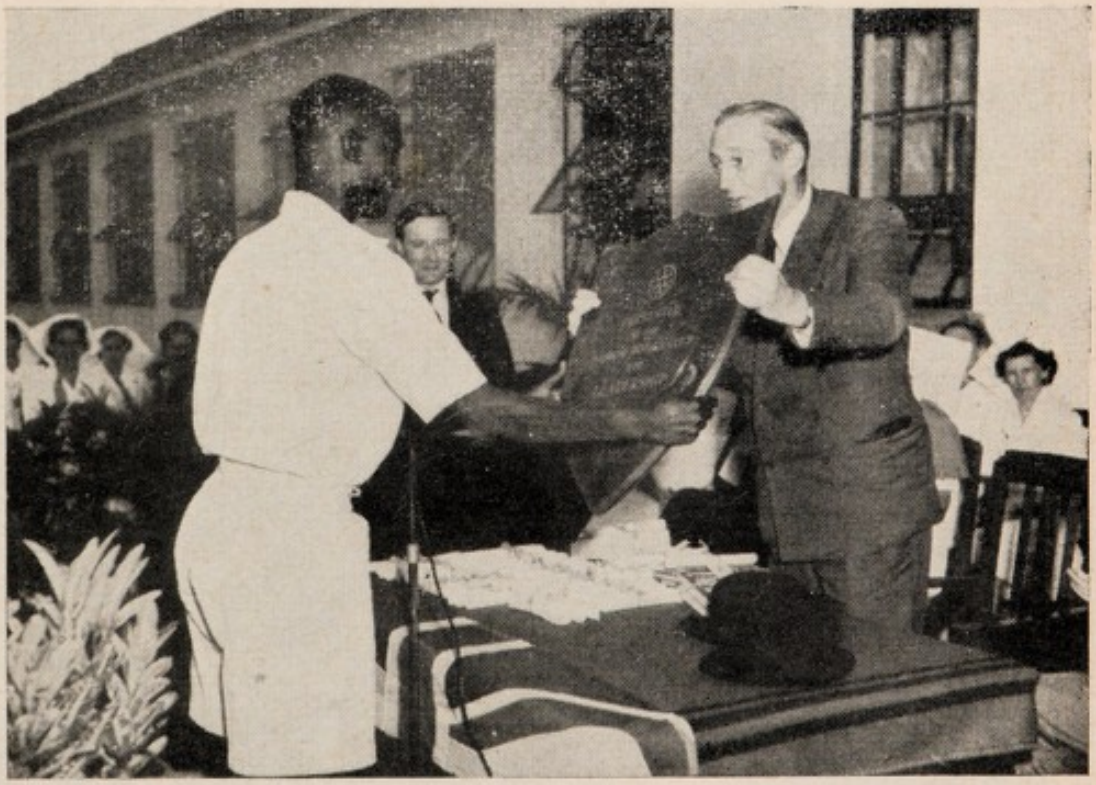
Carter, F. Stephen, and Dockeray, G. C.—"A Case of Congenital Hemihyperthrophy." (*Arch. Dis. Child*, vol. 28, p. 321, August, 1953.)

Carter, F. Stephen.—"Cerebral Cysticercosis." (*E.A.M.J.*, vol. 30, p. 295, July, 1953.)

———— "Introperitoneal Transfusions." (*E.A.M.J.*, vol. 30, p. 499, December, 1953.)

Cooke, E. R. N.—"Iron Bacteria." (*J. Roy. San. Inst.*, vol. 73, p. 634, September, 1953.)

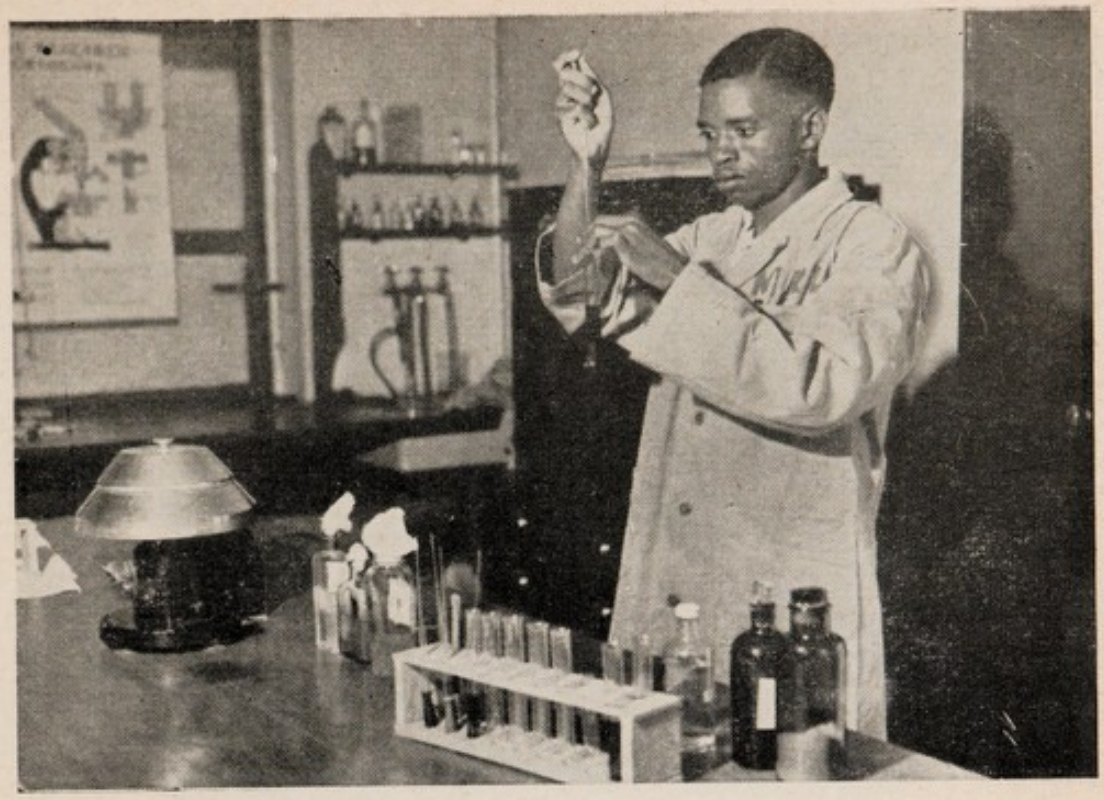
Medical Training School, Nairobi. One of the new buildings



Medical Training School, Nairobi. Annual Prize-giving. His Excellency the Governor of Kenya presenting the Rotary Club Shield for Leadership

The School of Hygiene, Nairobi. Health Inspectors in training

Hospital pharmacy. An African Compounder at work

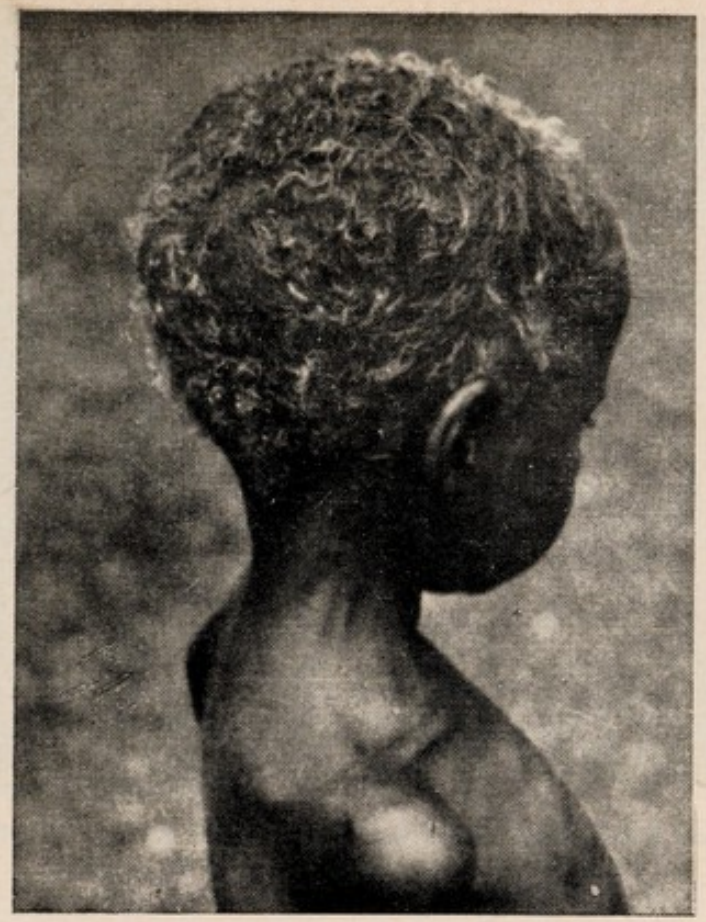


The Medical Research Laboratory, Nairobi. An African Laboratory Assistant at work

Orthopædic Centre Workshop, Nairobi. Types of artificial limbs made

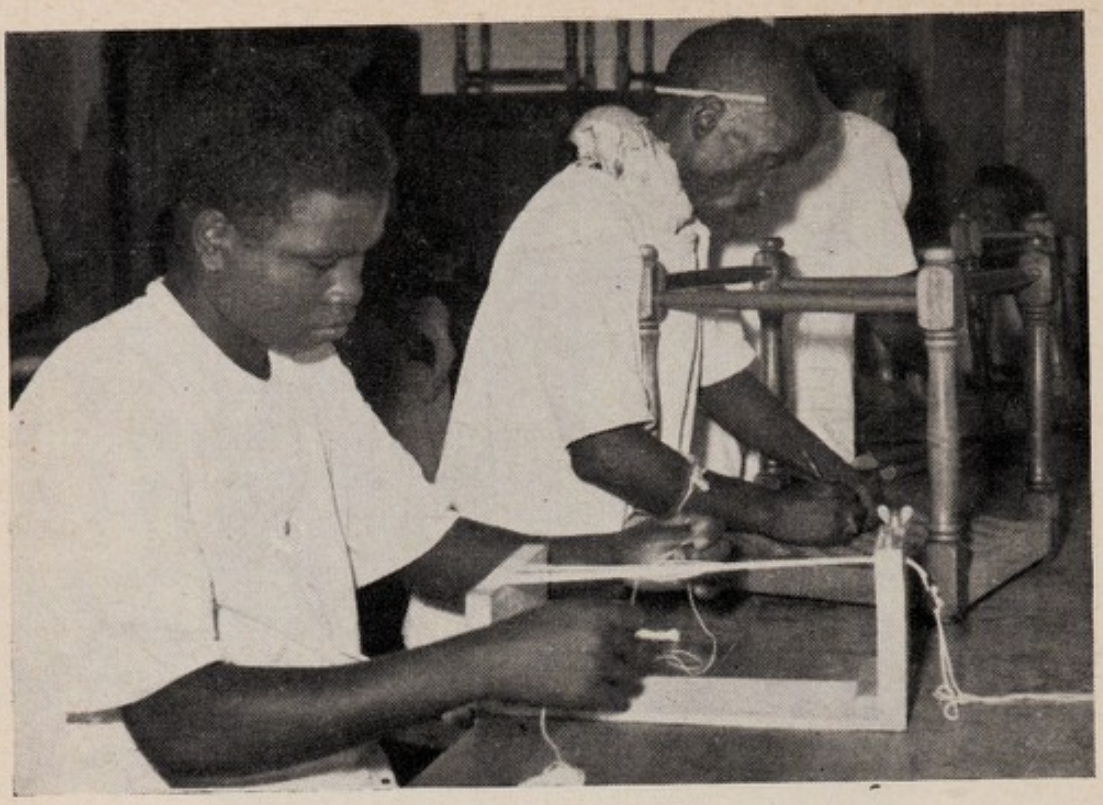
Medical Training School, Nairobi. Instruction in bed-making

Medical Training School, Nairobi. Practical instruction for Hospital Assistants in Training



Malnutrition in an African child

The Mobile Eye Clinic provided by the British Empire Society for the Blind

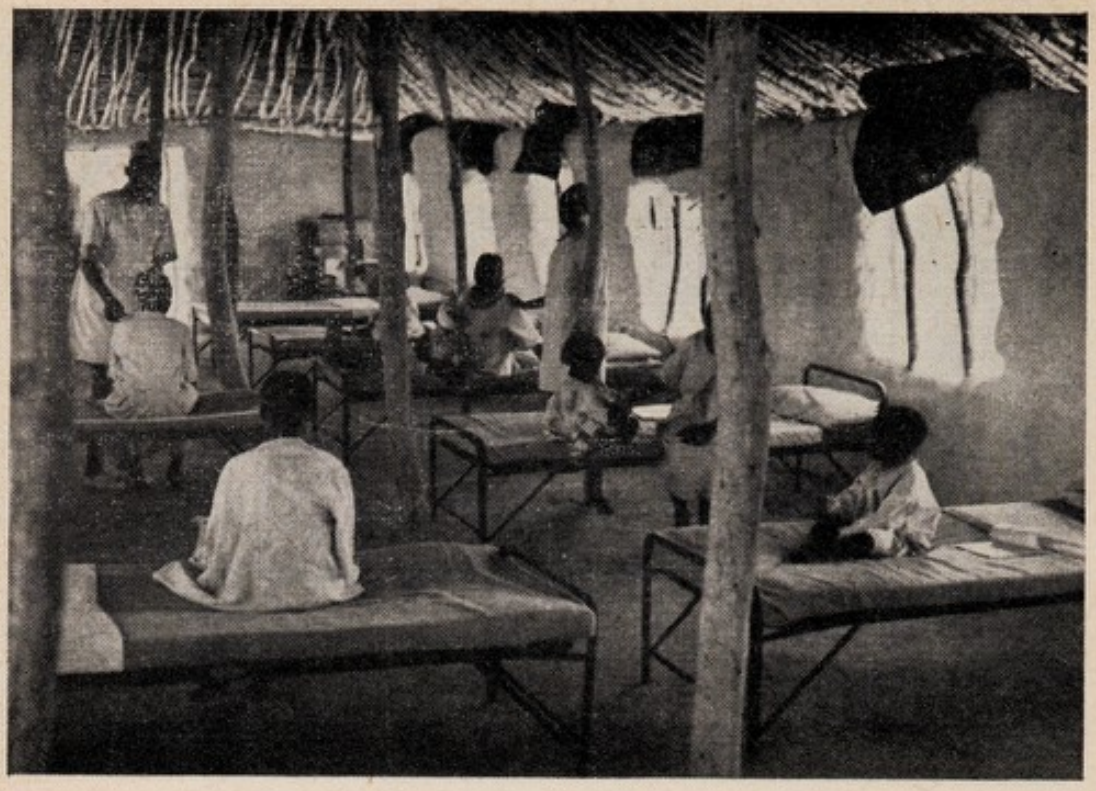


Mathari Mental Hospital, Nairobi. Occupational therapy for patients

Itesio Leprosarium. A clinic in operation

Malaria control. Application of high-spreading oil

Malaria control. Application of a residual insecticide



The kala-azar epidemic. A ward in Tseikuru relief hospital

Rural hygiene. A protected spring

DOCKERAY, G. C.—"Synopsis of Histopathology." (*E.A.M.J.*, vol. 30, p. 78, February, 1953.)

FENDALL, N. R. E.—"The History and Character of the Kala Azar Outbreak in the Kitui District." (*E.A.M.J.*, vol. 30, p. 269, July, 1953.)

GARNHAM, P. C. C., and HEISCH, R. B.—"On a New Blood Parasite of Insectivorous Bats." (*Trans. Roy. Soc. Trop. Med.*, vol. 47, p. 357, September, 1953.)

GRATTAN, E. O'D., and KEER KEER, F.R.A.—"A Case of Severe Burns in an Epileptic with loss of both hands and Subsequent Repair." (*E.A.M.J.*, vol. 30, p. 303, July, 1953.)

GRATTAN, E. O'D.—"Thyroidectomy in conjunction with the Use of Hexamethonium Bromide." (*E.A.M.J.*, vol. 30, p. 507, December, 1953.)

HARRIS, BRIAN P.—"Aureomycin in Tick Typhus: Second Series." (*E.A.M.J.*, vol. 30, p. 99, March, 1953.)

HEISCH, R. B., GRAINGER, W. E., and D'SOUZA, J. ST. A. M.—"Results of a Plague Investigation in Kenya." (*Trans. Roy. Soc. Trop. Med.*, vol. 47, p. 503, November, 1953.)

HEISCH, R. B. and GUGGISBERG, C. A. W.—"*Ornithodorus graingeri* N. sp., A Tick from Caves in Kenya." (*Parasitology*, vol. 42, p. 192, January, 1953.)

———— "Notes on the Sandflies (*Phlebotomous*) of Kenya." (*Ann. Trop. Med.*, vol. 47, p. 44, March, 1953.)

———— "On *Ornithodorus zumpti* N. sp., A New Tick from South Africa." (*Parasitology*, vol. 43, p. 136, May, 1953.)

HEISCH, R. B., and HARVEY, A. E. C.—"Note on the action of Terramycin on *Spirochæta duttoni* in White Rats." (*Trans. Roy Soc. Trop. Med.*, vol. 47, p. 239, May, 1953.)

———— "The Biology of *Ornithodorus graingeri* Heisch and Guggisberg, 1952." (*Parasitology*, vol. 43, p. 131, May, 1953.)

HEISCH, R. B. and GARNHAM, P. C. C.—"Fortuitous Zeno-diagnosis of Bat Trypanosomiasis." (*Nature*, vol. 172, p. 248, August, 1953.)

HEISCH, R. B.—"Epidemiology of Kala Azar." (*E.A.M.J.*, vol. 30, p. 267, July, 1953.)

———— "On a Spirochæte isolated from *Ornithodorus graingeri*." (*Parasitology*, vol. 43, p. 133, May, 1953.)

JARVIS, J. FULFORD.—"Surgery of the Oesophagus." (*E.A.M.J.*, vol. 30, p. 523, December, 1953.)

NEVILL, L. B., and BRASS, W.—"Preliminary Report on Dental Fluorosis in Kenya European School Children." (*E.A.M.J.*, vol. 30, p. 235, June, 1953.)

O'KEEFFE, DECLAN.—"A Case of Traumatic Amputation at the Wrist." (*E.A.M.J.*, vol. 30, p. 349, August, 1953.)

SHARMA, O. D.—"Treatment of Ten Cases of Pulmonary Tuberculosis in Africans with Isoniazid." (*E.A.M.J.*, vol. 30, p. 385, September, 1953.)

STOTT, HUGH.—"The Use of certain Toxic Chemicals in Agricultural Practice." (*E.A.M.J.*, vol. 30, p. 59, February, 1953.)

WRIGHT, F. J.—"Human Reactions." (*E.A.M.J.*, vol. 30, p. 417, October, 1953.)

WRIGHT, F. J., COOKE, E. R. N., and D'SOUZA, J. ST. A. M.—"Brucellosis in Kenya." (*Trans. Roy. Soc. Trop. Med.*, vol. 47, p. 117, March, 1953.)

WHITTAKER, LESLIE R.—"A Case of Ectopic Ossification in the Adductor Magnus Muscle." (*E.A.M.J.*, vol. 30, p. 121, March, 1953.)

APPENDIX A

DIVISION OF INSECT-BORNE DISEASES

Routine Duties

Colonies of ticks in the Laboratory include *O. moubata, savignyi, erraticus, turicata* and *graingeri*. The *Ædes ægypti* colony is still being maintained.

Field Investigations and Research

Malaria, Mosquitoes, Control Measures.—The Daraprim experiment at Makueni, where 4,000 Africans were dosed in 1952, was concluded. The parasite rate, after a dramatic drop from 50 to 2 per cent, remained low and only reached 17 per cent about seven months later. A proportion of these positives were tested and found resistant to large doses of Daraprim.

At Nandi, about 80,000 Africans were mass treated with Daraprim at the beginning of April just before the rains. Parasite rates are shown in the table:—

South Nandi

At time of dosage (11th May, 1953)	*2 weeks later*	*6 weeks later*	*10 weeks later*	*24 weeks later*
Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
22	2	4	9	4

Control Area (*Tiriki*)

At time of dosage (11th May, 1953)	*2 weeks later*	*6 weeks later*	*10 weeks later*	*24 weeks later*
Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
38	39	42	55	26

North Nandi

At time of dosage (11th May, 1953)	*2 weeks later*	*6 weeks later*	*10 weeks later*	*24 weeks later*
Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*
7	not done	5	not done	6

Although it is difficult to be sure whether a malarial epidemic was prevented in Nandi, the results are still very striking. The parasite rate fell dramatically after the mass dosing in South Nandi and remained low during ensuing months. The control rate rose from 38 to 55 per cent in three months. The North Nandi rates remained low throughout. Seasonal malaria usually starts in South Nandi, affecting the North later; this evolution may have been interrupted by the dosing. It must be emphasized that the object of the scheme was not to eradicate the malaria but merely to dislocate transmission so as to prevent the development of an epidemic. *A. gambiæ* was the chief vector in the area and reached a peak in May the hut index varying from 1.4 to 7. In August it was very low varying from 0.04 to 0.9. *A. funestus* was only present in very small numbers.

During a dry weather mosquito survey at Macalder Mines in September *A. gambiæ* and *funestus* larvæ were found near the Migori and Kuja Rivers. The hut index for *gambiæ* was 0.6 and for *funestus* 0.13. At Eldoret in February no larvæ or adults of either vector species were found. At Kitale in the wet season no *gambiæ* or *funestus* adults were captured.

The new Marigat Kikuyu Rehabilitation Camp was surveyed in December. There was intensive mosquito breeding in the lower Molo River and the *gambiæ* hut index was 36. Four out of 310 *A. gambiæ* showed sporozoites on dissection.

Modified yellow fever control measures are now in force throughout the Colony, the routine control of several townships, notably in North Nyanza, having been discontinued. The effect of D.D.T. spraying on *ægypti* incidence is very striking and offers an effective and labour-saving alternative to orthodox methods. At Mambrui, sprayed with D.D.T. over four years ago, there are still no *ægypti* larvæ in houses in spite of repeated attempts to establish the species artificially; a few larvæ however appeared in bamboo pots placed in compounds. Lamu, sprayed in 1952, is now almost free of *ægypti* the highest index for 1953 being 0.07; there is also a great reduction in other mosquito species, only 3–4 *Culex fatigans* being found in huts on the periphery of the town. *A. ægypti*, however, reappeared at Takaungu (sprayed in July, 1951), the index now being 2 per cent; this is probably because the village is interspersed with many palm trees.

Research into the bionomics of *A. ægypti* at Ganda has now been concluded. Some of the findings appear in the 1952 Annual Report. An interesting recent observation is that "bush" *Ædes ægypti* are dark in colour while those from houses are pale. Adults from about 200 eggs collected in a house were all the pale variety.

Further specimens of *Ædes woodi* have been found in the bush near Ganda but their breeding habits are still unknown; attempts to obtain eggs were unsuccessful.

Work on the new "malaria" parasite of insectivorous bats (*Nycteris capensis*) was continued and much material was dispatched to Professor Garnham at the London School of Tropical Medicine. The parasite, which appears as circular gametocytes in red cells with peripheral filaments, has liver tissue forms resembling these of *Plasmodiom falciparum*, and has been named *Nycteria medusiformis*. A strenuous fortnight was spent with Professor Garnham near Mombasa trying to find the vector and attempting to elucidate the morphology of the parasite. Although the investigation was disappointing, interesting observations were made on the zenodiagnosis of bat trypanosomiasis. An engorged nymph of *Ornithodoros graingeri* was found on one of the infected bats. The bats showed a remarkable homing instinct and if released near the camp easily found their way back to their caves nearly a mile away.

Plague.—The plague investigation was completed early in the year. Rongai was again visited in February when conditions were very arid. Although the *Rattus* after being almost exterminated the previous year had failed to become re-established, the few caught being negative for plague, *P. pestis* was again isolated from the wild rodents and their fleas. This appears to show that round Rongai wild rodents are the true or primary reservoir of plague, and *not Rattus*. It would be profitable to study sylvatic plague patterns throughout East and other parts of tropical Africa, so as to ascertain whether the same rodent species are involved in the different territories.

The discovery of glycerine-positive strains of *P. pestis* in Kenya, Tanganyika and the Belgian Congo is of great interest and in striking contrast to South Africa where strains are predominantly glycerine negative. The epidemiology of plague in South Africa is quite different from that in East Africa and it would be interesting to ascertain whether there is a region where the two varieties overlap; such an ecotone (if it exists) would be worth investigating.

Kala Azar.—Work on kala azar began in the Kitui District in January and continued for the rest of the year. There have been over 2,000 cases of the disease in the affected area, which is most alarming. During the year about 4,000 sandflies were identified and many dissected; a number of animals were examined. Although much interesting information was obtained, the investigation proved most baffling and complicated. Attempts to discover the vector and the disease reservoir were unsuccessful.

In the Sudan *P. orientalis,* a sandfly of the *major group* is regarded as an important vector and bites man very readily. This species appears to be absent from the Kitui District. Another species suspected in the Sudan is *P. clydei,* which bites man and has been infected experimentally. Around Kitui *P. clydei* occurs in large numbers in gerbil (*Dipodillus* and *Taterillus* sp.) burrows but there is no evidence that it bites man in nature. Precipitin tests show that the gerbil is the chief host. Three different types of flagellates have been found in *P. clydei* while dissecting wild-caught specimens: (*a*) anterior leptomonads, (*b*) anterior crithidia and (*c*) posterior crithidia. Several hamsters inoculated with naturally infected *P. clydei* were examined for L.D. bodies several months later, with negative results. *P. clydei* was quite easily infected by feeding on hamsters, two out of four developing anteriorly-placed leptomonads; a few always fed quite readily when a number were placed on man in feeding boxes. There is no evidence that *P. clydei* is a vector of kala azar in the Kitui District and gerbils from infested burrows were never infected.

We worked for a year in the kala azar area without observing sandflies biting man. The first sandfly to bite was the *Sergentomyia, P. hunti,* which, during the November rains suddenly appeared in large numbers in the ventilation shafts of termite hills and bit persons sitting nearby in small numbers. Over Christmas a number of *P. kirki* (another *Sergentomyia*), some of which were engorged, were caught in a net trap and a specimen from a pit latrine was positive (precipitin test) for human blood. After Christmas the *hunti* in the termite funnels were replaced by a new species of *Sergentomyia* rather similar to *P. collarti.* This readily bit persons sitting near the termite hills, and one evening 16 were caught on man, but only a few entered trap nets placed a short distance away; it is doubtful whether humans are the usual host. Flagellates were found in the *collarti*-like species on several occasions; one specimen with anteriorly-placed *leptomonads* was inoculated into a hamster. Over 20 specimens were fed on a heavily infected hamster but none showed flagellates when dissected five days later. Another new species of *Sergentomyia* appeared in large numbers at Christmas time in treeholes, and one engorged specimen was taken from a trap net; the blood, however, was not human and it is doubtful whether the species feeds on man.

These four *Sergentomyia* appeared suddenly during a lull in the November–December rains, persisted for several weeks, and then rapidly died out with the exception of the one resembling *P. collarti* which, in diminishing numbers, continued in termite funnels well into February. Termite hills are colonized by mongooses and spiny mice (*Acomys* sp.); all those examined were uninfected.

It is extremely difficult to draw any conclusions from this complicated picture, though it seems significant that in Kenya only sandflies of the sub-genus *Sergentomyia* have been caught biting man. One of these may be the vector, but this has yet to be proved.

So far no animal reservoir has been discovered, and it is possible that none exists in the Kitui District where kala azar has probably been recently introduced. Animals examined included dogs, jackals, mongooses, gerbils, elephant shrews, spiny mice (*Acomys* sp.), *Steatomys* sp. genet cats, ichneumons, bush babies, a rat and an aarrdwolf, but all were negative. We consider that the animal reservoir (if one exists) is more likely to be found near the Omo River in Abyssinia. A known focus in the Northern Frontier District at Saricho on the Uaso River will be visited at the first opportunity.

A list is now given of all sandfly species collected during the investigation with a note on their habitats:—

Phlebotomus (*Phlebotomus*) sp. nov. (*papatasii* group ?). 14 ♀ ♀ Tseikuru, Ngomeni, Nuu. In huts and by lamp.

P. (*P.*) sp. nov. (*martini* group). 2 ♀ ♀ by lamp.

P. (? *Sub-genus*) sp. nov. 1 ♂, Ngomeni. In rest house.

Phlebotomus (*Sintonius*) *affinis*. Nuu, Endau; mainly among stones, occasionally in treeholes.

P. (*S.*). *thompsoni*. Tseikuru, 17 specimens in earth holes.

P. (*S.*). *clydei*. Found all over kala azar area. Main habitat gerbil burrows. Occasionally in huts, at lamp and in tree holes.

P. (*S.*) ?*wansoni*. 1 ♂ Nuu, rest camp.

P. (*S.*) sp. nov. at same time as *wansoni*. Nuu, rest camp.

Phlebotomus (*Sergentomyia*) *antennatus*. All over kala azar area in native huts; at times fairly common in termitaries.

P. (*S.*) *bedfordi*. All over kala azar area; in treeholes, huts, among stones and in pit latrine at Nuu.

P. (*S.*) *schwetzi*. Rare dry season, very common after rains in treeholes, huts and among stones.

P. (*S.*) Very common during and immediately after rains. Main habitat uncertain but found in termitaries; in large numbers in hospital ward near lamp. Occasionally in huts. Net traps.

P. (*S.*) *dureni*, 2 ♀ ♀ "Kitui area".

P. (*S.*) sp. nov., related to *P. collarti* and *decipiens*. Very common in termitaries for several months after the rains over a wide area.

P. (*S.*) *hunti*. Very common during and immediately after rains in termitaries.

P. (*S.*) *squamipleuris*. Found locally throughout kala azar area. Mainly in earth holes near rivers and wells. Also under stones, occasionally in tree holes.

P. (*Sergentomyia*?) sp. nov. Common during the rains. Main habitat treeholes. Also found in huts.

The above list includes six new species, one of which bites man. Blood meals from specimens of the two new *Sergentomyia* and *hunti, kirki, antennatus, bedfordi, schwetzi* and *clydei* found resting in various situations, were all negative for human blood with the exception (already referred to) of a single *P. kirki* caught in a pit latrine.

Trap nets baited with humans were used for the first time during the November–December rains. Results of trap-net catches are as follows:—

P. clydei	5	*P. squamipleuris*	1
P. affinis	1	*P.* (*Sergentomyia*) sp. nov. related to *P. collarti* ..	23
P. antennatus	9	*P.* (? *Sergentomyia*) sp. nov. (erect, haired species)	4
P. bedfordi	7		
P. schwetzi	22		
P. kirki	18		
P. hunti	2		

Most of the sandflies trapped were unengorged and probably either entered by chance or were attracted by the whiteness of the nets. Several of the *kirki* trapped over Christmas were engorged and the African in the net complained of being badly bitten; it is therefore probable this species comes to feed. A single freshly-engorged specimen of the "erect haired" *Sergentomyia* sp. nov. was found in one of the nets, but the blood was not human. *P. schwetzi* and the other new *Sergentomyia* (the one related to *P. collarti*) entered the traps in fair numbers but were never engorged.

It is really impossible to interpret this medley of complicated data. It is of interest that in Kenya only sandflies of the genus *Sergentomyia* are known to bite man, that *P. orientalis* (except in the Northern Frontier District) is absent, and that *P. clydei*, although naturally infected with leptomonads, is apparently innocuous. It is possible there is man-to-man transmission in the Kitui District, without the intervention of an animal host, and perhaps, a seasonal sandfly of the sub-genus *Sergentomyia* is the vector.

Professor Adler visited us for a fortnight and was much impressed by the difficulty of the problem.

Relapsing Fever and Ticks.—After the successful infection of general paralytics with the gerbil spirochæte, *S. dipodilli*, attempts were made to infect "domestic" and "burrow haunting" *O. moubata* and to transmit the spirochæte to white rats by the bites of these ticks.

It was discovered that *O. moubata* can only transmit *S. dipodilli* with great difficulty. The two forms of *O. moubata*, although morphologically indistinguishable, perhaps differ biologically; thus "burrow haunting" *moubata* are very difficult to feed on laboratory animals.

O. erraticus were collected in fair numbers from the burrows of ant chats (*Myrmicocichla* sp.); they were negative for spirochætes.

A tick, obtained by Dr. Likimani from a house in Narok, was identified as *Argas reflexus* (Fabricius).

Large numbers of *Argas brumpti* were found under fissured rocks at Nuu and Ngomeni in the kala azar area and it is probable they normally feed on rock hyraxes.

Trypanosomiasis.—Sleeping sickness appears to have been almost eradicated from the Kibigori area and no new cases were reported during the year. Riverine bush was last treated with D.D.T. in 1952 but the *G. palpalis* incidence is still low. Bush is still being cleared in the Kadumu and Alego Districts by the Department of Tsetse Survey and Control.

After riverine bush at the confluence of the Kuja and Gori Rivers, near Macalder Mines, had been sprayed four times with D.D.T. emulsion, there was a striking reduction in *G. palpalis*. During searches over 4,000 *G. palpalis* were caught before treatment and only 16 afterwards.

Onchocerciasis.—*S. neavei* has apparently been eradicated from the Kisii and Kericho foci where rivers were treated with D.D.T. in January. The last fly was caught on the Kipsenoi River on 25th November, 1952, a very encouraging result.

The banks of the Kitare and Sanda Rivers at Kodera are still free from *S. neavei*. All of 129 children with milk teeth were found uninfected, as compared with 37 per cent in a similar group examined in 1946.

Further surveys were made of rivers in the Mount Elgon area. Infested *P. niloticus* were found on the lower reaches of the Kuiwa River and *S. neavei* adults hatched from pupæ on the crabs.

Observations were made on the length of the larval stage of *S. neavei*.

Miscellaneous Parasites.—During the kala azar work a variety of parasitological observations were made. Flagellates were isolated from the heart blood of ichneumons and mongooses cultured on N.N.N. and Adlers; only crithidial forms were observed. Ground squirrels are infected with a trypanosome and a Hepatozoon. An interesting discovery was *P. brodeni* in elephant shrews (*Elephantalus* sp.) which are infested with *Rhipicephalus neavei*. Geckoes contain trypanosomes, and crithidea (probably of lizard origin) have at times been observed in *P. bedfordi, schwetzi* and *squamipleuris*. Recently *O. moubata* were collected from a burrow containing three porcupines.

APPENDIX "B"

LABORATORY SERVICES

MEDICAL RESEARCH LABORATORY

Bacteriological Section

The section was reorganized at the beginning of the year in an attempt to give the Bacteriologist some opportunity to teach and to concentrate upon the more exacting and important examinations by leaving more of the simpler routine work to the senior African Laboratory Assistants. The senior Africans, African trainees and European learners were brought in to assist him in turn. Of the African trainees taught during the year, a number showed promise and one was outstandingly good.

The amount of work and the constant rush to get through it has been a strain on the staff. There has been little time for work other than routine. The staff is still the same numerically as it was 20 years ago, in spite of the great increase in the work. There are a number of tests which should be done, such as sensitivity tests of tubercle bacilli for the new anti-tuberculosis drugs, but these cannot be considered at present.

Many unnecessary tests are done at present, for instance, *S. typhi* was isolated from stools on 203 occasions, but in many cases as many as six specimens were sent from the same patient in as many days. Blood cultures are often asked for after a positive stool culture has been obtained in typhoid cases. Some of these examinations may be useful, but many are not required.

During the year there was a slight fall in the total number of examinations—11,724 as against 13,600 in 1952, but there was an increase in the number of cultures done—8,744 as against 7,387 in 1952.

Of the 11,724 examinations done in 1953, 9,398 were from Africans, and 2,326 from European and Asian patients. Of the 8,744 cultures done, 6,822 were from African patients and 1,981 were from Europeans and Asians.

The Organisms Isolated

Mycobacterium Group

M. tuberculosis was isolated 30 times by culture from pus, peritoneal fluids and various exudates out of a total of 496 such specimens received.

Acid-fast bacilli were seen six times in smears made from 102 specimens of pus and other fluids. *M. tuberculosis* was grown only twice from 773 specimens of cerebro-spinal fluid and five times from 953 specimens of urine. Acid-fast bacilli seen in one specimen of urine deposit were typical, and pus and red cells were present, but no growth was obtained in culture and the deposit did not infect a guinea pig. Eight deposits of suspected tubercle-infected urine were inoculated into guinea pigs but none were positive. No information was given as to whether the patients had received streptomycin.

Acid-fast bacilli were seen 332 times out of a total of 1,599 specimens of sputum examined. The organism was isolated from gastric contents 16 times out of 204 samples.

M. lepræ was found in one nasal smear.

Streptococci

Beta-hæmolytic streptococci were isolated from many cases of tonsillitis. It was possible to type only an occasional culture; all those tested were Lancefield Group A. Anærobic streptococci were isolated four times from pus and twice from blood in cases of bacterial endocarditis.

Pneumococci were isolated four times from pus, nine times from throat swabs and found either by culture, direct smear or both in 49 out of 773 samples of C.S.F. Three were also isolated from nasal discharges.

A number of pneumococci grew much better in anærobic culture than in the presence of 10 per cent CO_2. Growth was often absent on ærobic culture, but in such cases always grew in the presence of CO_2 and anærobically.

Brucella Abortus and Melitensis

The organisms were isolated ten times by blood culture. No attempt was made to differentiate the two; experience has shown that nearly all Brucella infections are due to *B. melitensis.* A *Brucella* organism was isolated once from fluid from an abscess.

Corynebacterium

C. Diphtheriæ was isolated from throat swabs ten times; three were from Europeans, three from Africans and four from Asians. Four of these were virulent and one which was sent from another laboratory in the city was also virulent. Two of these organisms were of the unusual urea-splitting type.

Bacillus Anthracis

This organism was found in the cerebro-spinal fluid by direct examination from a case of anthrax meningitis. The organism was cultured and proved lethal to guinea pigs.

Neisseria Group

Organisms morphologically identical with gonococci were found in smears from eyes on six occasions, and 97 times from urethral, cervical and vaginal smears, and three times from urine. *N. meningitis* was found once only in a sample of cerebro-spinal fluid.

Hæmophilus Group

H. influenza was isolated from 25 samples of cerebro-spinal fluid and three times from sputum.

The Koch-Weeks-bacillus was seen in 18 eye smears.

Bacterium Group

B. coli were isolated from urine 32 times out of 278 samples.

Pasteurella pestis was seen in three out of four post-mortem specimens.

The Salmonella Group

As in previous years, a large number were isolated.

S. typhi was isolated 203 times from stools, as compared with 61 times in 1952, and 134 times from blood, compared with 42 times in 1952. It was isolated once from urine. It is not possible to say how many cases were represented by these figures, as multiple specimens were sent from the same case for culture even though a positive culture had already been obtained.

A number of salmonella organisms could not be identified, but it is hoped to improve this next year if the Colindale Laboratories in London are able to let us have more diagnostic sera.

The list of salmonella organisms isolated is as follows:—

Unclassified	3,814	
S. typhi	203	
S. typhi-murium	17	
S. oranienburg	9	
S. enteriditis	5	
S. manchester	1	
S. brandenburg	1	
S. oregon	1	
S. bovis-morbificans	1	
S. paratyphoid C.	1	(from Mombasa)

One new type was isolated during the year, but it has not yet been named.

S. brandenburg is a type not met with before in Kenya.

S. enteriditis was isolated from an abscess of the arm in a child who had had the organism in the stool.

Shigella

Shigella organisms were isolated 958 times from stools. They were as follows:—

Unclassified	253
Sh. flexner	478
Sh. sonnei	109
Sh. schmitzi	62
Sh. manchester	41
Sh. newcastle	4
Sh. boydii	6

Double infections were found as follows:—

Unclassified Shigella—*Sh. flexner*	1
S. typhi and *Sh. sonnei*	1
S. typhi and *Sh. flexner*	1
S. typhi and unclassified Shigella	1

There were a number of cross-infections in the King George VI Hospital and patients frequently had a succession of Shigella organisms.

The total number of Shigella organisms isolated in 1952, was 336.

Fungi

Aspergilli, Penicillin and *Candida* were isolated. Most of the aspergilli were *A. niger* and were obtained from discharging ears.

Some of the *Candida* organisms did not conform to any known type, and *C. albicans* was not found.

Sensitivity tests: 182 were done during the year.

Advice was given on sterilization in the theatre of King George VI Hospital, and many bacteriological tests were done on the water from the sterilizers there. Non-pathogenic anthracoids were isolated from the boiling water. (Water boils

at 94° C. at the altitude of Nairobi.) The hospital was also inspected and a report made on the general hygiene in Wards 3, 4 and 12, and suggestions made for improvements there to reduce the number of cases of dysentery occurring in these wards. Heavy fæcal contamination was demonstrated on draining boards, wash basins and walls and around the open drains into which washings were discharged.

Media

There was a constant shortage of culture-media during the year, although that which was made was good. Production will have to be doubled to provide enough for the Bacteriological Section of the Medical Research Laboratory, the Public Health Food Laboratory and the Provincial Laboratories. More staff, more space and extra autoclaves are required.

The Public Health Food Laboratory

A technologist, who has completed a course in Food Hygiene at the Public Health Laboratories, Colindale, London, took charge of the Public Health Section as from 1st October, 1953. It is intended to expand the work of this section by undertaking examination of many samples of prepared foods, e.g. ice cream, pies, canned foods, etc., but it was not possible to do this, due to shortage of staff in the Media Preparation Department. It is hoped that in 1954 this difficulty will be overcome and the work of this section expanded.

The work done during the year was as follows:—

Water Examinations

Total number of waters examined	351
Total number of mineral waters examined ..	197

Vaccine Production

The preparation of vaccine for use in Kenya and for export to neighbouring territories continued to be an important part of the work of the laboratory, earning a considerable revenue and saving large sums which would have had to be spent if the vaccine used in Kenya had been bought from abroad.

By the middle of the year it became impossible to hire calves from the Native reserve or to buy them at an economic price from the Kenya Meat Commission and production was from then on entirely on sheep which were slaughtered before harvesting. Yields average 50 grams. per sheep.

Vaccines Produced.—Vaccine Lymph, anti-Rabic Vaccine (Semple's carbolized rabbit-brain suspension 2½ per cent), Plague Vaccine (Haffkine type), Typhoid-paratyphoid (alcoholized) Vaccine, Diagnostic Agglutinable Suspensions, Sour Milk Cultures (*B. bulgaricus*).

Amounts of Vaccine Produced and Issued During 1953 *were as Follows*:—

	Prepared	*Issued to Kenya*	*Sold to other Territories*	*Total Issues*
Vaccine Lymph (doses) ..	7,517,000	521,046	5,340,238	5,861,284
T.A.B. (Alcoholized) Vaccine (ml.)	156,000	111,530	37,740	149,270
Plague Vaccine (ml.) ..	30,000	18,325	1,375	19,700
Rabies Vaccine (ml.) ..	68,920	45,220	36,900	82,120
Diagnostic agglutinable bacterial suspensions (ml.)	129,500	129,500	Nil	129,500
Sour Milk Cultures	121	116	2	118

*Value of Products Prepared at Current Kenya Government Prices**

	£
Vaccine Lymph	22,551
Typhoid Vaccine	4,680
Rabies Vaccine	1,148
Plague Vaccine	600
Diagnostic Suspensions	518
	£29,497

The revenue earned from other Governments is as follows:—

Country	*Vaccine Lymph*	*Anti-Rabic Vaccine*	*T.A.B. Vaccine*	*Plague Vaccine*	*Total*
	£	£	£	£	£
Tanganyika	3,612	65	547	3	4,227
Uganda	4,217	30	540	24	4,811
Nyasaland	—	390	24	—	414
Zanzibar	52	—	22	—	74
E.A. Command and R.A.F.	90	106	—	—	196
B. Somaliland ..	38	24	—	—	62
	£8,009	£615	£1,133	£27	£9,784

Increase on revenue for 1952 .. £3,572

Medical Biology Section

It was unfortunately necessary, for various administrative reasons, to impose changes of staff on this section which made it difficult to maintain a smooth routine to a satisfactory standard and impossible to undertake any work beyond that imposed by requests from clinicians in respect of individual patients.

Examinations for Blood Parasites

	European	*Asian*	*African*	*Total*
Plasmodium falciparum Trophozoites	82	48	344	474
Plasmodium falciparum Gametocytes	5	—	41	46
Plasmodium vivax	4	3	4	11
Plasmodium malariæ	1	—	20	21
Plasmodium ovale	2	—	2	4
Mixed Infections	3	—	44	47
Malaria Positive	97	51	455	603
Malaria Negative	1,314	687	7,579	9,580
Treponema recurrentis	—	1	—	1
Microfilaria perstans	—	—	12	12
Microfilaria bancrofti	—	—	—	—
Trypanosomes	—	—	—	—
Total Number of Slides	1,411	739	8,046	10,196

* These prices are below commercial ones; if bought in England, the Vaccine Lymph prepared during the year would have cost £87,000.

Examination of Sternal Marrow and Splenic Pulp for Leishman-Donovan Bodies

Negative	80	
Positive	34	(All Africans)
Total	114	

Examination of Fæces for Parasites, Protozoa, etc.

	European	*Asian*	*African*	*Total*
Ova *Tænia*	7	8	1,080	1,095
Ova *Ancylostoma*	6	33	832	871
Ova *Ascaris*	3	19	940	962
Ova *Trichuris*	17	35	216	268
Ova *S. mansoni*	46	21	308	375
Ova *Oxyuris vermicularis*	6	9	29	44
Ova Trichostongylus	—	19	8	27
Larvæ Strongyloides stercoralis	14	3	134	151
Hymenoleptis nana	1	10	25	36
Hymenoleptis dimminuta	—	—	5	5
Entamœba coli Active and Cystic	91	98	1,706	1,895
Entamœba histolytica Active	1	4	28	33
Entamœba histolytica Cystic	15	9	186	210
Iodamœba butschlii	9	18	495	522
Chilomastix mesnili	—	10	266	276
Chilomastix mesnili Cystic	38	47	1,094	1,179
Giardia lamblia	66	37	281	384
Balantidium coli	—	—	10	10
Isospora hominis	—	—	3	3
Endolimax nana	—	—	—	—
Trichomonas hominis	—	—	3	3
Charcot-Leyden Crystals	111	36	158	306
Negative	1,328	768	3,688	5,784
Total	1,759	1,185	11,495	14,439

Hæmatology

Examinations on blood performed	7,842	
Examination of urine for schistosomes:—		
Negative	237	
Positive	49	
Total	286	
Digestion of rectal mucosa for schistosomes:—		
Negative	12	
Positive	3	
Total	15	

Miscellaneous examinations including examinations of pus and sputum for amœbæ; cerebro-spinal fluid for trypanosomes; formol-gel tests; sputum for mites, etc.: 21.

Recorded total number of specimens: 32,799.

Pathological Section

The Pathologist was on vacation leave for six months during the year. While in Europe he visited the laboratories at New Scotland Yard and at the Paris Sûreté and gave an address to the International Criminal Police. At the end of his leave he represented Kenya at the Fifth International Congress in Tropical Medicine at Istanbul. During his absence his duties were carried out by the Assistant Director, Laboratory Services.

The work of the section is summarized below:—

Post-mortem Examinations (mainly medico-legal)	171
Histological Examinations	1,781
Electrocardiagrams	56
Gastroscopies	6
Estimations of the Basal Metabolic Rate	94
Friedman Tests for Pregnancy	420
Kahn Tests	26,286
Prothrombin Time Determinations	70
Blood Groups—ABO and Rh	2,382
Coomb's Tests	70
Grouping of Stains (medico-legal)	32
Examinations of Stains and films in Cases of Alleged Rape	139
Age Assessments in Capital Charges	5
Medico-legal Reports on Bones	16

The laboratory work in connexion with the Kenya Blood Transfusion Service of the local branch of the British Red Cross Society was also continued throughout the year.

Biochemical Section

Staff

Since the retirement of the former Biochemist in July, 1951, his position had remained unfilled until the arrival of his successor at the beginning of July, 1953. The appointment of the latter officer had been made earlier in the year, but before proceeding to Kenya he spent three months with Professor B. S. Platt's unit at the London School of Hygiene and Tropical Medicine undergoing a condensed course of nutritional studies.

For the first half of 1953, therefore, the entire burden of the work of the section fell, as during the previous year, upon its Laboratory Technician, with the assistance of one trained African and two others. No praise is too high for the admirably efficient manner in which this responsibility was accepted and discharged.

Routine Work

A total of 2,321 investigations of urine were carried out, of which 1,807 were general examinations and 514 more specialized ones. Blood examinations numbered 966, while 1,687 determinations were performed on 763 specimens of cerebro-spinal fluid. Liver, renal and pancreatic physiological efficiency tests, together with gastric investigations including fractional test meals, totalled 287; 221 examinations of fæces were done; and all others, grouped under the heading "Miscellaneous", totalled 71. Since the advent elsewhere in the laboratory of a Sanborn "Metabulator" the routine determination of basal metabolic rates has for the time being ceased to fall within the province of the Biochemical Section.

OTHER ACTIVITIES

A large proportion of the Biochemist's time has been occupied with paper work in connexion with nutritional and dietetic problems that have arisen within the Colony. Thus the questions of institutional dietaries, notably those of schools and prisons, received much attention and were the subjects of a number of memoranda for the use of the appropriate authorities. Evidence was given before the Minimum Wages Sub-Committee to be used in the compilation of the Carpenter Report in the following year, and an Appendix by the Biochemist, based upon the recommendations submitted to that Committee, will be published in the said Report.

Efforts to devise a simple process, operable by uneducated Africans, for the production of a palatable and nutritionally valuable hydrolysate (similar to the commercial article "Marmite") from waste brewery yeast were not successful. A method was found for the detection and estimation of small concentrations of a potentially dangerous preservative whose use in foodstuffs and beverages had been advocated but prohibited in the Colony.

ANIMAL HOUSE

The animal house serves all sections of the laboratory including the Division of Insect-borne Diseases. It was in the charge of a senior African Laboratory Assistant who, in 1952, had to be sent to England for medical treatment; when it was completed and while he was being kept under observation as to its efficacy, he was sent on a study course in animal management at the National Institute for Medical Research.

The approximate average animal population has been:—

Rabbits	250
Guinea Pigs	270
Rats	1,500
Golden Hamsters	50
Mice	300
Monkeys	32
Horse	1
Hens	36

The sheep used for vaccine production are housed separately and looked after by the Vaccine Section.

REVENUE

The revenue received from the sale of vaccines to other governments and from fees for the examination of specimens from patients not entitled to free laboratory services was £12,945.

Training of Africans as Laboratory Assistants

The Technologist in charge of training was on leave for six months of the year during which period formal lectures and demonstrations could not be continued and the trainees were dispersed among the various sections of the laboratory to work under supervision on routine examinations.

During the year, two first-year and two second-year students asked to have their deeds of apprenticeship cancelled and went elsewhere for higher pay or a shorter period of training.

At the request of the Medical Officer in Charge of Training, to extend the training period to a full four years, the final examinations are in future to be held in February and no learners therefore qualified in 1953. The numbers of each year in training, excluding the four who resigned, were:—

1st year	2
2nd year	5
3rd year	5
4th year	5

The minimum educational standard required on entry has been kept at Form IV.

Refresher courses were given to six Grade II Assistants during the year.

Visiting Workers

Drs. Henry Foy and Athena Kondi, of the Wellcome Trust Laboratories, continued to use the Medical Research Laboratory, Nairobi, as their base although they were away, first in the Sudan and then in Europe for nearly six months of the year. They continued to investigate cases of anæmia in African patients in King George VI Hospital and to study the effects of antibiotics upon them. They also continued and virtually completed their survey of the incidence of the sickle-cell trait in different tribes of East Africa and of the Southern Sudan.

Dr. Cornelius B. Phillip, Assistant Director of the National Microbiological Institute, Rocky Mountain Laboratory, Hamilton, Montana, U.S.A., paid a short visit in August to study local ticks and rickettsioses. He failed to isolate a strain directly from a human case owing to the lack of a suitable opportunity but he did obtain a strain of rickettsiæ of the spotted fever group from wild-caught *Hæmaphysalis leachii.*

PROVINCIAL LABORATORIES

The Provincial Laboratories continued to do valuable work and to justify the policy of decentralization. Those at Mombasa and at Kisumu were especially useful to the private practitioners and medical officers in Native Hospitals throughout the Province.

Coast Province

The Laboratory at the Native Civil Hospital, Mombasa, was left in the charge of the Asian Laboratory Assistant there for three months at the beginning of the year when the Technologist normally in charge of it had to be sent on leave, with some urgency, on medical grounds.

The Emergency led to the removal of three Kikuyu who had been working there as Laboratory Assistants and had to be replaced by others of coastal tribes.

The total number of specimens examined was 52,447, an excess of 3,406 over the figure for 1952. The entire staff by the end of the year was working at far too high a pressure and a second Technologist will be posted to this laboratory on his return from leave in the new year.

The work done is summarized thus:—

Blood Films for Parasites—of which 3,430 were malaria positive and four contained microfilariæ	15,967
Splenic Films—3 of which contained Leishman-Donovan bodies ..	16
Hæmatology—examinations performed	4,412
Cerebro-spinal Fluid—examinations performed	103
Serology—tests performed	10,231
Biochemical Examinations—total performed	4,862
Fæces for Ova and Cysts—examinations performed	8,357

S. hæmatobium was identified in 847 specimens of urine out of a total of 2,380 examined.

Rift Valley Province—Nakuru Laboratory

The Technologist in charge was conscripted into the Forces early in the year and no substitute could be sent for a period. A total of 17,509 examinations was recorded which were as follows:—

Blood Slides for parasites—of which 209 were malaria positive and one contained microfilariæ	4,528
Hæmatological Examinations	1,179
Serological Examinations	4,664
Blood Groupings	312
Blood Chemistry—Analyses	69
Fæces Examinations	1,520
Urine Examinations	765
Cerebro-spinal Fluid Examinations	188
Microscopical Examinations for Organisms	3,904
Cultures	250
Miscellaneous Examinations	131

Revenue: The revenue earned by this laboratory for the year was £220.

Nyanza Province—Kisumu Laboratory

The Technologist-in-charge was away on four months (curtailed) vacation leave during the year and no relief was available. During his absence, the laboratory was run, with reduced scope, by a senior African Laboratory Assistant.

The following examinations were carried out:—

Blood Films—of which 2,121 were malaria positive, 13 contained *B. duttoni*, four microfilariæ and 30 trypanosomes	8,588
Hæmatological Examinations	1,960
Blood Analyses	30
Serology—tests performed	8,720
Cerebro-spinal Fluid Examinations	97
Fæces Examinations	5,451
Urine Examinations—of these, 331 contained ova of *S. hæmatobium*	3,837
Sputa Examinations	1,565
Films for Bacteriological Examinations	836
Gland Puncture Films for Trypanosomes	68
Bacteriological Cultures	142
Miscellaneous Examinations	48

OUT-STATION LABORATORIES

The laboratories in the out-stations, single rooms in the District Hospitals and Health Centres run by one or at the most two graded African Laboratory Assistants continued in most stations to do a great deal of work as the returns which follow show. With the wider training now in force and the refresher courses for those who joined the service too early to benefit from it the scope of the work in these small laboratories has increased and most of them can undertake more than the simple microscopical examinations which comprise their limits a few years ago. Cultural bacteriology, histology, biochemistry and rhesus grouping are not however attempted.

These laboratories are not visited as often as they ought to be and unless the Medical Officer of the hospital is particularly interested in clinical pathology the assistants are left too much to their own devices; their standards in the circumstances do them credit. Their laboratory accommodation is not always suitable and there are still hospitals where they have only a rickety table in the corner of an office or dispensary. Even some of the newer rooms built specially for them seem to have been designed without reference to anyone experienced in laboratory work and are inconveniently arranged and inadequately fitted out. It is now the practice however for all new plans to be discussed at the Medical Research Laboratory before they are finally approved.

EXAMINATIONS RECORDED AT OUT-STATION LABORATORIES

Coast Province	*Fæces*	*Blood Slides*	*Others*	*Total*
Mombasa Infectious Diseases Hospital	211	649	2,918	3,778
Port Reitz Chest Hospital ..	1,131	660	9,017	10,808
Malindi	1,404	3,399	1,135	5,938
Msambweni	1,010	1,162	2,041	4,213
Kilifi	1,310	2,367	2,312	5,989
Wesu	1,473	6,165	1,997	9,635
Central Province				
Nyeri	2,585	5,663	5,307	13,555
Embu	2,161	4,722	1,342	8,225
Meru	2,978	4,543	1,789	9,310
Keruguya	2,761	4,582	1,411	8,754
Fort Hall	4,488	7,573	3,196	15,257
Kiambu	1,525	2,688	2,732	6,945
Machakos	3,030	3,829	4,603	11,462
Kangundo	2,291	7,847	2,660	12,798
Kitui	2,389	1,633	4,518	8,540
Rift Valley Province				
Eldoret	3,975	9,613	5,876	19,464
Kitale	1,526	5,151	2,093	8,770
Kapsabet	277	3,227	499	4,003
Kabarnet (Laboratory opened August, 1953)	61	333	227	621
Nyanza Province				
Bungoma	727	4,031	2,064	6,822
Kakamega	3,037	8,740	4,085	15,862
Kericho	2,885	5,257	2,098	10,240
Kisii	2,054	20,574	3,849	26,477
Masai Province				
Kajiado	330	871	405	1,606
Narok	702	1,174	984	2,860

RETURN OF DISEASES—OUT-PATIENTS, 1953

Code	Disease	European			Asian			African		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
	INFECTIOUS AND PARASITIC DISEASES									
001–008	Respiratory Tuberculosis	1	1	2	714	238	942	2,188	588	2,776
010–019	Other Tuberculosis	3	3	6	—	—	—	1,168	784	1,952
020–029	Syphilis	—	—	—	2	—	2	9,120	5,353	14,473
030–035	Gonorrhœa	3	1	4	16	2	18	16,306	5,876	22,182
036–039	Other Venereal Diseases	1	—	1	69	23	92	2,224	696	2,920
045	Bacillary Dysentery	15	34	49	71	48	119	4,304	2,941	7,245
046	Amœbic Dysentery	21	12	33	16	4	20	1,394	1,586	2,980
055	Diphtheria	—	—	—	—	—	—	16	5	21
056	Whooping-cough	22	17	39	22	12	34	2,672	2,828	5,500
057, 340	Meningitis (excluding Tuberculosis)	—	—	—	—	—	—	6	6	12
058	Plague	—	—	—	—	—	—	—	—	—
060	Leprosy	—	—	—	—	—	—	609	251	860
061	Tetanus	—	—	—	—	—	—	30	22	52
062	Anthrax	—	—	—	1	1	2	99	48	147
071	Relapsing Fever	—	—	—	—	—	—	104	61	165
073	Yaws	—	—	—	—	—	—	3,699	3,334	7,033
080	Acute Poliomyelitis	2	1	3	—	—	—	19	10	29
084	Variola Major	—	—	—	—	—	—	—	—	—
084	Variola Minor	—	—	—	—	—	—	—	—	—
085	Measles	18	339	357	26	10	36	2,486	2,112	4,598
086	Rubella	5	61	66	1	—	1	—	—	—
087	Chicken-pox	22	99	121	9	5	14	1,433	760	2,193
088	Herpes Zoster	13	12	25	6	2	8	501	395	896
089	Mumps	15	24	39	14	7	21	1,367	1,006	2,373
092	Infectious Hepatitis	7	12	19	7	3	10	559	376	935
095	Trachoma	3	—	3	26	11	37	1,881	1,791	3,672
110	B.T. Malaria	2	—	2	—	—	—	164	105	269
111	Qt. Malaria	1	—	1	1	—	1	821	651	1,472
112	S.T. Malaria	113	85	198	139	71	210	9,393	6,307	15,700
115	Blackwater	—	—	—	—	—	—	—	—	—
121	Trypanosomiasis	—	—	—	—	—	—	29	30	59
120·0	Schistosomiasis (Hæmatobium)	1	—	1	1	—	1	2,640	1,092	3,732
123·1	Schistosomiasis (Mansoni)	1	2	3	—	—	—	564	1,450	2,014
126	Tapeworm	11	11	22	6	1	7	12,714	4,674	17,388
127	Onchocerciasis	—	—	—	—	—	—	3	—	3
129	Ankylostomiasis	1	4	5	7	3	10	2,433	1,694	4,127
130·0	Ascariasis	1	2	3	26	19	45	5,638	5,202	10,840

RETURN OF DISEASES—OUT-PATIENTS,—1953—(*Contd.*)

Code	Disease	European			Asian			African		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
131	Tinea	26	33	59	29	11	40	2,612	1,490	4,102
135	Scabies	—	—	—	102	85	187	22,986	14,683	37,669
N.O.S. 036–138	Other Infective and Parasitic Diseases	46	39	85	732	93	825	14,950	6,945	21,895
	New Growths									
140–205	Malignant Neoplasms	3	6	9	—	1	1	75	75	150
210–239	Benign and other Neoplasms	12	15	27	2	—	2	396	185	581
	Allergic Metabolic and Blood Diseases									
241	Asthma	19	37	56	108	52	160	1,637	972	2,609
286·6	Kwashiorkor	—	—	—	4	—	4	936	819	1,755
290–293	Anæmia	7	43	50	59	104	163	1,251	1,188	2,439
N.O.S. 240–299	Other Allergic, Endocrine, Metabolic and Nutritional Diseases	50	70	120	87	43	130	1,444	1,036	2,480
	Diseases of Nervous System and Sense Organs									
300–326	Mental Disorder	11	4	15	1	—	1	139	81	220
353	Epilepsy	4	—	4		4	4	249	154	403
N.O.S. 330–369	Other Diseases of the Nervous System and Sense Organs	87	116	203	73	30	103	1,792	720	2,512
	Disease of Eye and Ear									
370	Conjunctivitis and Ophthalmia	50	74	124	459	143	602	28,910	19,262	48,172
373	Stye	26	25	51	57	8	65	892	415	1,307
389	Blindness	—	—	—	3	—	3	716	430	1,146
N.O.S. 371–388	Other Diseases of Eye (not Trachoma)	400	268	668	878	303	1,181	6,673	2,534	9,207
390–398	Diseases of Ear and Mastoid Process	211	197	408	188	105	293	12,020	7,271	19,291
	Circulatory Diseases									
400–447	Diseases of the Heart	22	31	53	6	3	9	99	78	177
450–468	Other Circulatory Diseases	56	79	135	8	4	12	279	230	509

RETURN OF DISEASES—OUT-PATIENTS, 1953—(*Contd.*)

Code	Disease	European			Asian			African		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
	Respiratory Disease									
490–493 N.O.S.	Pneumonia	30	53	83	33	24	57	3,912	2,546	6,458
470–527	Other Diseases of the Respiratory System (including Coryza, Pharyngitis and Bronchitis)	1,040	1,564	2,604	3,059	736	3,795	160,606	96,298	256,904
	Alimentary Diseases									
530–535	Dental Caries—Other Disease of Teeth and Gums	27	53	80	87	50	137	19,714	7,181	26,895
537	Glossitis	—	—	—	9	7	16	267	304	571
536–538	Stomatitis and Other Diseases of the Buccal Cavity and Salivary Glands	226	452	678	241	158	399	8,007	5,363	13,370
560–561, 570	Intestinal Obstruction and Hernia	24	14	38	1	—	1	459	32	491
571·0	Gastro-enteritis under 2 years	22	28	50	140	132	272	14,078	14,901	28,979
571·1	Gastro-enteritis over 2 years	166	274	440	255	98	353	18,462	9,519	27,981
N.O.S. 539–587	Other Diseases of Alimentary System	266	225	491	634	214	848	41,933	33,880	75,813
	Genito-Urinary Diseases									
613	Hydrocele	3	—	3	—	—	—	340	—	340
N.O.S. 590–617	Other Diseases of Genito-Urinary System and Male Genital Organs	89	—	89	55	—	55	2,967	—	2,967
636	Sterility (Female)	—	4	4	—	—	—	—	1,291	1,291
N.O.S. 620–637	Other Diseases of Uterus and Female Genital Organs	—	355	355	—	86	86	—	5,563	5,563
	Normal Pregnancy	—	157	157	—	12	12	—	7,504	7,504
650–652	Abortion	—	17	17	—	12	12	—	1,875	1,875
N.O.S. 640–689	Other Diseases of Childbirth	—	28	28	—	2	2	—	638	638
	Skin and Musculo-Skeletal Diseases									
690–698	Boils and Infections of Skin and Subcutaneous Tissues	382	353	735	571	186	757	27,540	14,383	41,923
715	Chronic Ulcers	7	5	12	232	63	295	53,980	28,395	82,375
N.O.S. 700–716	Other Diseases of the Skin	152	244	396	171	43	214	11,683	6,759	18,442
720–759	Diseases of Bones, Joints, Muscles and Malformation	364	280	644	539	136	675	37,511	20,773	58,284

RETURN OF DISEASES—OUT-PATIENTS, 1953—(*Contd.*)

Code	Disease	European			Asian			African		
		Male	Female	Total	Male	Female	Total	Male	Female	Total
	ILL-DEFINED DISEASES AND INJURIES									
760–776	Neonatal Diseases	—	7	7	—	4	4	—	374	374
788·8	Pyrexia of Unknown Origin	256	300	556	834	153	987	63,450	37,112	100,562
N.O.S.										
780–795	All Other Ill-defined Causes of Morbidity	183	206	389	231	28	259	3,594	1,423	5,017
N.800–N.839	Fractures and Dislocations	167	61	228	10	—	10	1,899	989	2,888
N.840–N.848	Sprains	102	66	168	74	14	88	6,769	2,407	9,176
N.930–N.936	Foreign Bodies	38	21	59	47	2	49	2,701	1,549	4,250
N.940–N.949	Burns and Scalds	29	16	45	101	32	133	9,480	6,239	15,419
N.960–N.979	Poisoning	—	4	4	—	—	—	336	207	543
N.O.S.										
N.850–N.999	Other Injuries and Wounds	569	298	867	1,016	275	1,291	84,926	30,090	115,016
Y.00–Y 18	Examination	1,466	623	2,089	1,031	24	1,055	14,303	3,094	17,397
	TOTAL	6,920	7,465	14,385	13,337	3,940	17,277	773,557	451,291	1,224,848

RETURN OF DISEASES—IN-PATIENTS, 1953

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.		General Infectious and Parasitic Diseases												
1	001–008	Respiratory Tuberculosis	7	11	18	1	83	22	105	6	1,759	1,029	2,788	499
2	010	Tuberculosis of Meninges and Central Nervous System	—	—	—	—	2	1	3	1	72	51	123	81
3	011	Tuberculosis of Intestines, Peritoneum and Mesenteric Glands	—	—	—	—	—	3	3	—	100	65	165	27
4	012, 013	Tuberculosis of Bones and Joints	—	2	2	—	3	5	8	—	234	131	365	19
5	014–019	Tuberculosis—All other Forms	1	4	5	—	7	—	7	—	353	233	586	61
6	020	Congenital Syphilis	—	—	—	—	—	—	—	..	116	92	208	24
7	021·0, 021·1	Primary Syphilis	3	—	3	—	2	—	2	—	176	151	327	—
7	021·2–021·4	Secondary Syphilis	—	—	—	—	2	—	2	—	496	411	907	3
8	024	Tabes Dorsalis	—	—	—	—	—	—	—	—	4	—	4	—
9	025	General Paralysis of Insane	—	—	—	—	—	—	—	—	7	6	13	2
10	022, 023	Cardio Vascular Syphilis	—	—	—	—	1	—	1	—	14	5	19	3
10	026–029	All other Syphilis	—	—	—	—	1	—	1	—	144	93	237	8
11	030, 031	Gonorrhœa, Genito-Urinary	1	—	1	—	2	—	2	—	796	374	1,170	1
11	033	Gonoccal Infection of Eye	—	—	—	—	—	—	—	—	78	59	137	—
11	032, 034, 035	Other Gonoccal Infections	—	—	—	—	2	—	2	—	160	123	283	—
12	040	Typhoid Fever	6	3	9	—	5	—	5	—	629	446	1,075	141
13	041, 042	Salmonella Infections	1	2	3	1	—	—	—	—	17	10	27	6
14	043	Cholera	—	—	—	—	—	—	—	—	—	—	—	—
15	044	Brucellosis	—	1	1	—	1	—	1	—	70	41	111	4
16	045	Bacillary Dysentery	7	15	22	—	28	—	28	—	862	586	1,448	106
16	046	Amœbiasis	33	8	41	—	15	2	17	—	645	616	1,261	17
16	047, 048	Other unspecified Dysentery	—	4	4	—	12	4	16	—	463	339	802	33
17	050	Scarlet Fever	—	—	—	—	—	—	—	—	—	—	—	—
18	051	Streptococcal Sore Throat	—	3	3	—	—	—	—	—	83	72	155	3
19	052	Erysipelas	—	—	—	—	—	—	—	—	3	1	4	—
20	053	Septicæmia and Pyæmia	1	—	1	—	2	—	2	—	35	23	58	26
21	055	Diphtheria	—	1	1	—	5	—	5	—	19	7	26	15
22	056	Whooping Cough	—	—	—	—	4	—	4	—	763	943	1,706	95
23	057	Meningococcal Infections	—	—	—	—	1	—	1	—	62	33	95	34
24	058	Plague	—	—	—	—	—	—	—	—	5	4	9	3
25	060	Leprosy	—	—	—	—	1	—	1	—	184	53	237	8
26	061	Tetanus	—	—	—	—	4	1	5	3	196	98	294	136
27	062	Anthrax	2	—	2	—	—	—	—	—	276	193	469	29

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.														
28	080	Acute Poliomyelitis	14	—	14	—	1	2	3	—	33	27	60	6
29	082	Acute Infectious Encephalitis	1	6	7	—	—	1	1	—	40	42	82	9
30	081, 083	Late Effects Poliomyelitis and Infectious Encephalitis	—	1	1	1	7	4	11	—	33	24	57	8
31	084	Variola Major	—	—	—	—	—	—	—	—	—	—	—	—
31	084	Variola Minor	—	—	—	—	—	—	—	—	—	—	—	—
32	085	Measles	17	11	28	—	4	3	7	—	1,462	1,064	2,526	41
33	091	Yellow Fever	—	—	—	—	—	—	—	—	—	—	—	—
34	092	Infectious Hepatitis	20	14	34	—	4	—	4	2	163	160	323	21
35	094	Rabies	—	—	—	—	—	—	—	—	—	—	—	—
36	100	Louse-borne Epidemic Typhus	—	—	—	—	—	—	—	—	—	—	—	—
36	101	Flea-borne Endemic Typhus	—	—	—	—	—	—	—	—	—	—	—	—
36	104	Tick-borne Typhus	9	4	13	—	—	—	—	—	6	3	9	—
36	102–108 N.O.S.	Other Rickettsial Diseases	2	—	2	—	—	—	—	—	—	1	1	—
37	110	B.T. Malaria	6	—	6	—	—	—	—	—	51	33	84	2
37	111	Qt. Malaria	3	—	3	—	—	1	1	—	116	35	151	—
37	112	S.T. Malaria	69	27	96	—	76	18	94	3	3,960	2,854	6,805	236
37	115	Blackwater Fever	—	—	—	—	—	—	—	—	9	—	9	4
37	113–117 N.O.S.	Other Forms of Malaria	—	—	—	—	—	—	—	—	—	—	—	—
38	123·0	Schistosomiasis (Hæmatobium)	—	—	—	—	—	—	—	—	601	372	973	—
38	123·1	Schistosomiasis (Mansoni)	—	1	1	—	2	—	2	—	150	132	282	—
38	123·2	Schistosomiasis (Japonicum)	—	—	—	—	—	—	—	—	—	—	—	—
38	123·3	Other Unspecified Schistosomiasis	—	1	1	—	—	—	—	—	60	49	109	—
39	125	Hydatid Disease	—	—	—	—	—	—	—	—	16	8	24	6
40	127	Onchocerciasis	—	—	—	—	—	—	—	—	5	1	6	—
40		Loiasis	—	—	—	—	—	—	—	—	—	—	—	—
40	127	Filariasis (Elephantiasis)	—	—	—	—	2	—	2	—	71	45	116	—
40	127	Other Filariasis	—	—	—	—	—	—	—	—	10	2	12	1
41	129	Ankylostomiasis	—	—	—	—	—	—	—	—	543	469	1,012	4
42	126	Tapeworm and other Cestode Infestation	18	9	27	—	2	—	2	—	612	364	976	—
42	130·0	Ascariasis	—	—	—	—	1	4	5	—	350	458	808	—
42	130·3	Guineaworm	—	—	—	—	—	—	—	—	5	1	6	—
42	124–130 N.O.S.	Other Diseases due to Helminths	—	—	—	—	—	—	—	—	42	35	77	—
43	036	Chancroid	—	—	—	—	1	—	1	—	52	3	55	—
43	037	Lymphogranuloma Venereum	—	—	—	—	—	—	—	—	9	3	12	—

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.														
43	038	Granuloma Inguinale	—	—	—	—	1	—	1	—	44	8	52	—
43	039	Other Unspecified Venereal Diseases	—	—	—	—	—	—	—	—	26	10	36	—
43	049	Food Poisoning, Infective and Toxic (excepting Salmonella Infections)	3	1	4	1	—	—	—	—	57	70	127	2
43	071·0	Relapsing Fever (Louse-borne)	—	—	—	—	—	—	—	—	—	—	—	—
	071·1	Relapsing Fever (Tick-borne)	—	—	—	—	—	—	—	—	114	82	196	3
43	072	Weil's Diseases	—	—	—	—	—	—	—	—	5	—	5	—
43	073	Yaws	—	—	—	—	—	—	—	—	260	262	522	—
43	086	Rubella	—	—	—	—	—	—	—	—	—	—	—	—
43	087	Chicken-pox	8	6	14	—	2	—	2	—	800	224	1,024	1
43	088	Herpes Zoster	—	—	—	—	—	—	—	—	68	27	95	1
43	089	Mumps	1	2	3	—	2	—	2	—	603	134	737	—
43	090	Dengue	—	1	1	—	—	—	—	—	3	—	3	—
43	095	Trachoma	—	—	—	—	1	—	1	—	206	251	457	—
43	096·7	Sandfly Fever	—	—	—	—	—	—	—	—	11	—	11	2
43	120	Leishmaniasis	—	—	—	—	—	—	—	—	264	108	372	48
43	121·0	Trypanosomiasis (Gambiense)	—	—	—	—	—	—	—	—	38	77	115	10
43	121·0	Trypanosomiasis (Rhodesiense)	—	—	—	—	—	—	—	—	—	—	—	—
43	121 2	Other Unspecified Trypanosomiasis	—	—	—	—	—	—	—	—	13	2	15	1
43	131	Dermatophytosis (Tinea)	—	—	—	—	—	—	—	—	22	17	39	—
43	135	Scabies	—	—	—	—	—	3	3	—	481	446	927	—
	N.O.S.													
43	054–055 N.O.S.	Other Infectious and Protozoal Diseases	8	10	18	—	—	—	—	—	54	52	106	—
43	132–138	Other Parasitic Diseases	2	1	3	—	3	—	3	—	32	51	83	—
		New Growths												
44	140–148	Malignant Neoplasm of Mouth and Pharynx	—	—	—	—	1	1	2	—	12	12	24	2
45	150	Malignant Neoplasm of Oesophagus	—	—	—	—	—	—	—	—	9	—	9	5
46	151	Malignant Neoplasm of Stomach	5	—	5	2	—	—	—	—	8	7	15	1
47	152, 153	Malignant Neoplasm of Intestine	2	3	5	1	1	—	1	—	20	6	26	9
48	154	Malignant Neoplasm of Rectum	—	2	2	—	8	2	10	1	3	2	5	3
49	161	Malignant Neoplasm of Larynx	—	—	—	—	3	—	3	—	4	2	6	1
50	162, 163	Malignant Neoplasm of Trachea, Bronchus and Lung not Specified as Secondary	7	—	7	2	3	—	3	—	3	3	6	—
51	170	Malignant Neoplasm of Breast	—	7	7	2	—	—	—	—	5	33	38	1

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.														
52	171	Malignant Neoplasm of Cervix Uteri ..	—	1	1	—	—	3	3	—	—	80	80	9
53	172–174	Malignant Neoplasm of other Unspecified Parts of Uterus	—	—	—	—	—	1	1	1	—	53	53	7
54	177	Malignant Neoplasm of Prostate ..	2	—	2	—	1	—	1	—	18	—	18	1
55	190, 191	Malignant Neoplasm of Skin	—	—	—	—	—	—	—	—	56	61	117	11
56	196, 197	Malignant Neoplasm of Bone and Connected Tissue	2	—	2	1	2	2	4	—	44	34	78	11
57	155	Malignant Neoplasm of Liver and Bile Passages (Primary)	—	—	—	—	3	—	3	—	82	25	107	31
	N.O.S.													
57	156–199	Malignant Neoplasm of all other and Unspecified Sites	15	—	15	3	12	5	17	1	213	111	324	60
58	204	Leukæmia and Aleukæmia	—	—	—	—	—	—	—	—	24	11	35	13
59	200–203, 205	Lymphosarcoma and other Neoplasm of Lymphatic and Hæmatopoietic Systems	—	—	—	—	1	—	1	—	76	36	112	13
60	210–239	Benign Neoplasms and Unspecified Neoplasms	—	—	—	—	5	2	7	—	137	141	278	3
		Allergic, Metabolic and Blood Diseases												
61	250, 251	Non-toxic Goitre	—	—	—	—	1	2	3	—	3	32	35	—
62	252	Thyrotoxicosis	—	—	—	—	1	—	1	—	—	2	2	—
63	260	Diabetes Mellitus	1	—	1	—	20	4	24	1	28	8	36	5
64	280	Beri-beri	—	—	—	—	—	—	—	—	5	1	6	—
64	281	Pellagra	—	—	—	—	2	1	3	—	139	58	197	—
64	282	Scurvy	—	—	—	—	—	—	—	—	14	7	21	1
64	286·6	Kwashiorkor	—	—	—	—	2	1	3	—	295	448	743	161
64	283–286	Other Deficiency States	—	—	—	—	2	—	2	—	197	158	355	69
65	290	Pernicious and other Hyperchromic Anæmias	—	—	—	—	1	—	1	—	22	41	63	9
65	291	Iron Deficiency Anæmias	—	1	1	—	—	2	2	—	63	56	119	40
65	292, 293	Other Anæmias	2	3	5	—	13	18	31	4	245	294	539	95
66	241	Asthma	4	7	11	1	19	7	26	—	390	186	576	6
	N.O.S.													
66	240–299	Other Allergic, Endocrine, Metabolic and Blood Diseases	18	11	29	—	23	8	31	—	132	68	200	12

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.		Diseases of Nervous System and Sense Organs												
67	300–309	Psychoses	—	1	1	—	2	—	2	—	78	67	145	8
68	310–324, 326	Psychoneuroses and Disorders of Personality	1	1	2	—	21	4	25	—	56	36	92	2
59	325	Mental Deficiency	—	—	—	—	2	1	3	—	199	88	287	10
70	330–334	Vascular Lesions Affecting Central Nervous System	—	2	2	—	1	—	1	—	27	17	44	12
71	340·0	Meningitis due to H. Influenza	—	—	—	—	1	—	1	—	12	11	23	14
71	340·1	Meningitis due to Pneumococcus	1	—	1	—	1	—	1	1	104	55	159	95
71	340·2	Meningitis due to Other Organisms except Tuberculous and Syphilitic	—	—	—	—	1	—	1	—	78	48	126	46
71	340	Meningitis (except Meningococcal and Tuberculous)	—	—	—	—	—	—	—	—	67	60	127	42
72	345	Multiple Sclerosis	—	—	—	—	—	—	—	—	16	—	16	—
73	353	Epilepsy	1	—	1	—	3	—	3	—	145	68	213	12
74	370–379	Inflammatory Diseases of Eye	3	2	5	—	38	7	45	—	1,073	791	1,864	1
75	385	Cataract	4	2	6	—	29	13	42	—	176	96	272	—
76	387	Glaucoma	—	3	3	—	—	—	—	—	21	6	27	—
77	390	Otitis Externa	2	1	3	—	2	—	2	—	83	49	132	—
77	391–383	Otitis Media and Mastoiditis	8	5	13	—	6	—	6	1	303	219	522	6
77	394 N.O.S.	Other Inflammatory Diseases of Ear	6	2	8	—	8	—	8	—	76	42	118	—
78	341–369–395–398 N.O.S.	All other Diseases of Nervous System, Sense Organs and Auditory System	78	40	118	8	44	3	47	—	437	199	636	34
78	380–389	All other Diseases and Conditions of Eye	4	1	5	—	18	4	22	—	486	339	825	—
		Circulatory Diseases												
79	400–401	Rheumatic Fever	3	—	3	—	10	4	14	—	252	217	469	10
79	402	Chorea	—	—	—	—	—	—	—	—	4	6	10	2
80	410–416	Chronic Rheumatic Heart Disease	—	—	—	—	1	1	2	—	46	44	90	17
81	420–422	Arteriosclerotic and Degenerative Heart Disease	2	5	7	6	7	2	9	2	28	17	45	8
82	430–434	Other Diseases of Heart	5	1	6	5	27	8	35	10	200	146	346	118

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.														
83	440–443	Hypertension with Heart Disease ..	3	5	8	3	10	—	10	3	32	17	49	18
84	444–447	Hypertension without Mention of Heart	9	5	14	1	10	—	10	4	10	26	36	7
85	450–456	Diseases of Arteries	8	35	43	—	5	1	6	—	26	14	40	6
86	460–468	Other Diseases of Circulatory System ..	31	15	46	3	12	1	13	1	129	76	205	19
		Respiratory Diseases												
87	470–475	Acute Upper Respiratory Infections ..	36	16	52	—	87	1	88	—	650	447	1,097	7
88	480–483	Influenza	28	21	49	—	119	42	161	—	588	293	881	4
89	490	Lobar Pneumonia	20	7	27	—	20	10	30	—	4,618	2,096	6 714	395
90	491	Bronchopneumonia	3	2	5	—	15	7	22	—	3,925	3,378	7,303	959
91	492, 493	Primary Atypical, other and Unspecified Pneumonia	31	9	40	—	2	1	3	—	1,231	881	2,112	129
92	500	Acute Bronchitis	12	9	21	—	62	10	72	—	2,964	2,395	5,359	83
93	501, 502	Bronchitis, Chronic and Unqualified ..	6	10	16	—	1	—	1	—	980	708	1,688	14
94	510	Hypertrophy of Tonsils and Adenoids ..	29	29	58	—	78	63	141	—	667	618	1,285	11
95	518, 521	Empyema and Abscess of Lung	8	4	12	—	6	—	6	—	43	19	62	6
96	519	Pleurisy (other than Tuberculous) ..	9	5	14	—	9	—	9	—	232	107	339	4
97	523	Pneumoconiosis	—	—	—	—	4	22	26	—	1	2	3	—
97	N.O.S. 511–527	All other Respiratory Diseases	28	15	43	—	6	4	10	—	289	211	500	6
		Alimentary Diseases												
98	530	Dental Caries	6	5	11	—	30	5	35	—	115	128	243	—
98	531–535	All other Diseases of Teeth and Supporting Structures	8	1	9	—	10	3	13	—	190	202	392	4
99	540	Ulcer of Stomach	4	6	10	—	4	—	4	—	27	8	35	2
100	541	Ulcer of Duodenum	40	16	56	1	9	1	10	—	52	27	79	6
101	543	Gastritis and Duodenitis	15	7	22	—	17	2	19	—	217	209	426	10
102	550–553	Appendicitis	124	51	175	—	63	22	85	1	109	29	138	7
103	560, 561, 570	Intestinal Obstruction and Hernis ..	35	11	46	1	74	12	86	—	763	152	915	109
104	571·0	Gastro-Enteritis and Colitis between Four Weeks and Two Years	7	5	12	1	44	7	51	4	1,647	1,592	3,239	452
104	571·1	Gastro-Enteritis and Colitis, Ages Two Years and Over	16	12	28	—	47	11	58	—	1,218	928	2,146	129
104	572	Chronic Enteritis and Ulcerative Colitis	6	9	15	—	3	—	3	—	111	126	237	17
105	581	Cirrhosis of Liver	3	—	3	2	1	1	2	—	168	163	331	56

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.														
106	584, 585	Cholelithiasis and Cholecystitis ..	14	25	39	—	1	5	6	—	28	20	48	1
107	536–587	Other Diseases of Digestive System ..	74	46	120	—	94	26	120	5	1,115	1,081	2,196	69
		Genito-Urinary Diseases												
108	590	Acute Nephritis	—	2	2	—	3	—	3	1	92	68	160	17
108	591–599	Chronic, other and Unspecified Nephritis	1	2	3	—	2	1	3	—	116	70	186	43
110	600	Infections of Kidney (other than Tuberculous)	8	9	17	—	2	4	6	1	61	98	159	14
111	602, 604	Calculi of Urinary System	17	9	26	—	18	1	19	—	.. 27	13	40	2
112	610	Hyperplasia of Prostate	6	—	6	2	9	—	9	1	81	—	81	10
113	620, 621	Diseases of Breast (not Neoplastic) ..	—	2	2	—	—	—	—	—	—	306	306	—
114	613	Hydrocele	4	—	4	—	16	—	16	—	179	—	179	1
114	634 N.O.S.	Disorders of Menstruation	—	7	7	—	—	10	10	—	—	749	749	1
114	601–617 N.O.S.	Other Diseases of Genito-Urinary System and Male Genital Organs ..	56	—	56	—	48	—	48	—	691	—	691	9
114	622–637	Other Diseases of Uterus and Female Genital Organs	—	60	60	—	—	102	102	—	—	1,778	1,778	28
		Diseases of Pregnancy Puerperium												
115	640–641, 681, 682, 684	Sepsis of Pregnancy, Childbirth and the Puerperium	—	—	—	—	—	—	—	—	—	196	196	6
116	642, 652, 685, 686	Toxæmias of Pregnancy and the Puerperium	—	1	1	—	—	3	3	—	—	111	111	5
117	643, 644	Hæmorrhage of Pregnancy and Childbirth	—	1	1	—	—	7	7	—	—	268	268	38
118	650	Abortion without Mention of Sepsis or Toxæmia	—	7	7	—	—	31	31	1	—	1,752	1,752	4
119	650	Abortion with Sepsis	—	—	—	—	—	16	16	—	—	392	392	6
120	660 N.O.S.	Delivery without Complication	—	38	38	—	—	80	80	—	—	7,841	7,841	—
120	645–689	Other Complications of Pregnancy, Childbirth and Puerperium	—	11	11	—	—	65	65	2	—	1,542	1,542	91

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.		Skin and Musculo-Skeletal Diseases												
121	690–698	Infections of Skin and Subcutaneous Tissue	39	24	63	—	87	14	101	—	2,351	1,425	3,776	15
122	720–725	Arthritis and Spondylitis	15	5	20	—	22	4	26	—	653	278	931	1
123	726, 727	Muscular Rheumatism and Rheumatism, Unspecified	21	14	35	—	43	—	43	1	1,006	644	1,650	3
124	730	Osteomyelitis and Periostitis	7	2	9	—	16	3	19	—	398	211	609	17
125	737, 745–749	Ankylosis and Acquired Musculo-skeletal Deformities	8	2	10	—	17	4	21	—	83	59	142	1
126	715	Chronic Ulcer of Skin	1	2	3	—	26	5	31	—	4,592	2,897	7,489	6
126	700–714, 716	All other Diseases of Skin	9	1	10	—	39	6	45	—	1,267	738	2,005	13
126	731–736, 738–744	All other Diseases of Musculo-skeletal System	23	2	25	—	41	14	55	—	895	461	1,356	7
127	751	Spina Bifida and Meningocele	—	—	—	—	—	—	—	—	45	161	206	6
128	754	Congenital Malformations of Circulatory System N.O.S.	—	—	—	—	—	—	—	—	5	—	5	—
129	750–759	Other Congenital Malformations	1	—	1	—	11	3	14	—	133	95	228	11
		Diseases of Newborn												
130	760	Birth Injuries	—	—	—	—	—	—	—	—	6	91	97	2
131	762	Post-natal Asphyxia and Atelectasis	—	—	—	—	—	—	—	—	7	2	9	3
132	764	Diarrhœa of Newborn (under Four Weeks)	—	—	—	—	3	2	5	—	29	37	66	4
132	765	Ophthamia Neonatorum	—	—	—	—	—	—	—	—	5	11	16	—
132	763, 766–768	Other Infections of Newborn	—	—	—	—	—	—	—	—	18	21	39	4
133	770	Hæmolytic Disease of Newborn	—	—	—	—	—	—	—	—	3	—	3	—
134	769, 771, 772	All other Defined Diseases of Early Infancy	—	—	—	—	—	1	1	—	26	30	56	19
135	773, 776	Ill-defined Diseases Peculiar to Early Infancy and Immaturity, Unqualified	—	—	—	—	1	4	5	—	80	558	638	39

RETURN OF DISEASES—IN-PATIENTS, 1953—(*Contd.*)

List No.	Code	Diseases	European				Asian				African			
			Admission			Total Deaths	Admission			Total Deaths	Admission			Total Deaths
			Male	Female	Total		Male	Female	Total		Male	Female	Total	
A.		ILL-DEFINED DISEASES												
136	794	Senility without Mention of Psychosis ..	—	—	—	—	—	1	1	—	50	29	79	28
137	788·8	Pyrexia of Unknown Origin	100	35	135	—	343	109	452	1	7,402	4,554	11,956	249
137	793	Observation, without Need for Further Medical Care	33	22	55	—	30	17	47	1	763	1,814	2,577	2
137	N.O.S. 780–795	All other Ill-defined Causes of Morbidity	15	12	27	—	55	26	81	—	1,266	2,218	3,484	43
A.N.		INJURIES												
138	N.800–N.804	Fracture of Skull	12	5	17	1	12	2	14	5	243	47	290	65
139	N.805–N.809	Fracture of Spine and Trunk	4	3	7	—	11	4	15	—	125	40	165	19
140	N.810–N.829	Fracture of Limbs	72	37	109	6	108	16	124	2	2,243	555	2,798	48
141	N.830–N.839	Dislocation without Fracture	11	6	17	—	5	2	7	—	332	109	441	—
142	N.840–N.848	Sprains and Strains of Joints and Adjacent Muscle	11	4	15	—	28	1	29	1	437	164	601	—
143	N.850–N.856	Head Injury (excluding Fracture) ..	11	6	17	4	11	5	16	1	443	132	575	19
144	N.860–N.869	Internal Injury of Chest, Abdomen and Pelvis	3	—	3	—	6	1	7	2	270	124	394	35
145	N.870–N.908	Laceration and Open Wounds	49	16	65	—	137	14	151	—	4,441	1,322	5,763	86
146	N.910–N.929	Superficial Injury, Contusion and Crushing with Intact Skin Surface	20	6	26	—	91	9	100	—	2,564	1,239	3,803	10
147	N.930–N.936	Effects of Foreign Body Entering through Orifice	14	8	22	2	10	1	11	1	196	108	304	1
148	N.940–N.949	Burns	6	1	7	—	31	12	43	6	1,073	674	1,747	152
149	N.960–N.979	Effects of Poisons	—	5	5	—	5	2	7	—	201	91	292	18
150	N.950–N.959 N.980–N.999	All other and Unspecified Effects of External Causes	42	14	56	—	18	2	20	2	957	540	1,497	8
		TOTAL	1,651	1,012	2,663	62	2,786	1,041	3,827	84	84,517	71,498	156,033	6,545

RETURN OF ACCIDENTS (COMBINED) IN-AND-OUT-PATIENTS, 1953

Code	List	Accidents	European		Asian		African	
			Cases	Deaths	Cases	Deaths	Cases	Deaths
E.810–E.835	AE.138	Motor vehicle accidents	7	—	66	4	886	36
E.800–E.802, E.840–E.866	AE.139	Other transport accidents	4	—	15	1	835	12
E.870–E.895	AE.140	Accidental poisoning	4	—	4	—	133	8
E.900–E.904	AE. 141	Accidental falls	45	—	77	2	4,611	10
E.912	AE.142	Accident caused by machinery	2	—	32	—	731	7
E.916	AE.143	Accident caused by fire and explosion of combustible material	1	—	16	3	2,393	61
E.917, E.918	AE.144	Accident caused by hot substance, corrosive liquid, steam and radiation	11	—	62	6	1,205	13
E.919	AE.145	Accident caused by fire-arm	1	—	1	—	295	33
E.929	AE.146	Accidental drowning and submersion	—	—	—	—	1	1
E.920	AE.147	Foreign body entering eye and adnexa	16	—	45	1	554	—
E.923	AE.147	Foreign body entering other orifice	1	—	2	—	456	1
E.927	AE.147	Accidents caused by bites and stings of venomous animals and insects	21	—	20	—	1,294	2
E.928	AE.147	Other accidents caused by animals	8	—	4	—	430	3
N.O.S.								
E.910–E.979	AE.148	All other accidental causes	40	—	327	1	11,453	24
E.980–E.985	AE.149	Homicide and injury purposely inflicted by other persons (not in war)	1	—	39	3	1,616	56
E.990–E.999	AE.150	Injury resulting from operations of war	—	—	—	—	—	—
		Total	151	—	710	21	26,903	267

G.P.K. 1585—375—7/54