

## **Report on the public health / Southern Rhodesia.**

### **Contributors**

Southern Rhodesia. Department of Health.

### **Publication/Creation**

Salisbury : Argus, [1937]

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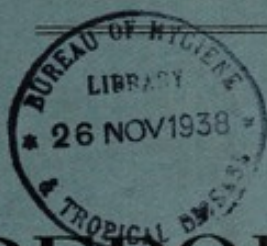
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**SOUTHERN RHODESIA.**



# REPORT

of

## The Public Health

For the Year 1937

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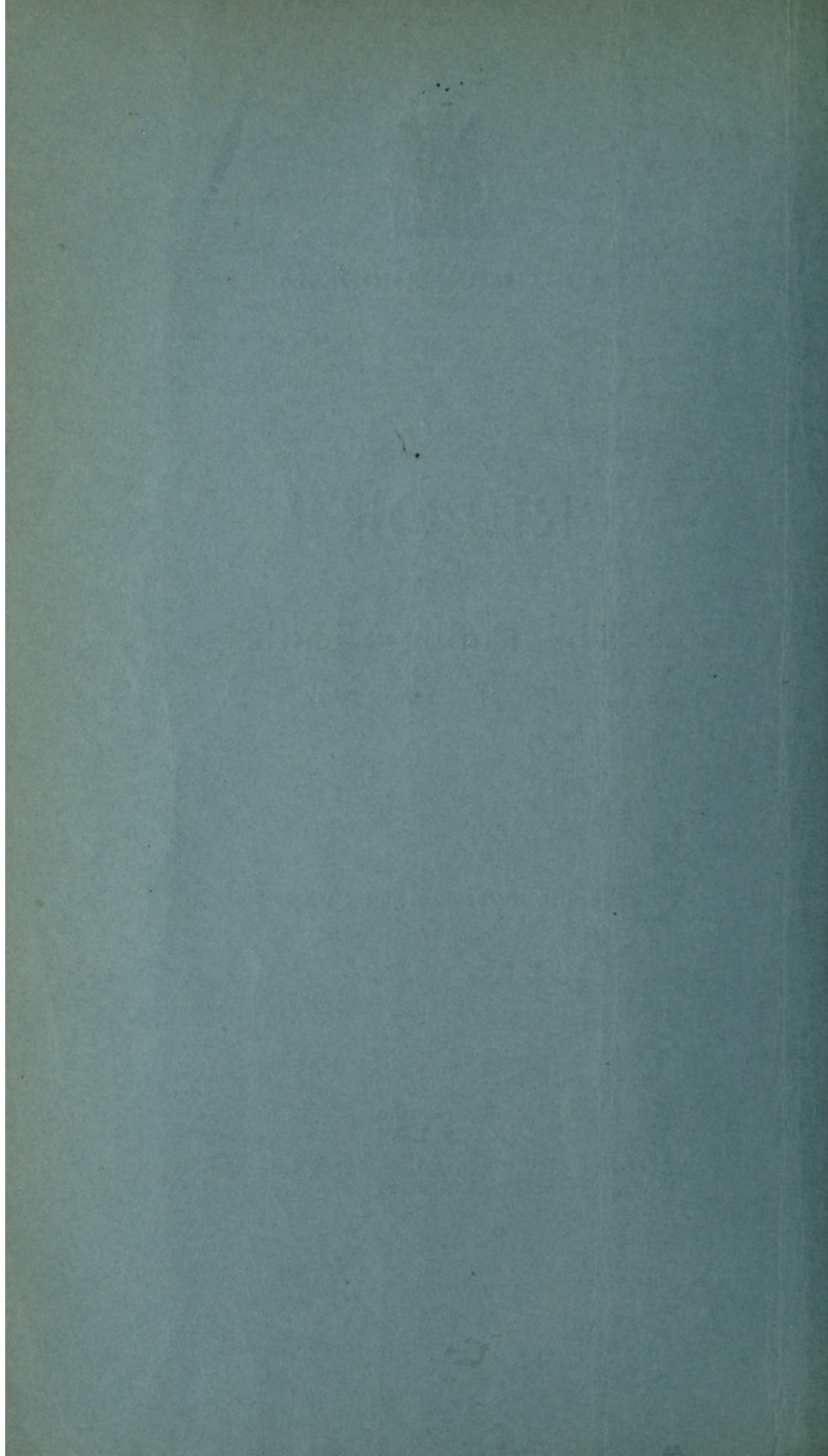
Presented to the Legislative Assembly,

1938

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Printed for the Government Stationery Office by the  
Rhodesian Printing and Publishing Co., Ltd., Salisbury.

1938

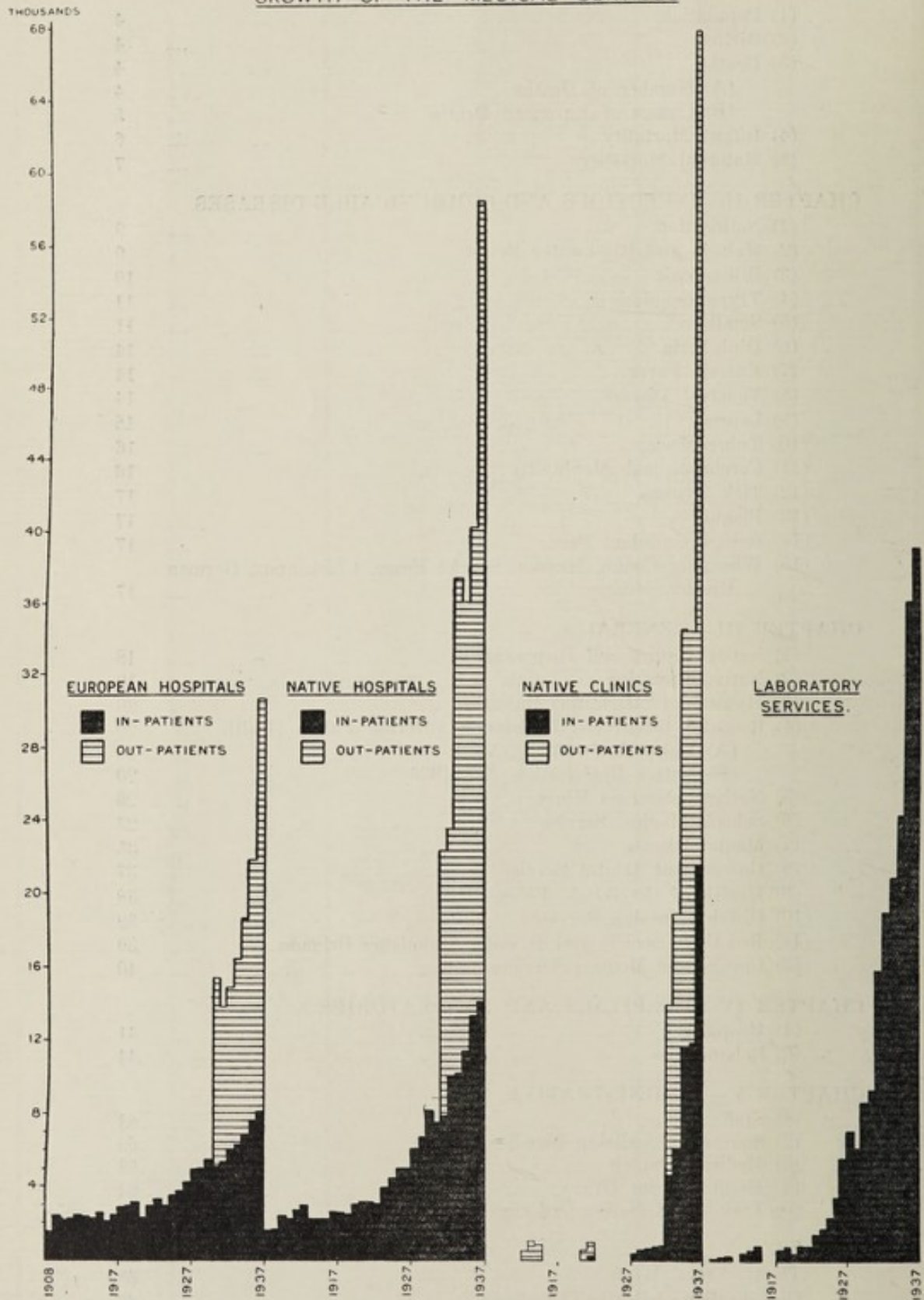




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# GROWTH OF THE MEDICAL SERVICES



# Report on the Public Health for the Year 1937.

THE MINISTER OF INTERNAL AFFAIRS.

I have the honour to submit the Public Health Department Annual Report for the year 1937.

## INTRODUCTION.

I am indebted for much of both the form and the material of the report to Dr. V. C. W. Vickers, who ably carried out the duties of presiding over the destinies of the Department during my absence on leave in the latter portion of the year. I am indebted also to Dr. D. M. Blair, the Field Officer, who has prepared all the statistical information and, in addition, has dealt with much of the body of this report.

The year was one of steady consolidation rather than of expansion in services and policy.

## I. HEALTH OF THE EUROPEAN.

The vital statistical indices concerning this section of the community show that health has been well maintained. A birth rate of 22.92 per thousand, a death rate of 9.39 per thousand, and an infant mortality rate of 50 per thousand are figures of which any community can be proud. The maternal mortality rate of 6.12 per thousand live births is still high but shows a steady improvement on the rates for the previous two years. When it is realised that 7 per cent. of the deaths are due to malaria and blackwater fever (easily preventable diseases) it will be appreciated that the death rate would be even more satisfactory if prevention and control were more generally practised.

Turning now to the hospital services indices we find that there are in Southern Rhodesia 70.6 general hospital beds, 22.1 mental hospital beds, 15.8 maternity beds and 10 infectious diseases beds per 10,000 of the European population. While comparisons are difficult because of differing conditions and because of our birth rate being nearly twice that of England and Wales, at the same time the latest figures for these latter countries make interesting reading: 53.4 general hospital beds, 35.6 mental hospital beds, 3 maternity beds and 10 infectious diseases beds per 10,000 of the population.

It will be seen that a more than liberal provision of inpatient accommodation has been provided for our present European population, and even more praiseworthy is the high standard of comfort and service found not merely in the large urban hospitals but also in the smaller rural institutions. Tuberculosis accommodation in special hospitals does not at present exist in this country but this hiatus will soon be filled when the sanatorium to be erected by the generosity of the State Lottery Trustees is put into service. The new Nervous Disorders Home to be constructed at Bulawayo with funds also provided by the State Lottery Trustees will complete adequate accommodation for all types and degrees of nervous illnesses. When these additions have been made Southern Rhodesia from the point of view of hospital accommodation will be as well equipped as any country in the British Empire.

*Appointments of Aided Government Medical Officers.*—New appointments have been made in this section of the medical staff, though not in every case with the desired results. Medical facilities are frequently demanded by rural communities and cogent arguments advanced why appointments of full-time Government Medical Officers should be made. Once, however, these appeals have been met and the new medical officers appointed, the rural communities are not always very anxious to employ their services until such times as they have made up their minds as to the medical officers' desirability either on the professional or the social side. Young and energetic medical men will not and cannot be expected to resign themselves to a penurious and vegetative existence whilst local communities are slowly satisfying themselves as to whether the medical man is worthy of their support. The long preparatory training which every medical man is to-day compelled to undergo should be a sufficient guarantee to the public that he is at least capable of dealing with the routine ills that flesh is heir to, and in addition that he has sufficient knowledge to seek for assistance from those of greater knowledge and experience when in



the face of some condition which he considers is beyond his own skill. Further, it is the policy of this Department to provide opportunities for every new entrant to the Medical Service to learn in the hospitals and laboratories of the country the particular illnesses which are commonly found here, so that on his appointment to an outside area even the newest recruit to the Medical Service has already had the opportunity of making himself familiar, under the tuition of more experienced officers, with the conditions with which he is likely to be faced in the practice of his profession in rural areas. For these reasons I feel compelled to appeal to the communities in rural areas to display more confidence in the local medical man and to make a greater use of his professional knowledge and advice than they have hitherto done.

## II. HEALTH OF THE NATIVE.

The year has shown steady consolidation of the Native Clinic system and the wide basis on which it has been formed and directed has been amply justified in practice. In fact the clinics are almost embarrassingly popular and despite the extraordinarily low cost per patient per day it is obvious that the expense of maintenance of these and future units will become an increasingly important section of public health finance.

Already we are beginning to feel the shortage of trained native personnel and there is not the slightest doubt but that the indigenous African in training at Salisbury and Bulawayo will be absorbed without any difficulty for many years to come. It is fitting that the indigenous native shall take his place in the framework of medical services for his own kith and kin and it is hoped that when provision has been made for their training that the native women will be spurred by the example of the men. It should always be remembered that women entered the field of sick nursing after the men all through the ages, but it must also be admitted that nursing only made progress when the women of the country took up the profession and brought the feminine qualities of gentleness and graciousness to its ministration.

Another matter requiring careful thought has been the siting of native clinics inasmuch as these must be easy of access by an all-weather road in order to enable regular visits to be made by the medical man in charge of the institution. This is an essential factor in the success of any clinic for without regular medical supervision, these institutions would readily lose in efficiency and indeed might easily become the centres of undesirable practices. These arduous extra duties, often involving many hours of motoring on veld roads, have been willingly undertaken by the Government Medical Officers, and the visits to the clinics have been so arranged as not to interfere greatly with the medical officers' function of furnishing a "general practitioner" service in outlying districts. In some areas, though, it is doubtful if much more native clinic work can be undertaken without interfering with the delicate relationship between the doctor and his European patients.

I hope to see these clinics assuming, in addition to their curative function, a broader health relationship to the people they serve. I look forward to the day when each clinic will be the fountain-head of knowledge of ante-natal and child welfare work, sanitation, nutrition, housing, personal and communal hygiene. For this reason it is intended that the preventive aspects of native medical work will be stressed from the outset and clinics so sited that they will be able to bring their beneficent influence to bear upon the community as well as upon the individual.

## III. TREATMENT OR PREVENTION—WHICH SHALL IT BE ?

A great proportion of institutional and domiciliary illness is preventable and it is obvious from advances in medical and allied sciences that the proportion of sickness which can be prevented will increase. It must be freely admitted that the European medical services in the first half century of the country's civilised history has been preoccupied with the curative aspect of medicine so that to-day we have buildings, equipment and staff unsurpassed by those of any other country similarly situated. On the preventive side, however, progress has not been so steady and satisfactory. Prevention is neither exciting nor spectacular, and the assets of prevention are largely invisible; there are



no fine hospitals, marvellous operating theatres or awesome X-ray plants to catch the eye, nor is there the dramatic thrill of snatching an individual life right from the jaws of death, to excite the imagination.

The general public are in the main responsible for the overweighted expenditure on curative medicine. They demand for their local centres, buildings and equipment equal to those supplied to larger centres. The attitude of mind which gives rise to demands for local hospital accommodation is keenly appreciated and it is also realised that a very deep feeling of security is engendered by the presence of local hospital facilities. But concentration on the curative side of medicine to the exclusion of the preventive side is not only bad medicine but unsound finance, inasmuch as health need never have been lost in many cases had preventive medicine been exercised in regard not only to their personal hygiene but also to the environment in which they lived. The flow of medical expenditure, however, can only be redirected by education of those who pay for the services. Preventive medicine is in the main applied personal and communal hygiene, and neither extensive schemes nor lavish expenditure by the central Government will achieve results without the fullest support and co-operation of the individual citizen.

Can it be claimed that even elementary knowledge of malaria and bilharzial disease control is unavailable to the man in the street? Are there people who do not know that Rhodesian rivers are dangerous from other animals than crocodiles; that the mosquito net and quinine are preventive agents against malaria?

In the past the enlightenment of the general public on health matters has been by way of pamphlets prepared after the most painstaking and careful field work. During the coming year it is intended to explore other methods of instilling this essential basic knowledge into the minds of all classes and races in the Colony. It is a sad fact that the malaria and blackwater admissions amount to 14.5 per cent. of the total admissions and that one in every fifty of the European population spends about a week each year *in hospital* from an easily preventable disease. The toll extracted by malaria in the category of domiciliary illness must be immense: how often do we hear of the farmer or miner confined to bed with a "touch of fever." This expression epitomises the average Rhodesian's outlook on malaria. The mosquito cycle in the transmission of malaria was a proven fact by Ronald Ross in the Roman Campagna in 1900, and the life cycle of the bilharzial worm was worked out by Leiper in Egypt in 1917. Why must there be such a delay in the application of vital knowledge?

Another aspect of preventive medicine (and one which has not yet received the consideration it deserves) is the contribution which might be made to an increased population by the prevention of loss of life and by the conservation of a state of good health necessary for full virility, fecundity and the maintenance of a high economic level in communal life. If fewer mothers died in childbed, if more of the babies that were born were saved to enter upon their inheritance of life, and if the health of the parents of the country exhibited the robustness and vigour necessary to fecundity, the rate of natural increase in the population would be considerably augmented and a highly desirable complementary factor added to the rôle played by immigration in the increase of population.

This same factor is equally important in the conservation of native labour supplies. The conservation of the health of the native community and the wise exploitation of the economic possibilities of the indigenous labour would remove many of the anxieties at present besetting the industries of the country through fear of a shortage of native labour.

This report could not be considered complete without a tribute of sincere thanks to the State Lottery Trustees, whose benefactions, made with a wise eye on the claims of the individual and the community at large, have brought happiness and cheer into the lives of the maimed and crippled, and comfort and relief to many hospital patients. The completion of the Trustees' "Wireless in Hospitals" scheme, taken alone, brings the grateful thanks of patients, especially those in convalescence from long and painful illnesses. Further, sums have been provided on a most munificent scale for the building of specialised hospitals and we hope in the future that large scale research will be made possible with financial assistance from the Trustees.



## CHAPTER I.—VITAL STATISTICS.

## (1) POPULATION.

The European population at the 30th June, 1937, was estimated at 57,080, being an increase of 1,490 over the 1936 figure. The Coloured population, including Asiatics, is estimated at 5,530 an increase of 150 over the previous year's figure. The Native population is considered to be 1,243,025, so that the total population as estimated at the 30th June, 1937, amounts to 1,305,635.

The annual rate of natural increase per 1,000 of the population, i.e. the excess of births over deaths, shows a further increase to 13.53 per 1,000 as compared with 13.13 per 1,000 last year. The natural increase of births over deaths amounts to 735, but this is due rather to a saving in deaths than to an actual increase in the number of births.

The gross number of immigrants was 3,008 for 1937 with an estimated nett immigration of 836. In 1927, ten years ago, the nett immigration was 1,711 and the actual natural increase was 635.

The information on vital statistics for the native population is quite unreliable. Apart from the figures culled from the return of natives employed on mines, an artificial group containing males only, we have no information on native birth and death rates, etc., etc. It is an axiom of successful public health work that any measures undertaken should rest on a secure vital statistical foundation. As far back as 1927 a limited Census of the native population in certain selected districts, with the introduction of compulsory registration of native births and deaths within such districts, was contemplated but the idea never bore fruit.

The position to-day is that while we can form fairly accurate opinions of the current health of the native in the main industrial parts of the Colony, yet we know remarkably little of his vital statistics and can only guess at the number of deaths which occur amongst the native people annually, whilst our knowledge of the number of births that take place is even less.

## (2) BIRTHS.

In 1937 there were 1,308 European births as compared with 1,302 in 1936. This corresponds to an annual birth rate of 22.92 per 1,000 of the European population.

Of the 1,308 births, 24 were illegitimate, being 1.86% of the total births as compared with 4.40% in England and Wales in the year 1932. These rates, however, are hardly comparable as no account is taken in this country of the illegitimate births resulting from miscegenation.

The birth rates of recent years are given below and are compared with the corresponding rates for the Union of South Africa and England and Wales.

*European Birth Rates, 1921-1937.*

	Southern Rhodesia.	Union of South Africa.	England and Wales.
1921-30 (average) .....	24.6	26.6	18.3
1930 .....	24.2	26.4	16.3
1931 .....	23.6	25.4	15.8
1932 .....	22.8	24.2	15.3
1933 .....	21.5	23.5	14.4
1934 .....	22.8	23.4	14.8
1935 .....	22.3	24.5	14.7
1936 .....	23.47	24.72	14.8
1937 .....	22.92		

## (3) DEATHS.

(A) *Number of Deaths.*—In 1937 there were 563 European deaths giving a crude death rate of 9.39 per 1,000, which is the lowest rate recorded since 1933. The lowest death rate (crude) of which we have knowledge was in 1931 when a figure of 8.32 per 1,000 was recorded.

The European deaths in 1936 amounted to 572. This decrease has been in a large part due to the reduction in the mortality from malaria and black-



water fever which declined from 66 in 1936 to 37 in 1937. This is the lowest figure recorded since 1932 when the population was approximately 5,000 less.

*European Death Rates, 1935-1937.*

Year	Crude death rate, Southern Rhodesia.	Standardised death rate.		
		Southern Rhodesia.	Union of South Africa.	England and Wales.
1935	10.43	12.69	10.28	9.0
1936	10.29	10.56	9.50	9.2
1937	9.39	9.46	(a)	(a)

(a) unobtainable

It is interesting to note the steady manner in which the figures for the crude and standardised death rates for Southern Rhodesia have approximated; an indication that the age and sex distribution of the European population is assuming more closely the population form of the long settled communities.

*B. Causes of European Deaths.*—The following table shows the causes of European deaths during the last five years. More detailed information is furnished in the table of deaths classified according to the International Classification of Causes of Sickness and Death, at the end of this report.

*Causes of European Deaths, 1933-1937.*

Cause of Death	1937	1936	1935	1934	1933	Totals	Percentage of total deaths
1. Cancer ...	54	52	46	41	37	230	8.78
2. Violence (all forms) ...	46	46	55	46	38	231	8.82
3. Heart diseases ...	77	81	69	63	36	326	12.44
4. Pneumonia and bronchitis ...	46	58	41	36	31	212	8.09
5. Malaria and blackwater fever ...	37	66	56	52	47	258	9.85
6. Nervous diseases ...	23	32	21	33	29	138	5.27
7. Premature birth and diseases of early infancy	36	33	29	25	31	154	5.88
8. Tuberculosis (all forms)...	3	4	17	11	14	49	1.87
9. Influenza ...	25	9	30	20	8	92	3.51
10. Diarrhoea and enteritis ..	8	4	13	9	11	45	1.72
11. Old age ...	8	14	9	4	11	46	1.75
12. Enteric fever ...	4	2	5	10	4	25	0.95
13. Diphtheria ...	6	6	5	5	8	30	1.15
14. Dysentery ...	2	2	7	14	13	38	1.45
15. Whooping cough ...	1	...	6	1	6	14	0.53
16. Measles ...	3	1	1	...	...	5	0.19
17. Scarlet fever ...	...	...	3	...	...	3	0.12
18. Other causes ...	157	162	150	138	117	724	27.63
Totals ...	536	572	563	508	441	2,620	100.00



1. *Heart Disease* retains its position at the head of the list of causes of death, though actually there were less deaths from this cause than in 1936.

2. *Cancer* occupies the second position this year though the actual increase on last year's figures amounts to only two.

3. *Violence (all forms) and pneumonia with bronchitis* tie for third place with 46 deaths each. Pneumonia and bronchitis were much less prevalent, there being 12 less deaths from this cause than in 1936.

4. *Malaria and Blackwater Fever* has dropped from second place in 1936 to fourth place in 1937, the deaths from these causes falling from 66 to 37.

The position of the other diseases causing death show little change since last year.

#### (4) INFANT MORTALITY.

In 1937 there were 66 deaths of European infants under the age of one year as compared with 64 in 1936.

The infant mortality rate for 1937 is 50 as compared with 49 in 1936. In addition there were 20 still births recorded in 1937 as compared with 27 in 1936.

The infant mortality rates compare favourably with the rates obtaining in England and Wales and in the Union of South Africa. Deaths from malaria in infants shows a welcome decline from 10 to 2 this year which is in keeping with the general decline in malaria mortality in 1937. The improvement in the malaria figures has been off-set by slight increases in the other causes of infant deaths.

Tables giving the facts regarding infant mortality are set out below. These figures apply to the European section of the population only. The parallel information for the other races is unknown and conjecture is fruitless.

#### *European Infant Mortality Rates, 1921-1937.*

	Southern Rhodesia	Union of South Africa	England and Wales
1921-30 (average) .....	63	70	72
1930 .....	45	67	60
1931 .....	45	63	66
1932 .....	55	69	65
1933 .....	55	61	64
1934 .....	45	61	59
1935 .....	48	62.8	57
1936 .....	49	59	59
1937 .....	50		

#### *Causes of Infant Deaths, 1928-1937.*

Disease	Number of Deaths	Percentage of Total
Premature birth and diseases of infancy .....	283	45.21
Bronchitis and pneumonia .....	76	12.14
Diarrhoea and enteritis .....	74	11.82
Malaria .....	62	9.90
Measles, whooping-cough, diphtheria, dysentery .....	41	6.55
Various (not classified above) .....	90	14.38
Total .....	626	100.00

#### *Deaths During Different Months, 1928-1937.*

	Number of Deaths	Percentage of Total
First month .....	314	50.16
Two months to six months .....	184	29.39
Six months to twelve months .....	128	20.45
Total .....	626	100.00

*European Infant Deaths, 1937.*

Cause of Death	Number of Deaths
Measles .....	2
Whooping cough .....	1
Diphtheria .....	1
Influenza .....	1
Malaria .....	2
Diseases of the thymus .....	1
Haemorrhagic conditions .....	1
Cerebral haemorrhage, apoplexy, etc .....	1
Infantile convulsions .....	1
Bronchitis .....	1
Broncho-pneumonia .....	6
Lobar pneumonia .....	1
Pneumonia, not otherwise defined .....	3
Diarrhoea and enteritis .....	5
Hernia, intestinal obstruction .....	1
Peritonitis, without stated cause .....	1
Disease of the joints and other organs of locomotion .....	1
Congenital malformations .....	9
Congenital debility .....	3
Premature birth .....	18
Other diseases peculiar to infancy .....	6
Total .....	66

It will be seen from the tables given above that one half of the infant deaths occur during the first month of life. Again it seems necessary to emphasize that much of this waste in infant life is not only unnecessary but unjustifiable, and that most of it could be avoided if greater use was made of the instructions available to all expectant mothers not only in ante-natal care but in the general principles of mothercraft, which would guide her in the training and rearing of the child.

Attention is drawn to the fact that one cause of death was recorded as diphtheria; rather an unusual notification, as this disease generally spares children in the first year of life.

*(5) MATERNAL MORTALITY.*

During 1937, eight mothers died as a result of childbirth compared with nine in 1936.

The maternal mortality rate for 1937 is 6.12 per 1,000 live births or 6.02 per 1,000 total births. The fall in this rate is encouraging but there is great room for improvement as the rate is still too high.

*European Maternal Mortality Rates, 1921-37.*

	Southern Rhodesia.	Union of South Africa.	England and Wales.
1921-30 (average) .....	5.4	5.1	4.1
1930 .....	6.0	5.3	4.4
1931 .....	5.1	4.7	4.1
1932 .....	6.0	5.3	4.2
1933 .....	6.3	4.8	4.5
1934 .....	7.46	5.99	4.41
1935 .....	7.47	4.73	3.94
1936 .....	6.91	5.09	3.65
1937 .....	6.12		



The England and Wales rates are based on total births, the South African and Rhodesian rates being based on live births.

The causes of maternal deaths during the last ten years were as follows:—

*European Maternal Deaths, 1928-1937.*

Cause of Death	Number of Deaths	Percentage of Total
Puerperal Sepsis .....	24	32.00
Accidents of pregnancy .....	12	16.00
Other accidents of childbirth .....	3	4.00
Puerperal haemorrhage .....	8	10.67
Puerperal albuminuria and toxæmia .....	13	17.33
Other causes .....	15	20.00
Total .....	75	100.00

During the year 1937, no deaths from puerperal sepsis were reported and it is hoped that with the recent advances in the chemo-therapeutics of streptococcal infections by the sulphonamide group of drugs, that in the coming years the 32 per cent. of maternal deaths in the previous decade due to puerperal sepsis will be reduced to minimal proportion.

During the year the Nursing Homes Registration Act was enforced, and as the measure was primarily aimed at the regulation and control of maternity homes it may well be mentioned here. The following registrations were made either by the Government or by the Municipalities of Salisbury and Bulawayo:—

*European—*

General and maternity .....	5
Maternity only .....	10

Difficulties arose in the registration of the Lady Chancellor Nursing Home by the Municipality of Salisbury but these have been largely overcome and conditional registration has since been effected by the Council.

In one instance registration was refused on account of an impure water supply and inadequate sanitary accommodation.

In the following table is included the work done by the registered homes during 1937 and to make the table complete the relative information from the Lady Chancellor Home and from the Maternity Home operated by the Government in conjunction with the European Hospital at Sinoia is also supplied.

	Registered Homes	Chancellor Home	Government	Total European	Native
Patients admitted .....	1,210	300	13	1,523	5,013
Confinements .....	599	247	13	859	60
Deaths .....	18	—	—	18	146
Deaths of infants .....	14	5	1	20	17
Still-births .....	12	9	—	21	6
Miscarriages .....	21	—	—	21	6
Operations—Major .....	26	6	—	32	30
Minor .....	146	109	—	255	266

While the record of confinements is not a record of actual births it would appear that of the total European births (1,308) about 65 per cent. take place in institutions.



## CHAPTER II.—INFECTIOUS AND COMMUNICABLE DISEASES.

## (1) NOTIFICATION.

Notification of infectious diseases is more honoured in the breach than in the observance, and it is extremely difficult to persuade medical officers, not only of the need for notification for the protection of the public health, but also of the valuable information which such notification renders available in connection with the epidemiology of infectious disease.

The following figures are obtained from the weekly bulletin of infectious diseases issued by the Department throughout the year.

*Infectious Diseases Reported during the Calendar Year, 1937.*

Name.	European		Native		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox .....	445	—	215	—	660	—
Measles .....	741	1	150	—	891	1
Whooping-cough .....	75	—	6	—	81	—
Typhoid .....	26	2	45	12	71	14
Mumps .....	212	—	61	—	273	—
Diphtheria .....	33	6	10	5	43	11
German measles .....	24	—	—	—	24	—
Erysipelas .....	5	—	2	—	7	—
Cerebro-spinal meningitis .....	3	1	61	11	64	12
Scarlet fever .....	58	—	—	—	58	—
Acute anterior polio-myelitis .....	1	—	—	—	1	—
Para-typhoid .....	2	—	2	—	4	—
Undulant or Malta fever .....	—	—	—	—	—	—
Anthrax .....	—	—	—	—	—	—
Puerperal septicaemia .....	—	—	6	2	6	2
Smallpox .....	—	—	246	2	246	2
Trypanosomiasis .....	—	—	3	1	3	1

## (2) MALARIA AND BLACKWATER FEVER.

In 1937, 26 deaths were registered as due to malaria and 11 due to blackwater fever—a total of 37 deaths as compared with 66 in 1936. In 1936 there were 50 deaths due to malaria.

The improved position cannot be attributed unless in small measure, to any realisation of the need for protection from mosquitoes or to any active measure being taken on the part of the population against mosquito breeding, but almost solely to the fact that climatic and weather conditions were not satisfactory for mosquito breeding. The type of disease is subtertian in the vast majority of cases and due to *Plasmodium falciparum*, though *P. malariae* infections are met with on the Eastern Border and *P. vivax* infections are occasionally encountered in the areas of lower altitude. The fourth malaria parasite, *P. ovale* has now been described in this country, having been found in the blood of natives living in the western part of the Hartley District.

Attention must be drawn to the improvement which has been effected in some of the smaller towns by such simple and inexpensive measures as low scrub clearing and grass cutting. Such measures can well be applied by farmers and miners for individual protection or for the protection of the small communities which spring up around the numerous small mines. More attention might well be paid to the proper siting of dwelling houses and the position of native compounds on farms and mines. Few people seem to realise that besides protecting themselves against mosquitoes any measures they take to prevent these insects from feeding on their native workers and especially native children, will result in the diminution of the number of female infected anopheline mosquitoes available for transmission of the disease.

The year has seen an expansion in the use of modern blood transfusion methods in the treatment of blackwater fever with very good success in all types of the disease except where anuria is present.



## (3) BILHARZIASIS.

This disease assumes a greater importance year by year as the implications and manifestations of this helminthic infection are better realised, and now bids fair to rival malaria as the disease of premier importance in Southern Rhodesia in its insidious undermining of general health and in its economic and social aspects.

The intestinal infection with *B. mansoni* at one time thought to be an interesting rarity in Rhodesia, has, with the helpful co-operation of district Government Medical Officers, proved to be much more prevalent. The field of action of the two parasites *B. haematobium* and *B. mansoni*, at one time thought to be confined to bladder and bowel respectively, has been shown to give rise to, or predispose to, cirrhosis and cancer of the liver, cancer of the bladder, peritonitis, appendicitis, lung disease, sterility in the male and various nerve complaints. This disease shows more clearly than most that racial barriers are not observed by disease, and infections with *B. haematobium* and *B. mansoni* are now being found in Europeans even where the presence of bilharzial disease was not previously realised or suspected.

The importance of this problem will be appreciated when it is known that the State Lottery Trustees have made a generous contribution for investigation and research into this disease. The Colony has been privileged by the acceptance of an invitation to visit Rhodesia by Professor R. T. Ljeper, M.D., D.Sc., F.R.S., etc., Director of the Division of Medical Zoology, School of Hygiene and Tropical Medicine (University of London), who it is hoped will arrive in Rhodesia during the coming year.

The attack on this disease would seem to be along four avenues:—

- (1) Improved methods in the diagnosis of the disease, especially in regard to mass-diagnosis of the disease. Considerable work has already been done along this line at the Public Health Laboratory, Salisbury, and it is hoped to develop more accurate methods of assessing cure than at present prevail.
- (2) Further advance in the knowledge of chemo-therapeutic agents. Fouadin, the drug used for treatment by intra-muscular injection, is not wholly reliable and the relapse rate is rather high. Antimony tartrate, originally introduced for the treatment of this disease by Christopherson during the Great War, is still widely used and on the whole with excellent results. The mode of administration, intravenously, however, precludes its use in mass-treatment and in the treatment of young children. Unfortunately, the drug is not free from unpleasant side-effects. The ideal to be aimed at is a drug which can be given by mouth, free from toxic and side-effects and assuring a high standard of cures. A drug of this type is under trial at the Public Health Laboratory, Salisbury, but it is too early to give any opinion on its efficacy.
- (3) Attack on the intermediate molluscan host of the bilharzia parasite, the snails which live in the rivers and pools of Rhodesia. A study of the molluscan fauna of the rivers may supply the reason for the claimed freedom of some regions of the country from bilharzial disease.

Natural methods of control by the creation of conditions inimical either to the snail host or to the cercarial stage of the bilharzial parasite—the stage at which the entrance into man is effected—by the encouragement of natural enemies, such as certain types of birds and fish, and forms of plant life whose fruit has been considered to be poisonous to the parasite.

- (4) The *hygienic control* of the disease; this is applicable to other diseases spread by lack of proper excretal disposal, namely, hook-worm and other bowel helminthic infections, dysentery, typhoid, and infantile enteritis borne by flies. The achievement of this end could be greatly assisted by propaganda and precept against promiscuous urination and defaecation, in which matter the European races are not wholly without blame.



The provision and use of the bored-hole latrine on mines, farms and in the reserves would greatly aid in preventing river and pool infection in bilharzia, and soil infection in hookworm. This type of latrine is now largely used in the East, is cheap to construct and once constructed lasts for years without giving rise to offence.

#### (4) TRYPANOSOMIASIS.

No indigenous case of trypanosomiasis was reported during 1937, though three cases resulting in one death occurred in native immigrants. The danger of the introduction of trypanosomes capable of infecting human beings into the tsetse fly population in the northern parts of the country is still present though much has been done by the controlled shooting of game to free some of the northern labour routes from tsetse fly. During the year it was discovered that invasion by tsetse fly of the species *Glossina morsitans* had occurred in Portuguese territory within five miles of the Eastern Border. A careful watch will be kept on this front for cases of human trypanosomiasis. It is probable that extended measures in the eradication of the tsetse fly areas in the country will be under way soon and this work will reduce the liability of the introduction of human infecting trypanosomes.

#### (5) SMALLPOX.

Smallpox provided the major epidemic interest in Southern Rhodesia during 1937. During the last two years the disease has been rather more prevalent than usual in Portuguese East Africa and in last year's report mention was made of a limited outbreak on the border in the Eastern Districts. A large amount of vaccination was done in the area and it was hoped that the outbreak was under control so far as Southern Rhodesia was concerned. In the closing days of 1936 a report of four native cases of smallpox was made from the Bubi District. Extensive vaccination there and in the neighbouring districts was carried out. In October, 1937, however, three cases were reported from this same area.

At the beginning of November, 1937, a case of smallpox was diagnosed by the Government Medical Officer, Gwanda, and on investigation it was found that similar cases had occurred in the Fort Tuli and Beitbridge areas. A closer inspection of the Beitbridge cases revealed a rather extensive outbreak of severe confluent smallpox. The source of the disease was traced back to the Northern Transvaal, where it was learned that the disease had been active for at least two months. Exceedingly vigorous measures were immediately put into force to limit the spread of the disease by prohibiting the entry of potentially infected persons into the Colony through Beitbridge until an extensive vaccination barrier had been formed in the area south of the line Bulawayo-Fort Victoria-Umtali. This measure proved its usefulness in that the progress of the disease was arrested and no further cases which could be traced back to the district under control, were reported on the Rhodesian side of the quarantined area. During an inspection of the stations along the barrier it was found that a focus of smallpox had been in existence for some weeks in the rather inaccessible area at the junction of the Sabi and Lundi Rivers, and that the disease had probably been in existence there since the beginning of September. The omission to notify the disease on the part of the natives was in large part said to be due to the fear that repressive measures similar to those which had been enforced during the recent outbreak of foot and mouth disease, would be instituted. Infected from this focus, scattered cases were found near Fort Victoria, Nuanetsi, Ndanga, Bikita and between Umvuma and Chilimanzi. These scattered foci compelled further extensive vaccinations behind the line of the original barrier. During the year, 344,173 vaccinations were performed among the native population and the expense of the lymph used in the process amounted £5,900. The cost of the control of this outbreak, involving the biggest vaccination campaign in the Colony's history, was an object lesson in the value of early diagnosis and notification of smallpox and early and vigorous action against even small outbreaks of the disease. The practice of labelling suspicious infectious diseases by names such as "amaas," "kaffir-pox," "milk-pox" and various native dialect names is a poor diagnostic refuge and much to be deprecated. This practice entails delay in control as



the condition is not notified until a severe case occurs and smallpox is then notified with the naive explanation that the disease has now changed its character. It must be fully realised that any disease considered to be in any way related to smallpox must be notified as such, and the responsibility of deciding whether the disease is of such a mild type that certain relaxation of restrictions can be allowed, must be left to the central Health Authority.

Such extensive and necessarily accelerated vaccination campaigns are not economic and the percentage of vaccination "takes" is much lower than when vaccinations are performed in a more leisurely manner. It would seem to be more profitable to have a five or seven year plan of vaccinations which would cover the whole country in turn and so maintain at a high level the protection of the population against the disease. Some evidence in support of such a scheme will be discussed later.

During December, 1937, further small outbreaks were reported from Umtali and Cashel; these recrudescences were similar to the small outbreaks last year when infection originated in the then endemic focus in Portuguese East Africa. It is probable that the cases in the Ndanga District and at Beitbridge were indirectly infected from this focus, and it appears likely that the busy labour route along our south-eastern border was the avenue of infection to the Northern Transvaal, whence the disease spread back to Messina and over into Rhodesian territory. The control of the epidemic at the Customs Port of Beitbridge revealed flaws in the Public Health Act of 1924, which was enacted before road communications to neighbouring territories had reached the state of development of to-day.

The legal definition of "successful vaccination" in Section 86 would appear to be out of date, as none of the vaccinations in the recent mass vaccination campaign were "successful vaccinations" in the legal sense. So far as we know there were no cases of post-vaccinal encephalitis. There were several cases of generalised vaccinia seen, one case in a European woman.

The records of smallpox and vaccinations in this Colony were examined and subjected to statistical treatment.

*Case Mortality Rate per cent.*

Year.	Cases.	Deaths.	C.M.R. %	S.E.D.	Act. Diff.	Significance (A.D./S.E.D.)
1918-22	1,532	287	18.47	0.874	9.60	10.9
1923-27	37	2	5.40	4.679	3.47	0.74
1928-32	1,463	6	0.41	0.8877	8.26	9.3
1933-37	385	8	2.08	1.529	6.79	4.3
Total	3,417	303	8.87	—	—	—
1922-37	1,885	16	0.848	0.8153	8.022	9.8

*S.E.D.* is the standard error of the difference between the grand total case mortality rate and the rates holding for the particular periods.

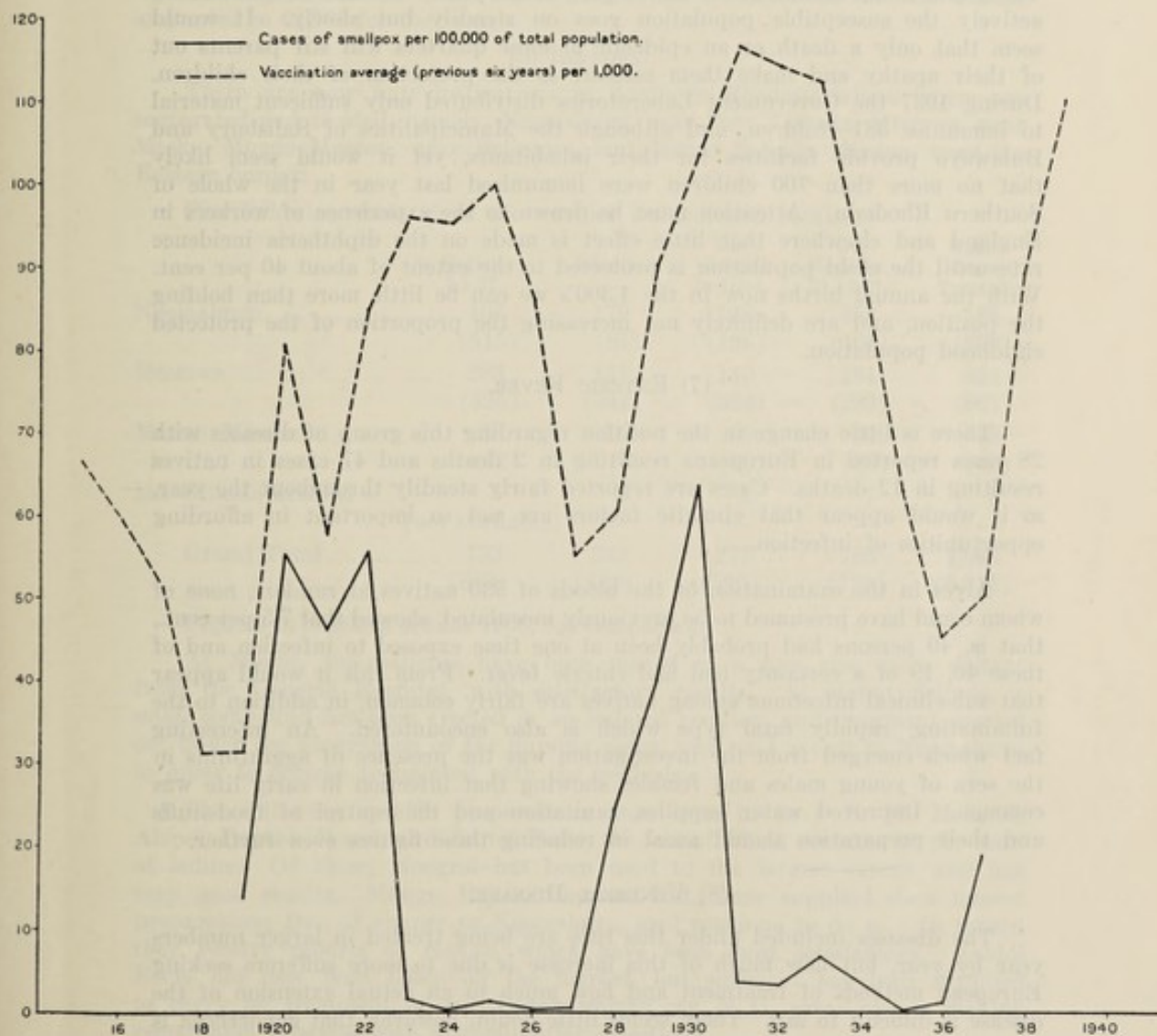
*Act. Diff.* is the actual difference between the grand total case mortality rate and the rate for the particular period.

*Significance (A.D./S.E.D.)* is the figure obtained by dividing the standard error of the difference between the percentage rates into the actual difference between the rates. Where the resulting figure is greater than 3.0 the difference between the case mortality rate and the grand total rate is said to be "statistically significant."

If the five-year period 1918-22 is compared with the fifteen-year period 1923-37, it will be seen that there was nearly a similar number of cases reported in each period but only 16 deaths from 1922-37 as compared with 287 between 1918 and 1922. This well marked drop in the case mortality rate occurred about the year 1923, which strangely enough was about the time when the case mortality rate in smallpox in the British Isles also showed a great drop.

If the incidence of smallpox in Southern Rhodesia is compared with the vaccination state of the population some interesting points arise. In the accompanying chart two curves are plotted, the number of cases of smallpox per 100,000 of the population and the vaccination average per 1,000 of the population. The vaccination average for any year is obtained by weighting the average number of vaccinations per year carried out in the previous six years, with the mid-year population of the year. For example the vaccination average for 1937 is obtained by totalling the vaccinations carried out in 1936, 1935,

THE EFFECT OF THE AVERAGE VACCINATIONS IN THE PREVIOUS SIX YEARS  
ON THE INCIDENCE OF SMALLPOX IN SOUTHERN RHODESIA.





1934, 1933, 1932 and 1931 dividing by 6 and based on the mid-year population of 1937 a rate per 1,000 is calculated. From the chart it will be seen that whenever the vaccination average is allowed to drop below a figure of about 70 per 1,000 a rise in the cases of smallpox can be anticipated. Once a rise in the cases of smallpox occurs, a big rise in the average vaccination rate is required to reduce the figures to insignificance.

It would therefore seem expedient to maintain the average vaccination rate at about 110 per 1,000.

To attain this ideal it would be necessary to vaccinate 212,000 people in 1938 and 105,000 people in 1939, assuming the gross population of the country increases at the present rate.

#### (6) DIPHTHERIA.

During 1937, 33 cases of diphtheria were notified in Europeans resulting in six deaths. This is the lowest number of cases notified since the year 1930. The deaths at six remain at the same figure as last year. The task of immunising actively the susceptible population goes on steadily but slowly. It would seem that only a death or an epidemic at close quarters will stir parents out of their apathy and make them consent to the protection of their children. During 1937 the Government Laboratories distributed only sufficient material to immunise 381 children, and although the Municipalities of Salisbury and Bulawayo provide facilities for their inhabitants, yet it would seem likely that no more than 700 children were immunised last year in the whole of Southern Rhodesia. Attention must be drawn to the experience of workers in England and elsewhere that little effect is made on the diphtheria incidence rate until the child population is protected to the extent of about 40 per cent. With the annual births now in the 1,300's we can be little more than holding the position, and are definitely not increasing the proportion of the protected childhood population.

#### (7) ENTERIC FEVER.

There is little change in the position regarding this group of diseases with 28 cases reported in Europeans resulting in 2 deaths and 47 cases in natives resulting in 12 deaths. Cases are reported fairly steadily throughout the year, so it would appear that climatic factors are not so important in affording opportunities of infection.

Alves in the examination of the bloods of 530 natives at random, none of whom could have presumed to be previously inoculated, showed that 7.5 per cent., that is, 40 persons had probably been at one time exposed to infection and of these 40, 19 of a certainty had had enteric fever. From this it would appear that sub-clinical infections among natives are fairly common, in addition to the fulminating, rapidly fatal type which is also encountered. An interesting fact which emerged from the investigation was the presence of agglutinins in the sera of young males and females showing that infection in early life was common. Improved water supplies, sanitation and the control of food-stuffs and their preparation should assist in reducing these figures even further.

#### (8) VENEREAL DISEASE.

The diseases included under this title are being treated in larger numbers year by year, but how much of this increase is due to more sufferers seeking European methods of treatment and how much to an actual extension of the disease is difficult to say. There seems little doubt, however, that gonorrhoea is becoming more prevalent and is spreading from the urban areas to the more remote native districts. Ample opportunities for natives seeking treatment are now available, there being over 40 centres scattered throughout the country. During the year, free out-patient treatment facilities were extended to all races, though facilities for the Coloured and Asiatic peoples are still inadequate. As the majority of this latter class live in the larger urban areas, the local authorities at Salisbury and Bulawayo are at the moment engaged in considering ways and means as to how to meet their needs. So great is the demand for treatment facilities that the local authorities are basing their schemes on the English model, with provision for regular evening clinics and with facilities for irrigation treatment available at any hour of the day.



In the case of the native races the marked disparity between the number of females treated as compared with males still exists and until the female partner in the diseases secures treatment for herself, even to the extent of ensuring that she is non-infectious, syphilis and gonorrhoea are likely to increase and extend their range from the urban to even the most remote rural districts. The large number of male natives concentrated in their employment on farms and mines will always furnish the demand which is met to quite a large extent by the daughters of indigenous natives, who at times of scarcity and tax payment eke out the family income by prostitution.

While yaws is not a venereal disease it may well be dealt with here. This disease is still prevalent in the south-eastern districts and in the Zambesi Valley. It would seem that spasmodic onslaughts against the disease using the arsenical preparations do not bring about a sustained improvement and it might be better to attack this condition more steadily and continuously by the use of drugs such as "Sobita" which are much cheaper and more easy to administer in mass-treatments.

The expenditure on drugs alone, used in the treatment of venereal disease amounted to £2,500 for the year.

#### (9) LEPROSY.

There are now four institutions in Southern Rhodesia where lepers are segregated and treated, namely, Ngomahuru, near Fort Victoria, Mtemwa, near Mtoko, Mnene Mission, near Belingwe, and Mount Selinda Mission, near the Eastern border.

The following table gives the number treated, and results:—

	On Register. 1.1.37	Admitted.	Dis- charged or Died.	On Register, 31.12.37.	Total Cases Treated.
Ngomahuru .....	407 (515)	179 (85)	128 (196)	458 (407)	586 (600)
Mtemwa .....	283 (326)	141 (341)	140 (384)	284 (283)	424 (667)
Mnene Mission .....	38 (42)	10 (6)	8 (10)	40 (38)	48 (48)
Mt. Selinda Mission .....	5 (not available)	3 —	1 —	7 —	8 —
Grand Total .....	733 (883)	333 (432)	277 (590)	789 (728)	1,066 (1,315)

Figures in brackets are for 1936, for comparison.

At Mnene, the patients have been moved to a new site, more distant from the General Hospital, with satisfactory results. At Mount Selinda, a small compound has been erected in an isolated position, and treatment carried out under the supervision of the nursing sister, who paid a visit to Ngomahuru in order to become acquainted with the methods.

The following specific preparations have been in use: B. W. Moogrol, Alepol, Bayer's Jantol, and Jantol Forte, the last of which contains 10 per cent. of iodine. Of these, Moogrol has been used to the largest extent, and has very good results. Messrs. Bayer, Pharma, Ltd., have supplied their newest preparations free of charge to Ngomahuru, and continue to do so. In return they receive reports of results, which have been most satisfactory. Jantol Forte has now been taken off the market, but sufficient has been supplied to carry on treatment of one Dutch woman, an  $N_1 C_2$  case, who is making remarkable progress with intramuscular injections.

Some leprologists assert that no form of specific treatment is of any use, and that general hygiene alone produces as good results, but this has certainly not been borne out in Southern Rhodesia. At Ngomahuru every case which was not receiving specific treatment became steadily worse, and has shown improvement from the time that treatment with Moogrol was begun. There are now no longer any of these "controls" left. This experience proves, to my mind, that treatment with derivatives of the Chaulmoogrie series is of great benefit. General hygiene is also of much importance; good food, including fresh vegetables and milk, regular exercise, and recreation are all given attention.



Leprosy is regarded by some as a "deficiency disease"; with this in view, Bayer's have brought out a new preparation "Betaxin," a biologically standardised Vitamin B<sub>1</sub>, a large quantity of which they have lately supplied free of charge, but it is yet too early to report on results. The results of the treatment with Moogrol at Ngomahuru is shown by the following record of a total of 581 patients who received regular treatment.

98 became arrested and were discharged.

363 improved, some considerably.

53 were stationary.

42 became worse.

25 died.

The number of patients who seek admission voluntarily continues to increase, but we are still dependent upon the activities of the Native Commissioners for the majority of patients. The Native Commissioner of Wankie must be particularly mentioned. He has sent 32 cases during the year, and hopes to be in a position shortly to assert that he has not a single leper left in his district. I wish to afford praise for this noteworthy attitude. If this system is actively carried out in all districts, this country may soon be free of leprosy, provided that immigrants can also be controlled, a matter of great importance.

The great majority of patients come from the Native Reserves, very few from the industrial centres, mines, railways, etc., so that one must look at the habits of the natives in the Reserves to ascertain the cause of the spread of leprosy. One very important factor has come to light, namely beer drinks; beer drinks are a national institution in this part of the world. They take place very frequently. They not only afford means of close contact, but lepers almost always drink from the same vessels as the general community. It is rare to elicit a history that lepers are treated in any other manner than that of communal guests. I am definitely of opinion that beer drinks are the main factor in the spread of leprosy in this country, and steps should be taken to bring this matter to the notice of the natives in the Reserves. I believe that every infectious leper is known to the community, and if these people were refused admission to the beer drinking parties, we should have at once put a stop to the main spread of infection.

Lepers must be told by their Chiefs that they must go to a leprosy hospital, where they will in all probability be cured, and allowed to return to their homes in due course. Beer drinks are not prohibited at the leprosy hospitals, but they are controlled.

During the year two applications were received for admission to Ngomahuru from European patients from other countries, and it was with the greatest regret that these had to be refused on account of lack of accommodation.

At the moment the Government has under consideration various suggestions whereby it may be possible to extend the facilities and benefits of the Ngomahuru Leper Settlement to Europeans in other countries infected by this disease.

Many valuable gifts have been received during the year from various private individuals and companies, to all of whom our warm thanks have been extended and are here gratefully repeated.

#### (10) TUBERCULOSIS.

It is not intended to comment on this subject with its related diseases, the pneumoconioses, as the whole question is under investigation by a Silicosis Commission whose chairman is Dr. L. J. Irvine, chairman of the Miners' Phthisis Bureau, Johannesburg. The result of the Commission's work will be awaited with great interest.

#### (11) CEREBRO-SPINAL MENINGITIS.

An extensive and fatal epidemic of this condition occurred in the northern part of Nyasaland and it was feared that the disease might be introduced into Southern Rhodesia.



Precautions were taken at the border posts to detain native immigrants showing signs of illness and the Nyasaland Government co-operated in discouraging the emigration of natives from the infected areas.

The natives were advised to sleep out in the open in order to cut down the possibilities of droplet infection.

During the year, three European cases were reported with one death, and there was an increase in the number of cases amongst natives; the position, however, was never such as to give rise to any anxiety.

#### (12) TICK TYPHUS.

Increasing interest has been aroused in this disease and it now seems fairly certain from recent work in the Union of South Africa that the vector is the red dog tick *Rhipicephalus sanguineus*. This tick has been associated with tick typhus in this country and in Kenya.

Weil-Felix agglutination reactions show positives with *B. proteus* strains X19 O, XK O, and X2 O, of which the commonest is probably X19 O. Flea-borne classical typhus has existed in the Union of South Africa for a number of years. The endemic disease does not occur in this country, though there have been several cases of fatal typhus, which might possibly have been flea-transmitted typhus. One death from typhus was notified this year, and this case exhibited features very suggestive of the flea-borne type. Complications of tick typhus have been recorded, including central nervous symptoms such as ataxia; these latter manifestations point to the presence of a neurotrophic strain of the virus.

The disease, first recorded in Southern Rhodesia in the Salisbury District, is found in all parts of the country.

#### (13) PLAGUE.

In January, 1937, an outbreak of plague was reported in Northern Rhodesia near Balovale, in Barotseland. The outbreak in human beings was associated with a mild epizootic in rodents in the same area. Stringent measures were taken immediately to deal with immigrants to Southern Rhodesia from the infected area, and a watch was kept on the Zambesi boundary and trains were deratised. The closest co-operation was maintained with the Health Departments in Northern Rhodesia and the Bechuanaland Protectorate, no human cases occurred in Southern Rhodesia, nor was there any evidence of our rodent population having become involved.

#### (14) RABIES, UNDULANT FEVER.

No notifications of the occurrence of these diseases were made during the year, though it would appear from the laboratory reports that there had been five cases in which agglutinins to *B. abortus* were demonstrated in the bloods of Europeans.

#### (15) WHOOPING COUGH, MEASLES, SCARLET FEVER, CHICKEN POX, GERMAN MEASLES, MUMPS.

Except in the cases of whooping cough and German measles notifications of the other diseases showed substantial increases on last year's figures. When compared with the figures of the last ten years, the notifications of chicken pox, measles and mumps amongst Europeans this year reach the highest total recorded, whilst scarlet fever shows the highest figure since 1935. These diseases are extremely difficult to control, and occur commonly in small epidemics in residential schools where large, unprotected juvenile populations are exposed to heavy and concentrated infection so suddenly that they are unable to bring into play the natural defence mechanisms against diseases.



## CHAPTER III.—GENERAL.

## (1) NATIVE CLINICS AND DISPENSARIES.

The expansion of the work undertaken by the native clinics and dispensaries maintained by the Government has been continued. By their distribution throughout the country these clinics bring the benefits of modern medicine within easy reach of large numbers of the native population. On reference to the accompanying map, it will be seen that the development of the clinics has been in a centrifugal manner outwards from the plateau of the country. Geographically there would appear to be room for development of this work in the far south of the Colony and also to the west. During the coming year it is expected that a dispensary will be opened at Nuanetsi which will meet the need in the lower section of the Chibi District. The large Sebungwe District and the low *veld* of the Zambesi Valley are as yet untouched; but the opening of clinics near these areas is rendered extremely difficult by the primitive means of communication and the difficulty of maintaining a service during the wet season. It is to be hoped to make a trial with dry-season clinics during the coming year. Only by the establishment of such clinics or by regular and frequent visits from a travelling dispensary can inroads be made on the incidence of yaws, which disease threatens year by year to spread to new areas.

The following are the consolidated figures for native patients treated during the year 1937 :—

Type of Service.	In-patients.	Out-patients.	Total.
Attached Native Hospitals (11) .....	13,704	44,521	58,225
Detached Native Clinics (17) .....	10,533	24,830	35,363
The Ndanga Group (8) .....	7,134	11,173	18,307
Mission clinics .....	10,381	61,512	71,893
Total .....	41,752	142,036	183,788

The following is a list of the institutions either maintained by the Government or in receipt of grants, which afford medical treatment for natives. Those which afford facilities for the treatment of venereal diseases are printed in italics :—

## NATIVE HOSPITALS (12).

Salisbury	<i>Gatooma V.D. Clinic</i>
Bulawayo	<i>Fort Victoria</i>
Umtali	<i>Sinoia</i>
Gwelo	<i>Gwanda</i>
Gatooma	<i>Enkeldoorn</i>
Bindura	<i>Shamva</i>

## NATIVE DISPENSARIES (32).

<i>Ndanga</i>	<i>Marandellas</i>	<i>Chibi</i>	<i>Selukwe</i>
<i>Bikita</i>	<i>Fort Usher</i> (pre-	<i>Chilimanzi</i>	<i>Rusapi</i>
<i>Dispensary A</i>	viously <i>Lees</i>	<i>Plumtree</i>	<i>Makumbi</i>
<i>Dispensary B</i>	<i>Memorial Hos-</i>	<i>Umvuma</i>	<i>Jena</i>
<i>Dispensary C</i>	pital)	<i>Mt. Darwin</i>	<i>Tsonzo</i>
<i>Dispensary G</i>	<i>Chingombi</i> (pre-	<i>Mrewa</i>	<i>Filabusi</i>
<i>Chichidza</i>	viously <i>Alheit</i> )	<i>Kutama</i>	<i>Wedza</i>
<i>Matibi No. 2</i>	<i>Kesi</i>	<i>Sipolilo</i>	<i>Tjolotjo</i> (lately
<i>Chipinga</i>	<i>Concession</i> (lately	<i>Lukosi</i> (lately <i>St.</i>	<i>Gwaai Reserve</i> )
	<i>Amandas</i> )	<i>Mary's, Wankie</i>	
	<i>Mphoengs</i>		

Some of the above were opened at the end of 1937 and the patients treated do not figure in the tables at the end of the report.

*Native Dispensaries opening early in 1938 (5)—*

Chinomwe	Hartley	Inyati	Matobo	Inyanga
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*Native Dispensaries asked for on the Estimates (13)—*

Buhera	Essexvale	Melsetter	Miami
Odzi	Shangani	Banket	Norton
Gokomere	Chiweshe Reserve	Selukwe Reserve	
St. Patrick's	Dawsons, Um- vukwes		

Two of the above, Gokomere and St. Patrick's, will mean the taking over of mission clinics, which will be rebuilt and run as Government clinics under the general supervision of the mission concerned.

In addition to the above, there are 27 missions in receipt of Government grants in aid of medical work among natives. Of these, 15 provide treatment for venereal diseases.

## (2) NATIVE DIETARIES.

Government Medical Officers at Sinoia, Hartley, Concession and Gwanda draw particular attention to the dietaries of natives employed on farms and the small mines, which still give room for great improvement. In Mashonaland it is noted that alien natives from the territories to the north arrive often in an emaciated and worn-out condition. They seek employment and are put to work immediately, with the result that they break down at once or else never recover full health and sufficient strength for hard manual labour. While alien natives from some northern districts are afforded transport and food facilities to Southern Rhodesia, this does not apply to the north-western labour routes. It would appear that some form of rehabilitation centre for immigrant labour would repay itself in the better health of the alien labour force. At such a centre the obvious unfits would be eliminated and repatriated; starvation and emaciation could be combated and worm and other infections cleared up at the very moment of the entrance of the labour to the country.

Several Government Medical Officers have drawn attention to the poor housing conditions and the absolute lack of sanitary facilities on most farms. Bored-hole latrines are easy and cheap to construct and would well repay any outlay in the diminution of intestinal troubles in the labour force.

The Government Medical Officer at Gwanda calls attention yet again to the unduly high incidence of scurvy in that district, particularly amongst the labour employed on the smaller mines, where there has been little or no improvement in the passage of the years.

Attention is called to the value of germinating beans as a cheap, easily obtainable and easily transported source of vitamin C, the scurvy-preventing accessory food factor. The appointment of native labour inspectors by the Department of Native Affairs, it is hoped, will have a favourable influence on this matter, but sufficient time for results has not elapsed. As one pointer to the increased interest taken by the northern territory administrations in the health and welfare of their subjects in the southern labour markets is the appointment by Nyasaland to Salisbury of a Labour Adviser. There is an awakening interest all over the world in this subject of nutrition, largely due to the work of the Health Organisation of the League of Nations, and it is hoped that the necessary apparatus for carrying out basal metabolism estimations will be obtained during the coming year, when the necessary preliminary work of eliciting local normal figures for further and more advanced work in the investigation of particular diets and foodstuffs.

Opinions as to what particular substance is lacking in native diets are so diverse, and even the knowledge that there is any particular marked defect in the usual dietary, renders such investigation particularly pressing.



## (3) THE HYGIENE OF "DORMITORY SUBURBS."

It is becoming increasingly evident that the worst sanitary conditions prevail in the immediate extra-municipal settlements. These suburbs usually have no form of local government, and the disposal of house waste, sullage water and even excreta is by individual effort.

Boreholes and wells are sunk on each property to procure a water supply and the surface protection of some of these boreholes and wells leaves much room for improvement. Pit latrines and privies are sited without regard for their own water supplies, much less with any consideration for the water supplies of neighbours. Refuse disposal is usually on to any unoccupied stands or neighbouring *veld*, and the native servants perform the alvine function in similar situations. Fly-breeding is extensive as a rule in such areas. Village Management Boards seem to be necessary, to ensure good health and environmental conditions until such time as the town around which these settlements spring up finds itself able to absorb its own "dormitory suburbs."

## (4) RECENTLY INTRODUCED LEGISLATION AFFECTING PUBLIC HEALTH.

A. *Dairy Act*.—In the latter part of the year the Dairy Act, 1937, was passed by Parliament, and its provisions come into force on the 1st of January, 1938. By this measure proper legislative control can be applied to all milking operations, the dairy farm with its buildings, water supply and sanitation. The health of the dairy personnel and the health and care of the animals in the herd can be supervised and the general hygiene of milk production from the cow, through the transport stages, right to the time of delivery to the consumer comes under control. The new regulations lay down for the first time satisfactory health standards for dairy produce, including ice-cream.

It is to be hoped that the policy of pasteurising milk supplies will become more popular, and that this form of milk treatment will be employed whenever the volume of supply is economically sufficient for such treatment. Efficient pasteurising plants to deal with quantities as low as 25-30 gallons are available, which should allow of the pasteurisation of milk in all but the smallest centres of population. A note of warning must be sounded at the danger of putting efficiently pasteurised milk into imperfectly clean receptacles, as the treatment does not mean that the milk will be safe whatever liberties are taken with it after the pasteurising process.

There is no evidence that the bovine form of tuberculosis is common in Southern Rhodesia, though there is evidence that tuberculosis in cattle is more common than was at one time thought. Contagious abortion in cattle is extremely prevalent, however, and it is to be marvelled at that the similar disease in humans, undulant fever, is not more prevalent than it is. The task of building up *B. abortus*-free herds would seem to be at the present time quite impracticable, and the method *par excellence* of rendering such milk safe with the least injurious effect on the nutritive and protective value of the milk is, without doubt, holder pasteurisation.

Only when the milk supply is reasonably safe and wholesome should steps be taken to encourage the increased consumption of milk by all races and ages of the community.

B. *Native Registration Act*, 1936.—In terms of section 22 of this Act regulations governing the medical examination of natives in urban areas were published in Government Notice No. 371 of 1937.

There have been difficulties in securing proper medical examinations at as regular and frequent intervals as would be desirable, but it should be remembered that money spent in prevention and early treatment saves more money spent in the treatment of the results of the disease.

## (5) NATIVE LABOUR ON MINES.

The average number of natives employed on mines in the twelve months ending November, 1937, was 90,049, being an increase on the previous year's figures of 6,430.



## A.—NATIVES ON MINES : COMPARATIVE STATEMENT OF MORTALITY, 1933-1937.

	Twelve months ended November.				
	1933	1934	1935	1936	1937
Average number employed —	47,080	61,101	75,173	83,619	90,049
<i>Disease—</i>					
Number of deaths —	438	573	851	829	827
Death rate per mille per annum —	9.30	9.38	11.32	9.91	9.18
<i>Accidents—</i>					
Number of deaths —	103	140	194	180	175
Death rate per mille per annum —	2.19	2.29	2.58	2.15	1.94
<i>All Causes—</i>					
Number of deaths —	541	713	1,045	1,009	1,002
Death rate per mille per annum —	11.49	11.67	13.90	12.06	11.12

From the above table it will be seen that the death rates from accident and from diseases have fallen to the lowest level recorded since 1933. It is interesting to refer back to 1913 when there were 946 deaths, of which 488, or 51.59 per cent., were due to respiratory diseases, and the population at risk employed on the mines was 33,543, giving a death rate of 28.20 per mille.

## B.—NATIVES ON MINES : RATES OF DEATHS FROM DISEASE.

Death rate per 1,000 employed.	Twelve months ended November.				
	1933	1934	1935	1936	1937
Pneumonia —	4.16	4.21	4.51	5.03	4.71
Other diseases —	5.14	5.17	5.91	4.88	4.47
Total Disease Death Rate —	9.30	9.38	11.32	9.91	9.18

From the above table it will be seen that in 1937, as in 1913, about half the deaths of natives on mines were due to respiratory diseases. Steps might well be taken by mine owners to reduce this proportion considerably by such means as—

- (a) prophylactic vaccination;
- (b) provision of warm drinks in the cold weather for the workers coming off shift;
- (c) compelling workers to don more clothing as soon as they ascend to the surface.

There is no doubt that pneumonia finds an easy prey in the exhausted and hungry native workers subjected to extreme environmental changes on reaching the surface after his work underground. The accident rate is a satisfactory one considering that deeper levels with proportionately increased dangers are being opened up year by year.



It is more evident that housing conditions, food supplies and medical care of natives on many mines leaves much to be desired. From the table below it will be seen that 210 cases of scurvy resulting in three deaths occurred.

It is greatly regretted that at this late date in the Colony's history such a number of cases of scurvy should figure on mining sickness returns in Southern Rhodesia. This is an easily preventable disease for which a cure has been known for over 200 years, but people seem loth to apply the knowledge gained after such well-tried experience.

C.—NATIVES ON MINES : SICKNESS, DEATHS AND DEATH RATES, 1937.

Disease.	Twelve months ended November, 1937.		
	Number of Cases.	Number of Deaths.	Death rate per mille per annum.
Malaria .....	4,578	33	0.37
Scurvy .....	210	3	0.03
Syphilis .....	1,173	26	0.29
Pneumonia .....	2,166	424	4.71
Phthisis (Consumption) .....	58	53	0.59
Other diseases of chest .....	931	15	0.17
Dysentery and diarrhoea .....	864	15	0.17
Other intestinal diseases .....	114	25	0.27
Heart disease .....	60	34	0.38
Debility .....	176	18	0.20
Influenza .....	7,555	42	0.46
Other diseases .....	2,276	139	1.54
Minor ailments .....	19,474	—	—
<b>Total .....</b>	<b>39,635</b>	<b>827</b>	<b>9.18</b>
<i>Accidents and Injuries.—</i>			
Major .....	431	175	1.94
Minor .....	12,588	—	—
<b>Total (all cases) .....</b>	<b>52,654</b>	<b>1,002</b>	<b>11.12</b>

The labour of our native population must be not only conserved, but must be used wisely so that this great natural asset can be built up for our successors and not ruined on account of our immediate needs.



## (6) SCHOOLS MEDICAL SERVICE.

A new male Schools Medical Officer arrived at the beginning of the year, and the work has been divided between him and the lady Schools Medical Officer. Inspections were carried out in every Government and Government-Aided School in the country during 1937; 5,640 European and 690 Indian and Coloured children were examined medically, a total of 6,330 routine examinations out of a school population numbering 10,750 Europeans and 1,181 Indian and Coloured. In view of the fact that no medical inspection has been carried out for a number of years in many of the schools, the medically examined pupils classified as "Re-examinations" and "Specials" in the attached list have been grouped together with the routine age-groups, since it was felt necessary to give these a thorough routine examination in place of a limited examination for the particular defect for which referred. For the same reason, the "Entrants" group includes not only the youngest children in the schools but children ranging in age from 5 to 17.

While inspecting each school, a full report was made on the school buildings and environmental conditions, from the point of view of physical and mental hygiene, and submitted to the Education Department. Reference is made to this below, among the various headings of the summary.

*Parents.*—One thousand two hundred and thirty-nine European parents and 39 Coloured and Indian parents attended the Medical Inspections, making an attendance of 21.9 per cent. and 5.7 per cent. respectively. In many cases parents sent notes giving details of medical history of their children when they were unable to attend the examination personally, and some sent representatives. Boarders were examined almost invariably in the presence of the School Matron, and in some of the bigger schools, all pupils were examined in the presence of the Physical Instructor. In a few cases a note was sent refusing medical inspection, this request being, of course, complied with. All parents do not yet appreciate the aims or value of the School Medical Service, as they have hitherto considered that a doctor's work begins as soon as a person becomes disabled by sickness. Educational propaganda in the form of cinematograph films—specially adapted for local conditions—would be an asset towards interesting the parents and their children in the preventive side of medicine and the maintenance of good health as opposed to the older and more wasteful idea of consulting the doctor to be cured of sickness. It is hoped to introduce this form of propaganda in the near future.

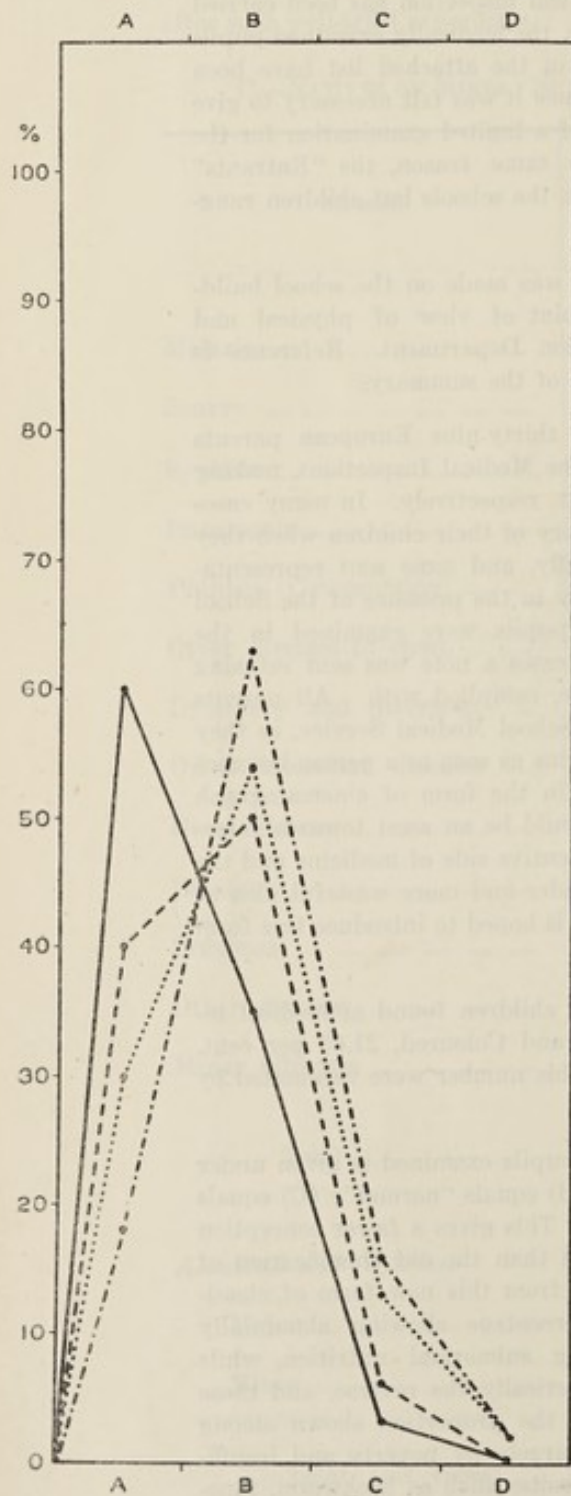
*Vaccination.*—The numbers of unvaccinated children found at medical inspection were 1,220 European and 204 Indian and Coloured, 21.63 per cent. and 29.6 per cent. respectively. About half of this number were vaccinated by the Schools Medical Officers.

*Nutrition.*—The state of nutrition of those pupils examined is given under one of four headings: (A) equals "excellent"; (B) equals "normal"; (C) equals "slightly below normal"; and (D) equals "bad." This gives a fairer conception of the state of nutrition of a group of children than the old classification of "normal" and "below normal." It will be seen from this new form of classification that among European children, the percentage showing abnormally good nutrition is more than twice that showing subnormal nutrition, while among the Coloured children the picture is practically the reverse, and those showing "bad" nutrition are nearly four times the proportion shown among Europeans. While this may be accounted for largely by poverty and insufficient food, there is no doubt that intestinal parasites such as hookworm, tapeworm and roundworm, as well as bilharzia and congenital syphilis account for a great deal of malnutrition among Coloured children. The exact extent of these can only be determined by a routine examination of the blood, urine and faeces of all Coloured children. In special cases sent for laboratory investigation of urine or faeces this year, 67 per cent. were positive as opposed to 12.3 per cent. of specimens sent from selected Europeans.

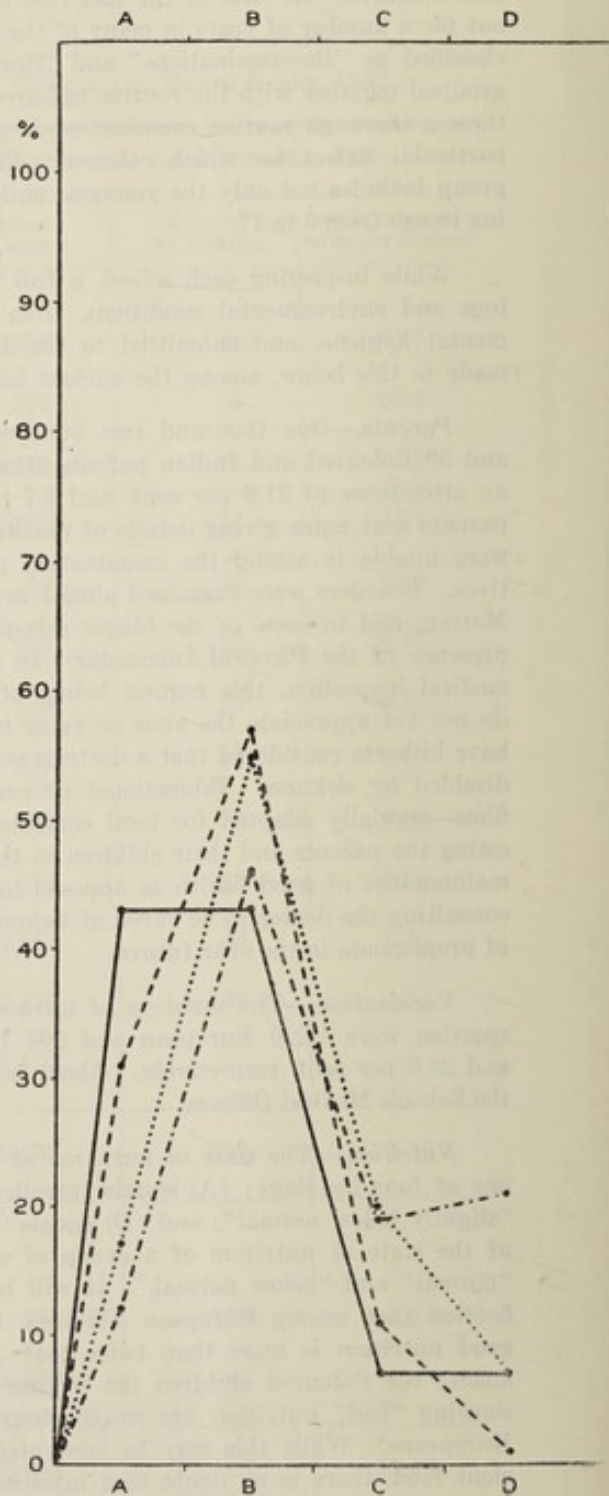


## COMPARATIVE ILLUSTRATION.

European Nutritional Graph.



Coloured Nutritional Graph.



- - - - - = 1928.

..... = 1925.

- - - - - = 1923.

———— = 1921.

ay. graph



Before blaming the lack of quantity or quality of food as being responsible for a case of malnutrition, it is necessary to eliminate the possibility of disease; this, in a tropical country, necessitates laboratory investigation. At present, routine laboratory investigation is impossible owing to insufficient personnel to deal with the amount of material which would be submitted.

There seems to be a gradual improvement in nutrition in direct proportion to the age of both European and Coloured children, the oldest age group (1921) being the best.

#### NUTRITION OF EUROPEAN SCHOOL CHILDREN.

Comparison of 4 Age Groups.

	1928.	1925.	1923.	1921.
Number examined .....	698	760	720	540
Number showing "A" nutrition .....	123	234	294	327
Percentage showing "A" nutrition .....	17.6	30.8	40.8	60.6
Number showing "B" nutrition .....	438	414	366	188
Percentage showing "B" nutrition .....	62.8	54.5	50.8	34.8
Number showing "C" nutrition .....	115	93	50	20
Percentage showing "C" nutrition .....	16.5	12.2	6.9	3.7
Number showing "D" nutrition .....	22	19	10	5
Percentage showing "D" nutrition .....	3.1	2.5	1.5	0.9

#### NUTRITION OF COLOURED SCHOOL CHILDREN.

Comparison of 4 Age Groups.

	1928.	1925.	1923.	1921.
Number examined .....	71	105	65	26
Number showing "A" nutrition .....	9	18	20	11
Percentage showing "A" nutrition .....	12.7	17.1	30.8	42.3
Number showing "B" nutrition .....	33	58	37	11
Percentage showing "B" nutrition .....	46.5	55.2	56.9	42.3
Number showing "C" nutrition .....	14	21	7	2
Percentage showing "C" nutrition .....	19.7	20.0	10.8	7.7
Number showing "D" nutrition .....	15	8	1	2
Percentage showing "D" nutrition .....	21.1	7.7	1.5	7.7

*Skin Diseases.*—Under this heading are included the acne and seborrhoea of puberty, scabies, impetigo, herpes, ringworm, psoriasis, congenital ichthyosis, and indeterminate rashes which are usually due to vermin. The latter and scabies and impetigo are commonest among the poorer community, while other skin diseases show no discrimination as regards race or social position.

*Defective Vision.*—The number requiring treatment in the schools is almost equal to those who have already received treatment. Owing to the prohibitive cost of obtaining treatment for this condition for their children, by parents of moderate means, it is proposed that the Schools Medical Officers, both of whom are experienced in this work, should conduct clinics in the various districts at the same time as medical inspection, using portable apparatus. The prescriptions for spectacles given at these clinics can be dispensed subsequently by an optician who is under contract to supply them at a fixed reasonable cost. It is the rule in Great Britain for such clinics to be open, free of charge, to all children attending public elementary and secondary schools. To facilitate detection of defective vision between inspections, all schools have been supplied with vision testing charts with written directions as to their use. Squint is relatively commoner among Coloured than European children, being mainly a condition associated with poverty, and frequently follows serious illnesses in early childhood from which children in better circumstances normally recover unscathed.



*Other conditions of the eye* include inflammation of the eyelids, often due to untreated defective vision; conjunctivitis, due to irritation from dust or infection; congenital malformation such as cataract and coloboma; injuries of the eye; interstitial keratitis and iritis, due to congenital syphilis, seen almost entirely among Coloured children.

*Defective hearing* is probably commoner in a mild form than the figures given, since it is usually unsuspected, even by the child concerned without a special instrumental test of each ear separately. The presence of wax accounts for about one third of these cases, the remainder being due to adenoid enlargement or to middle ear disease. The latter is contracted in infancy usually as a result of scarlet fever or sometimes measles, and chronic discharge from the ear or deafness, seen in children of school age from this cause means usually that the acute condition received insufficient treatment in the first place. Fortunately, very few cases of active discharge from the ear were seen—only 5 cases this year—since this condition does not readily respond to treatment once it has become chronic.

*Tonsils and Adenoids.*—Since the frequency of enlarged tonsils and adenoids may be inversely proportional to the number of children who have had these organs removed previously in any school, it is best estimated by adding together the numbers under these two headings. From this, it will be seen that the incidence of enlarged tonsils and adenoids is approximately 30% of those examined. On the other hand, removal was advised in only 3% of those examined. The view taken by both the Schools Medical Officers of this condition is that enlarged tonsils with no pathological symptoms, such as recurrent sore throats which impair health, or mechanical obstruction to breathing or speech, should be treated as a physiological condition, possibly caused by excessive dust in the atmosphere, and that no treatment is required for it. On the other hand enlarged adenoids invariably cause pathological symptoms by obstruction to breathing, and these, as well as tonsils causing definite symptoms, are advised to be removed.

There appears to be no geographical endemicity, except that the numbers of tonsils and adenoids removed is greater on the whole in or near the large towns, although even here the numbers vary greatly in different schools, as will be seen from the following table of schools in Bulawayo and neighbourhood.

TONSILS AND ADENOIDS IN BULAWAYO AND DISTRICT (1937).

School.	Number Examined	Enlarged	Per cent.	Removal Advised	Per cent.	Removed Previously	Per cent.
Bellevue Public .....	31	4	13.0	—	—	5	16.1
Bulawayo Technical (Boys')	96	1	1.0	1	1.0	21	21.9
Cement Public .....	13	1	7.7	1	7.7	1	7.7
Coghlan (Boys') .....	75	5	6.7	—	—	12	16.0
Coghlan (Girls') .....	128	19	14.8	—	—	20	15.6
Convent (Girls') .....	221	34	15.4	1	0.45	53	23.5
Eveline High (Girls') .....	324	49	15.1	4	1.2	84	25.9
Hillside Public .....	30	1	3.3	1	3.3	3	10.0
Hyde Park Public .....	22	2	9.1	—	—	2	9.1
Kingsdale Public .....	33	2	6.2	2	6.2	2	6.2
Milton Junior (Boys') .....	235	15	6.4	5	2.1	65	27.7
Milton Senior (Boys') .....	100	—	—	—	—	39	39.0
Raylton Public .....	49	8	16.4	4	8.2	4	8.2
Sauerstownship Public .....	34	7	20.6	—	—	—	—

1391 148

911



*Heart.*—Organic diseases of the heart appear to be more frequent than in Great Britain (among Europeans, .52 per cent; among Coloured, 1.16 per cent., as compared with Great Britain, .35 per cent.—see Annual Report of Chief Medical Officer to Board of Education, 1936). This incidence may be artificial, owing to the considerable proportion of children examined for the first time this year. Moreover the percentages are not strictly comparable without allowance for errors of sampling. The cause appeared to be rheumatism in all cases except two.

Under "Functional Diseases" are included all those cardiac conditions which are not definitely organic disease, and it is probable that a number of these cases are in fact organic disease. Rheumatism being a disease associated with poverty, it is not surprising that the incidence of rheumatic heart disease is twice as high among Coloured children.

#### TABLES.

##### (1) ORGANIC HEART DISEASE.

	Southern Rhodesia.	England and Wales (1936 report).
No. examined .....	5,640	1,727,031
No. showing organic heart disease .....	29	6,089
Percentage .....	0.52	0.35

##### (2) NUTRITIONAL STANDARDS.

	Southern Rhodesia.	England and Wales (1936).
Number examined .....	5,227	1,726,755
A. 1,483 = 28.37%		A. 14.6%
B. 3,040 = 58.16%		B. 74.2%
C. 567 = 10.85%		C. 10.5%
D. 137 = 2.62%		D. 0.7%

*Diseases of Lungs* appear to be uncommon among school children, no cases of pulmonary tuberculosis were seen.

*Postural Defects.*—All deformities due to badly balanced action of the muscles, and remediable by physical training are classified as "postural defects." These deformities occur in the spine as Kypho-lordosis—usually associated with round shoulders, a flat chest and a prominent abdomen; and scoliosis, a side to side twist in the spine resulting in asymmetry of the shoulders and chest and often severe backache; in the feet as flat feet, resulting in a shuffling gait and often pain in the feet and calves of the legs. These defects are all due to one fundamental cause, namely, overstrain, and are about five times more common among boys than among girls. The peak of incidence is reached in some of the larger boys' schools: e.g. Plumtree 21 per cent., Rhodes Estate Preparatory 17 per cent., Salisbury Public Boys' 20 per cent. The result of leaving these conditions untreated is usually permanent deformity, remediable only by surgical measures and not always by those; chronic and permanent weakness, and in the case of kypho-lordosis—chronic ill-health in the form of indigestion, constipation, weak circulation and predisposition to pulmonary tuberculosis. Hence the enormous importance attached to physical training in Germany and Italy and lately in Great Britain. While a school may be proud of its record at games and sports—which is in fact won by its *fittest* members, it is only fair that the other side of the story should be manifest too—i.e. the record of the number of children who are unfit to indulge in games at all and for whom games are definitely harmful until the defects have been remedied successfully.

Physical instruction on a scientific basis takes a very small part in the schools curricula at present. A glance at the list of incidence of postural defects will show how urgently necessary this is. In view of this deficiency a list of remedial exercises was compiled this year, with the help of the Physical Training Staff, with explanations and diagrams of the various movements, and a copy was presented to those pupils suffering from postural defects, who



## FINDINGS OF MEDICAL INSPECTION, 1937.

[illegible]



## FINDINGS OF MEDICAL INSPECTION, 1937.

[illegible]



could get no advice from a physical instructor. Copies were also left with the Principal or Physical Instructor of every school in which postural defects were detected.

*Deformities.*—Under this heading are included orthopaedic deformities such as club-foot and hammer-toe, paralytic deformities resulting from birth injuries or infantile paralysis, deformities resulting from injury; deformities resulting from disease such as pigeon chest, and congenital deformities such as hare-lip and cleft palate and hypospadias. Strictly speaking one might classify all hernias under this heading too, but instead, these have been classified together with "other conditions."

The number of orthopaedic remediable deformities does not justify the inauguration of special orthopaedic clinics in the various districts, as is the custom in some areas in Great Britain; all such cases are referred to private doctors at present, or if indigent they are sent to the nearest Government hospital.

#### POSTURAL DEFECTS.

COMPARISON TABLE.

School.	No. Examined.	No. showing Postural Defects.	Per cent.
<i>Boys' Schools—</i>			
Bulawayo Technical .....	96	13	13.5
Coghlan Boys', Bulawayo .....	75	3	4.0
Daisyfield Pioneer School .....	41	2	4.9
Eiffel Flats Public .....	70	6	8.6
Enkeldoorn Public .....	41	3	7.3
Gatooma Public .....	52	4	7.7
Gwelo Chaplin .....	132	17	12.9
Marandellas Public .....	48	5	10.4
Marula Central .....	46	3	6.5
Milton Junior, Bulawayo .....	235	26	11.1
Milton Senior, Bulawayo .....	100	12	12.0
Plumtree .....	71	15	21.1
Prince Edward Junior .....	174	18	10.3
Prince Edward Senior .....	151	21	13.9
Que Que Public .....	62	5	8.1
Raylton Public, Bulawayo .....	49	3	6.2
Rhodes Estate Preparatory .....	94	16	17.0
Rusape Public .....	90	4	4.4
Salisbury Public .....	74	15	20.3
Umtali High .....	183	19	10.4
Umtali Public .....	83	3	3.6
Wankie Public .....	50	4	8.0
<i>Girls' Schools—</i>			
Convents (Salisbury and Bulawayo) .....	339	5	1.5
Gwelo Chaplin and Convent .....	155	—	—
Eveline, Bulawayo .....	323	8	2.5
Girls' High, Salisbury .....	345	2	0.58
Umtali High and Convent .....	285	4	1.4
	1,347	19	1.4%

*Enlarged Spleens.*—Owing to lack of sufficient laboratory facilities, the detection of an enlarged spleen is the only positive evidence of malaria which is accepted by the Schools Medical Officers. A history of malarial attacks is too vague altogether to be relied upon for statistical purposes. If a blood smear were taken as a routine measure from every child inspected, there is no doubt that the incidence of malaria would be found considerably higher than that given. The incidence 3.12 per cent. given for 5,640 European children scattered all over Southern Rhodesia is in any case a matter for grave concern when consideration is given to the fact that a large proportion



of these children live in towns or big villages, e.g. the large boys' and girls' schools where endemic malaria is negligible in comparison with country districts. The mere presence of a few children with enlarged spleens in a school does not signify endemic malaria, since many of the boarders in the town schools come from the country or other parts of Africa such as Northern Rhodesia, and Nyasaland and Portuguese East Africa, and many of these infections can be contracted by a short stay on holiday in an endemic zone. However, the fact remains that out of approximately half the school population which was inspected last year, no less than 176 children were found to be suffering from chronic malaria. Apart altogether from the permanent weakening of the body and inertia of the mind which results from chronic infection by a parasite which lives and feeds on the blood and blood forming organs, the danger of such infection does not seem to be appreciated by parents and principals of schools. All these 176 children are liable at any moment to one or more of four complications *which may kill them within a few hours*, namely: (1) a malignant attack of cerebral malaria, (2) blackwater fever, (3) rupture of the spleen from a minor injury sustained while playing, (4) intercurrent infections or accidents such as pneumonia or a fractured limb which are a hundredfold more dangerous in a malarial subject than in one not so affected. Incidentally, intercurrent illnesses are far more frequent among malarial subjects.

COMPARATIVE TABLE.  
SPLEEN ENLARGED (CHRONIC MALARIA).

School.	Number Examined.	Number enlarged spleen.	Percentage.
Annandale .....	11	4	36.4
Beatrice Central .....	68	6	8.8
Bulawayo Convent .....	221	3	1.4
Bulawayo Technical .....	96	1	1.0
Bindura .....	42	2	4.8
Chipinga Public .....	28	5	17.9
Coghlan Bulawayo .....	75	1	1.3
Darwendale .....	32	4	12.5
Daisyfield Pioneer (Boys') .....	41	2	4.9
Daisyfield Pioneer (Girls') .....	40	1	2.5
Eiffel Flats P.S. ....	70	1	1.4
Eveline (Bulawayo) .....	305	1	0.3
Enslindeel Central .....	14	3	21.4
Fort Victoria .....	62	2	3.2
Gatooma Public (Boys') .....	52	6	12.8
Gatooma Public (Girls') .....	31	3	9.7
Greystone Central .....	39	2	5.1
Hartley Public .....	15	2	13.3
Hillside Public (Bulawayo) .....	30	1	3.3
Inyazura A.F.S. ....	4	2	50.0
Kingsdale P.S. (Bulawayo) .....	33	2	6.2
Makoni North F.S. ....	19	4	21.0
Marandellas Public .....	48	3	6.3
Marula Central .....	46	4	8.7
Matopos South C.S. ....	27	1	3.7
Melsetter Public .....	20	1	5.0
Mombi A.F.S. (near Gatooma) .....	6	2	33.3
Penhalonga P.S. ....	14	3	21.4
Plumtree Village S. ....	28	1	3.6
Prince Edward Junior (Salisbury) .....	174	4	2.3
Prince Edward Senior (Salisbury) .....	151	3	2.0
Que Que Public (Boys') .....	62	2	3.2
Rathlyn A.F.S. (Nyamandhlovu) .....	4	4	100.0
Raylton Public (Bulawayo) .....	49	1	2.05
Rhodes Estate Prep. (Boys') .....	94	6	6.4
Riversdale Central .....	22	1	4.5
Somabula .....	41	2	4.9



Comparative Table (continued).

School.	Number Examined.	Number enlarged spleen.	Percentage.
Rusapi Public — — — — —	90	6	6.7
Salisbury Public (Boys') — — — — —	74	6	8.1
Salisbury Public (Girls') — — — — —	119	3	2.5
Selukwe Public (Boys') — — — — —	35	1	2.9
Shabani Public (Boys') — — — — —	32	3	9.36
Shabani Public (Girls') — — — — —	20	2	10.0
Shamva — — — — —	15	2	13.3
Umtali High (Boys') — — — — —	183	14	7.7
Umtali High (Girls') — — — — —	181	2	1.1
Umtali Public — — — — —	83	1	1.2
Wankie Public — — — — —	50	7	14.0
Weaverdene A.F.S. (Bulawayo) — — — — —	10	3	30.0
Welgetroos F.S. — — — — —	14	1	7.1
Bulawayo Col. — — — — —	114	4	3.9
Embakwe Col. — — — — —	118	10	8.5
Gatooma Col. — — — — —	19	2	10.5
Bulawayo Indian — — — — —	35	1	2.8
Que Que Col. — — — — —	29	3	10.3
Salisbury Hindu — — — — —	25	2	8.0

Some Schools in which no enlarged spleens were detected.

School.	Number Examined,
1. Milton Junior (Bulawayo) — — — — —	235
2. Milton Senior (Bulawayo) — — — — —	100
3. Plumtree, Bulawayo — — — — —	71
4. Umtali Coloured — — — — —	33
5. Salisbury Coloured (Boys') — — — — —	43
6. Bellevue P.S. (Bulawayo) — — — — —	31
7. Enkeldoorn P.S. (Boys') — — — — —	41
8. Gwanda P.S. — — — — —	38
9. Chaplin, Gwelo, (Boys') — — — — —	132
Chaplin, Gwelo (Girls') — — — — —	127
10. Hyde Park (Bulawayo) — — — — —	22
11. Johannesburg C.S. — — — — —	37
12. Louwdia C.S. — — — — —	24
13. Ngesi Poort C.S. — — — — —	26
14. Sauerstownship P.S. (Bulawayo) — — — — —	34
15. Vlakplaats F.S. — — — — —	28
16. Girls' High School (Salisbury) — — — — —	345
17. Umtali Convent (Girls) — — — — —	43
18. Bulawayo Coloured (Girls) — — — — —	67
19. Bulawayo Indian (Girls) — — — — —	30
20. Chisipite — — — — —	25
21. Hatfield — — — — —	80
22. Que Que Public (Girls) — — — — —	47
23. Gwelo Coloured — — — — —	47
24. Sinoia — — — — —	40
25. Selukwe (Girls) — — — — —	30
26. Avondale — — — — —	36
27. Emerald Hill — — — — —	43

*Nervous Diseases.*—Nine epileptics and one case of chorea were seen among European inspections this year, and one case of chorea and one epileptic among Coloured children. The other conditions seen include nocturnal enuresis, habit spasms, hydrocephalus, Raynaud's disease and fits secondary to the presence of intestinal worms, and various behaviour habits.



*Report on Intelligence Tests for Age Group, 1925.*

During 1937 Binet Simon tests have been carried out on 140 children who were born in 1925. The children were not selected in any way—the complete age group was tested in as many schools as time allowed. The group, therefore, may be taken as a fair sample of the school population.

Tests were carried out in the following schools:—

School.	No. of Children.
Public, Salisbury .....	22
Hatfield, Salisbury .....	12
Parktown, Salisbury .....	1
Emerald Hill, Salisbury .....	6
Avondale, Salisbury .....	4
Chaplin, Gwelo .....	17
Fort Victoria .....	3
Victoria Plots .....	5
Convent, Gwelo .....	4
Umvuma .....	6
Eveline, Bulawayo .....	40
Coghlan, Bulawayo .....	20
	140

The children varied widely in their educational attainments, ranging from Standard 2 to Standard 7.

	No. of Children.
Standard 2 .....	7
Standard 3 .....	13
Standard 4 .....	52
Standard 5 .....	54
Standard 6 .....	13
Standard 7 .....	1

*Nationalities.*—English, 97; Dutch, 33; other, 10. The results of the test are as follows:—

No. of Children.	Intelligence Quotients.	Percentages.	Percentages according to Terman.
1	116 +	0.7	11.8
22	106 - 115	15.7	23.1
34	96 - 105	24.2	33.9
39	86 - 95	27.8	20.1
33	76 - 85	23.5	8.6
10	66 - 75	7.1	2.5
1	56 - 65	0.7	0.3

These results may be compared with Terman's results on 1,000 American children between the ages of 5 and 14. It will be seen that the highest peak in the American scale comes between 96 and 105, while the highest peak in the Rhodesian test comes between 86 and 95. The American tests show 34.9 per cent. of children above the peak and 31.5 per cent. below.

The Rhodesian tests show 39.9 per cent. above the peak and 31.3 per cent. below, so that the two curves are approximately symmetrical, the Rhodesian one being about 10 points lower in the scale than the American one.

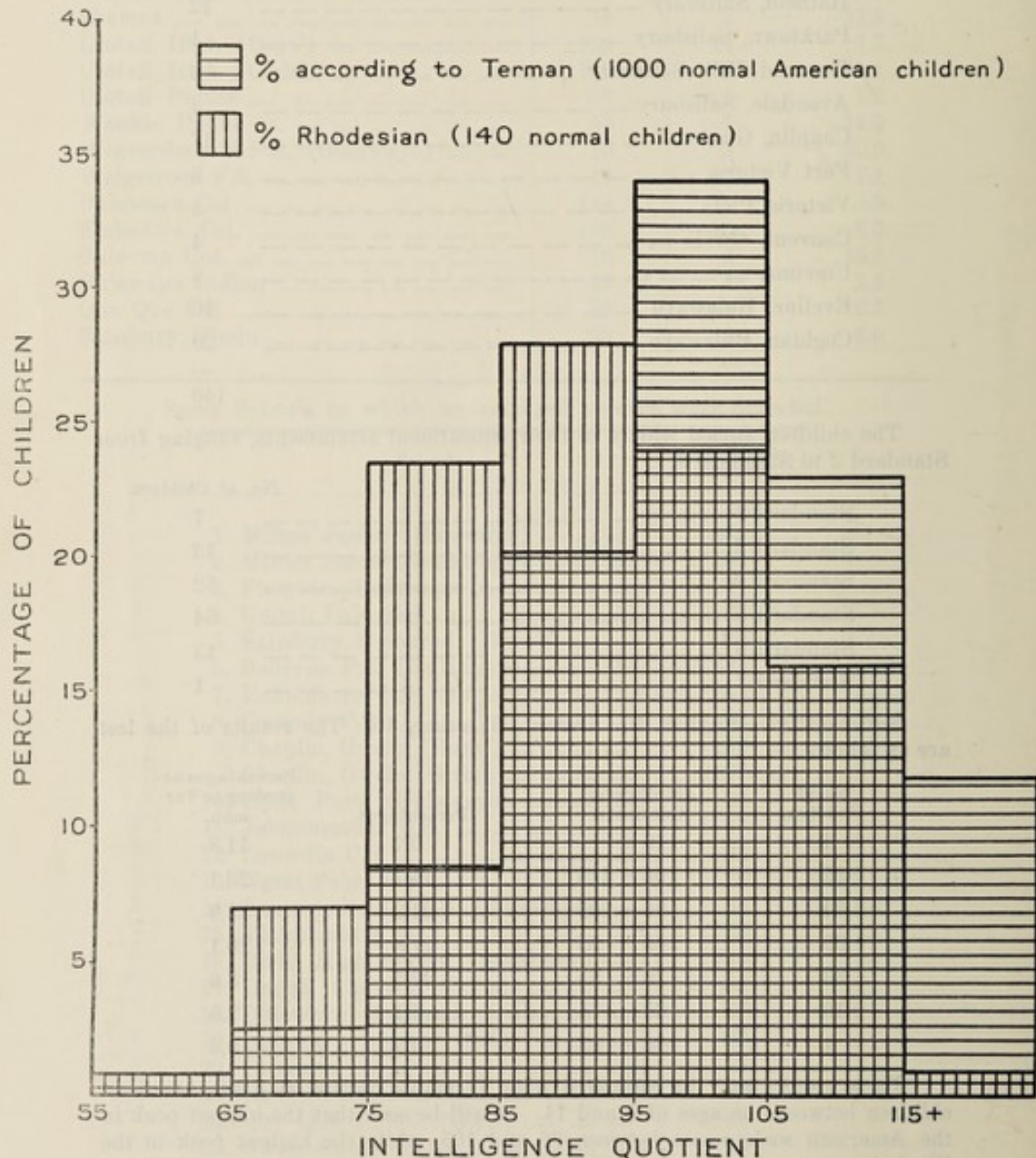
Professor Cyril Burt estimates that in London the average brain with an intelligence quotient between 85 and 115 is 76 per cent. of the population, with 12 per cent. above and 12 per cent. below.

In the Rhodesian figures there are 110 with an intelligence quotient between 85 and 115 = 77 per cent., with 0.7 per cent. above and 27 per cent. below.



The expected 12 per cent. of bright children have not been found among the group tested in Rhodesia, which may be partly accounted for by the fact that a number of children from good homes are educated outside the country or in private schools.

INTELLIGENCE TEST (BINET-SIMON) OF  
140 RHODESIAN SCHOOL CHILDREN  
BORN IN THE YEAR 1925.



On the other hand the number of dull children found is more than twice that found in London. It is obviously unfair to draw comparisons with so small a group of children as have been tested in Rhodesia, and I would venture to suggest that this work should be continued and that opportunity might be provided for the testing of a complete age group by the new revised Binet Simon tests, which give the most accurate and reliable results of any tests published up to date.

*Mental Tests.*—During 1937, an effort was made to carry out Binet Simon tests on one age group, i.e. those children born in 1925. This, however, was found to be impracticable owing to lack of time and only 140 were tested. Binet



Simon tests were also carried out on 35 children at the request of teachers. Of these, 2 were classified as imbecile, 8 as feeble-minded, and 16 as dull and backward.

The Education Department, assisted by the School Medical Department tested 1,500 children by means of the South African Group Intelligence Test.

The number of feeble-minded children found in the European schools varies round about 100, e.g. about 1 per cent. of the school population.

*Speech.*—Twenty-three cases (4.2 per thousand children examined) were found to be suffering from speech defects—mainly stammering. This is a spasmodic condition occurring in a nervous child and is best treated by relaxation and rest, associated with appropriate breathing exercises and rhythmic speech. Pamphlets on this subject will be distributed to teachers and parents during the coming year by the School Medical Officers, so that treatment may be carried out in the schools, and if possible, in the homes of these children, many of whom are unemployable if untreated, in spite of otherwise good abilities.

*Other Conditions.*—Under this heading are included hernia, clinical anaemia, injuries, parasitic infestations, congenital syphilis and benign tumours, and other less common conditions. Operable hernia is fairly commonly seen and operation is advised. The farming community, especially the Dutch-speaking isolated one, can very seldom be persuaded to have these children cured by operation, preferring to use a truss or some advertised "cure," in spite of the danger of the hernia becoming strangulated in an isolated district, many hours' journey from a hospital, which is clearly explained to them. Clinical anaemia is probably due mainly to malaria, although some is due to parasitic infestation and to dietetic errors. Parasitic infestations—including bilharzia, can only be diagnosed positively by laboratory investigation of all children examined, since many cases of infestation show atypical symptoms, e.g. bilharzia, in which the only symptom complained of may be insomnia, or nightmares. A medical examination can not be complete in a tropical country if the blood, urine and faeces have not been examined microscopically.

Congenital syphilis is hardly ever seen among European school children—last year 2 cases only were seen—whereas it is relatively common among the Coloured children. A condition, not included as a defect, but excessively common among school children is endocrine dysfunction. These children show excessive obesity and often have infantile generative organs in relation to their ages. Many seem to outgrow this condition in their late 'teens, and the cause or treatment of it is not at present definite.

#### (7) MENTAL DISEASE.

Dr. Rodger, the Medical Superintendent, Ingutsheni Mental Hospital, reports as follows:—

On the 1st January, 1937, there were 410 patients on the register. During the year 226 patients were admitted, 103 discharged, and 57 died; 638 cases were treated, that is 88 European males, 71 European females, 386 native males and 93 native females. There remained on the register on the 31st December, 1937, 478 patients, that is 66 European males, 49 European females, 291 native males and 72 native females; an increase of 68 over the number on the register on the corresponding date in the previous year.

*Discharges.*—Of the 103 certified cases discharged, 64 were discharged recovered, 3 were improved and handed over to the care of relatives, and 18 were discharged by the order of the Magistrate on or before the expiration of the Urgency Application. Of the 8 voluntary patients who left the Hospital, 5 were relieved of the symptoms which led them to seek treatment and three were not improved. Five European male patients and 2 native male patients were discharged owing to non-return on expiration of leave—technically by escape.

The recovery rate, calculated on the number of certified patients admitted, was 28.31 per cent., European recoveries being 22.22 per cent. and native recoveries 14.22 per cent. The recovery rate includes Voluntary Patients. The poor recovery rate reflects the large increase in the number of congenital mental defectives admitted during the year.



*Deaths.*—Fifty-seven deaths occurred during the year; of these 8 were Europeans and 49 were natives. The death rate, calculated on the number of patients treated, was 8.96 per cent. The rate for Europeans was 9.49 per cent. and for natives 10.25 per cent.

*Repatriations.*—During the year all alien natives were repatriated on recovery, Northern Rhodesia and Nyasaland being the principal destinations.

*Probation.*—Liberation on probation was allowed in 24 cases. Five recovered and nineteen (seven European males, four European females, five native males and three native females), have not yet completed probation.

*Voluntary Patients.*—Ten patients applied for admission for voluntary treatment; of these two remained to undergo further treatment.

*Health.*—The health of the hospital during 1937 remained satisfactory. No epidemics of a serious nature took place. Casualties have been slight and call for no special remarks. Dental inspection and treatment is carried out satisfactorily.

*Occupations and Amusements.*—The occupation of the patients has been maintained satisfactorily at its previous level, but has made no further advance. The work performed continues to have both a therapeutic and an economic value, but I feel that if more variety were added there would be better results. All departments of the gardens have benefited by the provision of an ample supply of borehole water. The quality of entertainment provided has been well maintained. Our mainstay in concerts and similar entertainments have been the Jewish Ladies, the Rovers and the Good Companions, the latter working in collaboration with Toe H. The Jewish Ladies have again made themselves responsible for our Christmas Tree. The Library progresses very slowly, but a scheme for periodic purchase of books is now under consideration.

During the year the State Lottery Trustees were good enough to replace the old half-size billiard table with a new full-sized one; the new table is greatly appreciated and in frequent use.

*Mental Hospital Board.*—A change in the organisation of the Hospital, which first operated in August, 1936, but on which no report was made last year, was the institution of a Mental Hospital Board. Its essential purposes are to give the patients a chance to make complaint personally to a body independent of the Hospital officials, and to observe any deficiencies of material or personnel which seem worthy of remark. It has fulfilled both purposes with remarkable patience and understanding, and has earned the gratitude of the patients and staff alike. In addition it has interested itself actively in the social amenities of the Hospital. It has presented a wireless set to the nurses of the European Female Ward which is a source of considerable pleasure to the recipients; and, generally, its members have shown a sense of public duty and citizenship far in excess of that demanded of them by the duties of their office.

*Additions, Alterations and Improvements.*—To my regret little has been achieved under this heading. The boreholes referred to in my last year's report have been completed and the necessary piping laid down, with the result that a copious supply of cheap water is now delivered to all parts of the gardens, and, in addition an area is now under irrigation on which fruit, lucerne, root crops and vegetables can be grown.

A new bathroom and lavatory have been added to the European Female section, and a very small proportion of necessary redecoration has been performed. A verandah in the male native ward has been enclosed to accommodate 20 male natives, but this work cannot as yet be regarded as completed. Ingutsheni as a whole has become overcrowded during the last year, and unless it is substantially enlarged it will so remain. The demand for increase of accommodation is mainly due to the fact that congenital mental defectives, a class of patient for whom little improvement and no cure can be hoped, are being sent here in increasing numbers, particularly on the female side. It is well that it should be so, as these unfortunate people are a grave anxiety and responsibility to their parents, particularly in the country districts, and their presence at home is a serious handicap on the business and social activities of their relatives. Nevertheless, their presence here presents a twofold problem, crowding and classification.



I am glad to be able to report that plans for a Nurses' Home are now out for tender, and that when this is completed the problems will be alleviated to some extent. This alleviation will be incomplete and temporary and further measures will have to be taken if these problems are not to be a perpetual impediment to the work of the Hospital.

*Acknowledgments.*—The proprietors of the Empire, Princes and Palace theatres continue to extend their hospitality to patients on suitable occasions; the various sporting associations in Bulawayo give permission to the men to attend matches; several of the hotels and clubs supply periodicals, and The Rhodesian Printing and Publishing Company supply newspapers. I am glad of this opportunity to thank all of these for their kindness. To H continue to take a close interest in the welfare of the patients, with whose gratitude I wish to associate myself.

In conclusion I wish to express my gratitude to the Matron and the Head Male Nurse for their assistance throughout the year, and particularly to Mr. McLean who is about to terminate twenty-six years' service on the Hospital staff, and whose ability and energy have been of a very high standard indeed. The Hospital owes much to his close personal interest, and he will be greatly missed.

*Divine Service.*—The clergy of Bulawayo continue to provide Sunday morning services and visit the patients regularly.

*Parole.*—Twenty-eight European male patients and five native male patients were on parole.

*Staff.*—A new Assistant Matron came from Great Britain during the year. One female probationer nurse passed the final examination of the Royal Medico-Psychological Association of Great Britain and Ireland. Probationer nurses have again proved an unstable population. It is to be regretted that this opportunity of making a career is not more greatly appreciated. It seems impossible to get the average entrant to the service to understand that the Nursing Diploma of the Royal Medico-Psychological Association is a qualification for employment anywhere and an assured means of a comfortable livelihood.

*Revenue and Expenditure.*—Revenue from paying patients, sale of Government property and value of produce from the farm and garden amounted to £4,317 7s. 6d., i.e. maintenance fees £3,240 15s. 7d., and sales £116 13s. 1d.; supplies from farm and garden £1,000 18s. 10d. Outstanding earnings amounted to £3,162 6s. 5d. as against £2,537 7s. 10d. at the end of December, 1936. The total expenditure for the year, including farm and garden produce, was £13,416 9s. 0d. This works out at £34 6s. 0d. per patient per annum. The cost of maintenance per diem, calculated on the gross expenditure, was 1s. 6½d. and the net cost to the Government, after deducting revenue from Hospital Vote was 1s. 2½d.

N.B.—These figures do not include the Medical Superintendent's salary, extraneous medical assistance and stationery.

#### (8) GOVERNMENT DENTAL SERVICE.

The Government employs two full-time Dental Surgeons with headquarters at Salisbury and Bulawayo, dealing respectively with the eastern and western divisions of the country. The work of this service continues to expand in all departments of their work:—

- (1) The examination of school children and treatment where necessary in necessitous cases;
- (2) dental treatment of members of the B.S.A. Police and the Permanent Staff, Defence Force;
- (3) dental treatment of the European patients at the Ingutsheni Mental Hospital;
- (4) the urgent dental treatment of prisoners;
- (5) a limited number of indigent Europeans and natives are treated at weekly clinics run at the Government hospitals at Salisbury and Bulawayo.



*Dental Treatment: B.S.A. Police.*

	Salisbury Division.	Bulawayo Division.
No. of examinations .....	731	463
No. of fillings .....	232	207
No. of extractions .....	174	137
No. of sealings .....	32	95
No. of other operations .....	239	59
No. of dentures supplied .....	40	25
No. of dentures repaired .....	34	17

*Indigent Europeans and Natives.*

	Salisbury Division.	Bulawayo Division.
No. of extractions .....	1,017	640
No. of fillings .....	32	56
No. of sealings .....	6	5
No. of other operations .....	6	12
No. of dentures supplied .....	11	6
No. of dentures repaired .....	1	2
No. of splints .....	—	2

*School Dental Service.*

	Salisbury Division.	Bulawayo Division.
No. of children examined .....	4,031	5,104
No. of children treated .....	697	655
No. of fillings—		
Temporary teeth .....	86	139
Permanent teeth .....	915	793
No. of extractions—		
Temporary teeth .....	1,040	718
Permanent teeth .....	199	216
No. of other operations .....	16	2
No. of sealings .....	30	19

## (9) HEALTH OF THE B.S.A. POLICE.

*Europeans.*—During the year the number of cases receiving attention for illness or injury was 983, as compared with 943 last year, necessitating abstinence from duty for 5,887 days and light duty for 3,593 days. The average days lost from duty per case, including no duty and light duty, which is counted as half a day off duty, amounts to 7.7. There is no great change in frequency of the various complaints, minor injuries heading the list with 202. There is a decline in conformity with the improvement in the country in general in the malaria figures from 152 to 124. There were only 9 cases of appendicitis during the year. No cases of syphilis were reported, and only two cases of gonorrhoea treated. No cases of blackwater fever were seen, but one case of enteric fever and two cases of tick fever were treated. There were four Europeans discharged as medically unfit and there was one death due to a haemorrhage from a gastric ulcer. The Force numbered 572 as against 573 last year.

*Natives.*—Numbered 1,058 as compared with 1,037 last year. One thousand five hundred and forty-eight natives were sick and 8,786 days of no duty and 3,642 days of light duty were lost. The number of cases of malaria in natives decreased from 407 to 311. Cases of syphilis were almost the same as last year, at 36; but an increase in the number of cases of gonorrhoea from 12 to 21 took place.

The average days lost per case was 6.76, which is an increase on the average for 1934-36, which is 6.3 days. Three deaths occurred, one each due to enteric fever, osteomyelitis and pyelonephritis. There were two discharges for chronic ill-health, compared with eight discharges in 1936.

*General.*—In the case of the European members of the Force, there has been an all-round improvement in health, but in the case of the Native members there has been an all-round setback in health, neither movements, however, being at all significant.



## (10) DISTRICT NURSING SERVICE.

This experimental service has now been in operation for a full year at two centres, one nurse working in the Shamva district and living at the nurses' quarters, Shamva Hospital, and the other working in the Lomagundi district and living at the Sinoia Hospital Nurses' Home.

The following is the record of work done at both centres :—

*District Nursing Service, 1937.*

<i>Midwifery—</i>	Shamva.	Sinoia.	Total.
Confinements — — — — —	5	3	8
Interviews — — — — —	53	8	61
Visits — — — — —	24	21	45
<i>General—</i>			
Interviews — — — — —	135	8	143
Visits — — — — —	405	47	452

In addition, both nurses conduct baby clinics in conjunction with the meetings of the local branches of the Women's Institute. This effort has not been rewarded with the support and encouragement deserved, and at Sinoia six clinics were held and a total of only eight babies seen. In addition to their work as District Nurses, the staff have assisted in the work of the local hospitals, particularly with regard to maternity work, whenever they had no district nursing duties. At Sinoia the experiment cannot be deemed to be a great success, and at the moment it is difficult to find reasons for its apparent lack of support there. There is, however, encouragement from the Shamva figures and greater efforts will be made in the coming year to extend and popularise this good work in other areas. One section of the population in both these districts, namely, the Asiatic and Coloured people, have greatly appreciated the work of these nurses, particularly in the field of midwifery.

## (11) RED CROSS SOCIETY AND ST. JOHN AMBULANCE BRIGADE.

The year has seen a great awakening in public interest in these societies, and they now claim a flattering degree of public interest after years of discouragement and neglect. The St. John Ambulance Brigade is associated with the Railways, from whom it receives active support, though the tuition facilities have always been freely available to such bodies as the British South Africa Police. A feature of their work has been the first-aid classes for natives. The Brigade has trained approximately 500 persons since the movement was inaugurated in this country in 1925.

The summary of the examinations passed by members of the Brigade will be the best index of the value of the work done :—

*Junior First Aid.*—European, 9; Coloured, 13; Native, 94. Total, 116.

*Adult First Aid.*—Europeans (including 79 members of the B.S.A. Police), 227. Adult Home Nursing, 38.

The energy and enthusiasm expended on the work of the Red Cross Society will be appreciated when it is known that the Society, represented by one branch at Salisbury at the beginning of the year, now has eight branches, a membership of 248, a junior membership of 1,000, and a native membership of about 50. Lectures and demonstrations have been organised at various centres and are well attended and supported by the public, and it is hoped that many candidates will present themselves for the examinations in First Aid and Home Nursing. It cannot be too often impressed that elementary knowledge in first aid and home nursing is essential in a country where distances from medical help may be great, and where, despite modern improvements in communication, roads become impassable and telephones break down. It is too late to have bitter regrets when a family is faced with a tragic crisis, blackwater fever, a snake bite or a severe accident and they are unable, by lack of the necessary elementary knowledge, to afford to the patient that assistance which any layman should be able to supply. One has only to attend a gymkhana or similar function in a country district, witness an accident, and realise how lacking this knowledge is in this country.



Sympathy, kindness and willingness to help is not enough; you must know how to help and also know when not to "enter where angels fear to tread."

(12) COST OF MEDICAL SERVICES.

The following information is compiled from figures appearing in the Auditor General's Report for the financial year ended 31st March, 1937:—

*Expenditure, 1936/37 :*

Public Health Vote .....	£69,965
Hospitals and Dispensaries .....	159,250
	<hr/>
	£229,215

*Revenue, 1936/37 :*

Public Health .....	£5,281
Hospitals and Dispensaries .....	36,115
	<hr/>
	£41,396

Total expenditure of Southern Rhodesia (excluding Loan Votes) £3,017,573

Gross expenditure on medical services as a percentage of the total expenditure ..... 7.59%

Nett expenditure on medical services as a percentage of the total expenditure ..... 6.22%

Total revenue of Southern Rhodesia ..... £3,059,858

Total expenditure on medical services as a percentage of the total revenue ..... 7.49%

For the purposes of comparison percentages of total expenditure spent in medical services in other countries during the years 1934, 1935 and 1936 are supplied in the following table:—

Country.	Expenditure on Medical Services.	Percentage of Revenue.	Percentage of Expenditure.
<i>In respect of 1934—</i>			
Palestine	161,605	4.6	—
<i>In respect of 1935—</i>			
Kenya	203,451	—	6.2
Uganda	148,907	9.5	—
Nyasaland	47,128	—	8.7 approx.
Gold Coast	293,431	—	11.3
Northern Rhodesia	60,429	7.5	—
Bechuanaland Protec.	16,320	—	10.3
Swaziland	14,544	10.4	—
Jamaica	186,652	—	8.5
Federated Malay States	455,466	6.3	7.6
Malaya	—	—	9.0
Mauritius	—	10.0	—
Fiji	78,052	9.2	—
Ceylon	—	—	11.6
Cyprus	52,436	—	6.3
Zanzibar	45,404	9.9	—
Hong Kong	—	16.6	—
British Guiana	—	10.9	—
Burma	—	17.0	—
Japan	—	—	15.64
French Indo-China	Approx. 50% of the Native Tax was returned in the form of Medical Services		



Country.	Expenditure on Medical Services.	Percentage of Revenue.	Percentage of Expenditure.
<i>In respect of 1936—</i>			
Kenya	196,368	—	5.9 of estimated expenditure
Uganda	164,765	9.6	—
Zanzibar	45,472	9.6	—
Gambia	30,895	—	11.9
<i>In respect of 1936/37—</i>			
Southern Rhodesia	229,215	7.49	7.59

**N.B.**—The figures given for the expenditure in Burma and Japan are not directly comparable as the expenditure is not entirely that of the Government—local authorities are responsible for the maintenance of clinics, etc.

The figures in this table are those for the maintenance of the medical services in the various countries and do not include provision for capital expenditure.

#### CHAPTER IV.—HOSPITALS AND LABORATORIES.

##### (1) HOSPITALS.

The Government hospitals continue to expand their activities as can be most graphically seen in the chart showing the expansion of the work of these institutions. All classes of the population are dealt with; though the first large scale private enterprise in general hospitals was opened on 19th November, 1937, by the Little Company of Mary at St. Annes Hospital in Avondale. This beautifully built and well-equipped 33-bedded hospital should go far to relieve the pressure on the Salisbury General Hospital. During the year small hospitals were opened at Que Que and Bindura and are already proving useful to the community.

Expenditure on Government Hospitals of all kinds including the native clinics and dispensaries amounted to £168,629. The revenue received from these institutions amounted to £39,307, which merely covers the increase in expenditure over last year's figure. The Government thus bears 77 per cent. of the cost of this service as compared with 66 per cent. last year. Even if the expenditure on native clinics and dispensaries, amounting to £17,502, is excluded from the total expenditure, the Government still bears 74 per cent. of the cost. Of the total 8,040 European cases admitted, only 1,860 were free patients, so it will be readily seen that the Government shoulders a big share of the upkeep of even the paying patients in Government hospitals.

Admissions of European, Asiatic and Coloured and Native in-patients and out-patients for the last five years have been as follows:—

##### *In-patients.*

	1933.	1934.	1935.	1936.	1937.
European .....	5,822	6,264	6,820	7,642	8,040
Asiatic, Coloured and Native .....	10,057	10,727	10,717	12,328	13,704
	15,879	16,991	17,537	19,970	21,744

##### *Out-patients.*

	1933.	1934.	1935.	1936.	1937.
European .....	8,996	10,135	11,866	14,345	22,685
Asiatic, Coloured and Native .....	13,563	27,273	24,700	36,895	44,521
	22,559	37,408	36,566	51,240	67,206

*Salisbury Hospital.*—The work of this hospital has again shown a steady increase and expansion of work in all services. European admissions amounted to 3,043, being a record figure and 167 more than last year. European out-



patients numbered 8,395, being 2,613 more than last year. Native and Coloured admissions totalled 2,797, being 361 more than last year. Native out-patients treated numbered 15,364, being 2,061 more than last year. The native hospital is now acutely over-crowded and attention to out-patients is carried out under great difficulties on a verandah. A temporary relief wood and iron building for convalescent native patients has been constructed.

This year 1,790 operations were performed on Europeans, being an increase of 59 over last year; 468 of these were major and 1,322 were minor operations. Three hundred and fifty operations were performed on native in-patients, 128 being major and 222 being minor operations. The X-ray department dealt with 2,885 patients, being an increase of 361 over last year.

During the year full possession was taken of the new administrative, X-ray, out-patient, and massage departments and the suite of operating theatres. Radical improvements were made in the mortuary block, which now has facilities and equipment more in accordance with modern requirements.

A feature of the Hospital has been the new lay-out of the grounds with monetary assistance from the State Lottery Trustees and the convalescent patients now have an enclosed garden in which to take their recreational exercise.

*Memorial Hospital, Bulawayo.*—The work at this hospital expands. European admissions numbered 2,279, an increase of 131 over last year; out-patients numbered 8,399, a big increase of 2,377 over last year. At the native hospital native in-patients numbered 3,698, being an increase of 266 on the admissions in 1936. Native out-patients numbered 12,619, being a decrease of 3,492 on last year's figures. This is probably due to increased patronage by the natives living in the town of the Municipal Location clinic. In the operating theatres, 1,378 European cases were treated, 389 being major and 989 minor operations. In the native hospital theatre 702 operations were performed—133 major and 569 minor; 1,450 X-ray examinations were made, including 805 Europeans and 645 natives, and this is an advance of 54 examinations on the previous year. In the electro-therapeutic department, 1,228 massage and 1,147 electrical treatments were given, a total of 2,375.

Scurvy among the native races is strongly commented upon by the Medical Superintendent of the hospital, where again 129 cases of this easily preventable disease were admitted. An interesting entry in the report was the occurrence of 18 cases of onyala with five deaths. The treatment for which condition was worked out in this country and a review of all that is known about this interesting tropical disease was made this year by a member of the department.

*Umtali Hospital.*—During the year 1,650 cases were admitted, 699 being Europeans and 951 Natives, being an increase over last year's admissions of 76. An enormous increase is seen in the number of out-patients attended to; 629 Europeans and 4,959 natives, a total of 5,588 patients, an increase of 2,729, or almost 50 per cent. An increase in the number of operations performed is noted, where 70 more operations were performed in the European hospital than last year.

Malaria showed a big decrease, the figures for Natives and Europeans in hospital for this disease showed a decline of nearly 50 per cent., and no cases of blackwater fever were seen. Three cases of scurvy were admitted, as compared with 15 last year. The prevalence of bilharziasis amongst the native population is commented upon, where over 60 per cent. of subjects coming to *post-mortem* were found to show evidence of this disease.

*Gwelo Hospital.*—Admissions were 432 Europeans and 1,103 Natives, making a total of 1,535, an increase of 47 on last year's figures; 1,433 European and 2,904 Native out-patients were treated, a total of 4,337, an increase of 2,251 over last year's figures. The buildings at the new hospital centre on the Selukwe road are completed and equipped. Gwelo now has hospital facilities second to none.

*Gatooma Hospital.*—The total admissions to this hospital were 2,074, being 624 Europeans and 1,450 Natives, an increase of 296 on last year's figures. The admissions of Europeans in 1936 were 622, so that the increase is all in the native section of the hospital. In the out-patient department 831 Europeans



and 2,504 natives were treated, a total of 3,335 cases, which is an increase of 820 over 1936. Operations numbered 352, 179 in Europeans and 173 in natives, an increase of 83 over last year's figures. Only 173 cases of malaria were treated in the European hospital as compared with 217 last year; 1,427 natives were treated in the Gatooma venereal diseases clinic, an increase of 65 cases, despite the opening of venereal diseases clinics elsewhere, especially in Matabeleland. Fifty-seven cases of scurvy in natives were admitted during the year—an increase on last year.

*Fort Victoria Hospital.*—A big increase has been experienced in the work of this hospital, where 295 Europeans and 643 natives, a total of 938, were treated, as compared with 671 admissions last year, 197 being European and 474 natives.

One hundred and nine European cases of malaria and five cases of black-water fever were seen. The malaria admissions have risen from 67 to 109, being the only centre in the country to show an increase in the malaria figures. Out-patients seen at the hospital amounted to 1,158 Europeans and 1,422 natives.

*Sinoia Hospital.*—There was a decrease in the European admissions from 229 to 169, and the native admissions have risen from 595 to 650, in addition to 174 venereal disease cases as compared with 187 last year. Eleven maternity cases were dealt with in the maternity block during the year, as compared with 27 last year. During the year the European hospital buildings were completed by the construction of a new private ward and nurses' dining-room, and an additional ward was built for the nursing of natives suffering from pulmonary tuberculosis.

*Gwanda Hospital.*—This hospital dealt with 165 Europeans and 1,041 natives, as compared with 112 and 856 respectively last year; 366 natives were treated in the venereal diseases clinic, as compared with 324 last year; 380 European out-patients and 743 native out-patients were dealt with. Scurvy is still a common disease in the Gwanda district, and 92 cases, with one death, were admitted. While this is an improvement on last year's cases of 270 with 6 deaths, 92 is still far too many.

*Enkeldoorn Hospital.*—One hundred and twenty-seven Europeans and 607 natives were admitted, as compared with 191 and 916 last year, which shows a big decline in both cases.

However, 841 European out-patients and 2,935 native out-patients were treated; 131 native cases of venereal disease were treated, as compared with 36 last year.

*Shamva Hospital.*—This hospital, built at a time when Shamva was the centre of the mining industry in the Mazoe Valley, has, particularly in recent years, been poorly patronised by the population whom it was built to serve. With the rise of Bindura 19 miles away, a rapidly growing township acting not only as a mining centre but also far more central for the agricultural industry than Shamva, the Government acceded to the request for the construction of a hospital at Bindura. This hospital having been built and opened to patients, it was intended to close down the Shamva European Hospital, maintaining the native hospital in the status of a clinic. This proposed action was vigorously contested by the neighbourhood, and the Government has agreed to maintain the Shamva European Hospital on a reduced basis at least until the end of the current malaria season. It is hoped that the local inhabitants will now support their own institution better than they have done in the past. During 1937, only 31 European patients were admitted, being less than half the 72 who were admitted in 1936; 470 natives were admitted and 20 were treated as out-patients. In addition, there were 207 natives treated in the venereal diseases clinic, about the same number as last year.

*Que Que Hospital.*—A new cottage hospital was opened on a site near the township of Que Que. This is the first of the new type of rural cottage hospitals which are being built at various centres. They are small but well equipped to deal with the ordinary general medical nursing case. Since the hospital was opened for patients in April, 1937, 78 patients have been admitted and 59 out-patients treated. As yet there is no accommodation for natives attached to this hospital. The Government is considering additions to the hospital to provide maternity accommodation for this rapidly expanding township and the busy mining district around it.



*Bindura Hospital.*—The second of the new type of cottage hospital to be opened received patients from September, 1937, since when 44 European patients and 122 native patients have been admitted, and 141 European and 99 native out-patients attended to. The Government is contemplating the provision of maternity accommodation in conjunction with this hospital.

## (2) LABORATORY SERVICES.

The Laboratory Services maintained by the Government in the Public Health Department, the Public Health Laboratories at Salisbury and Bulawayo and the Laboratory of the Government Analyst, Salisbury, continue to increase their activities and to extend their range of investigations for Government Departments, the Municipalities and for the medical profession in general. Despite the fact that all are routine laboratories, useful research is carried out sometimes under difficulties consequent on the rush and bustle of a routine laboratory.

The following are the numbers of investigations carried out in the years 1934 to 1937:—

	1934.	1935.	1936.	1937.
Public Health Laboratory, Salisbury .....	18,087	21,114	31,557	32,092
Public Health Laboratory, Bulawayo .....	2,412	2,725	3,605	5,984
Government Analyst's Laboratory, Salisbury .....	567	501	844	1,061
Grand Total .....	21,066	24,340	36,006	39,137

As has been pointed out in previous Reports, each examination may require many different treatments or analyses. For example, the fractional test-meal, a bio-chemical test, counts as one examination, but may require eighty-four distinct chemical tests.

It is now thirty years since Dr. L. J. J. Orpen started the work of the Public Health Laboratories in a back room in the old Government Offices, and in that year, 1908, he made thirty-three examinations, so that this branch of medical work has increased well over a thousand-fold.

### (a) *The Public Health Laboratory and Pasteur Institute, Salisbury.*

As in former years the major activity of the Laboratory has consisted in the routine investigation of specimens for diagnostic purposes. These specimens are received mainly from the Mashonaland area but a certain proportion come from Northern Rhodesia, Nyasaland and Portuguese East Africa. In spite of a load of routine work which continues to increase from year to year an effort has been made to maintain and carry out a programme of research, the main features of which will be discussed later in the report. None the less, it must be recognised that the staffing arrangements of the laboratory are such that research work can be carried out only by the routine worker and more often than not the exigencies of his duties are such as to restrict and modify his programme and to enhance his difficulties. During the year a record number of examinations was carried out in the Laboratory, the total being 32,092 as against 31,557 in 1936. These figures reflect in some measure the increasing role of the laboratory as a diagnostic centre and the increasing reliance placed by the tropical practitioner on laboratory diagnosis. There is a tendency in some quarters to deplore the increasing employment of laboratory investigation at the expense of clinical study. There is certainly some justification for such criticism but when practising under tropical conditions the free use of laboratory facilities is a matter for rejoicing rather than regret, since there are so many diseases of the tropics for which highly specific remedies are available and which can be diagnosed with accuracy by means of laboratory methods.

### 1. BACTERIOLOGY:

*Faeces.*—Cultural examinations were carried out on 268 specimens of faeces (European 208; Native 60) but for some reason a smaller number of "positive" findings were returned than usual. The main bacteriological



findings from cases of dysentery or gastro-enteritis may be summarised as follows:—

	European	Native
<i>Bact. dysenteriae</i> Flexner .....	1	4
<i>Bact. dysenteriae</i> Shiga .....	1	—
Salmonella group .....	2	2
<i>Bact. alkaligenes</i> .....	1	—
<i>Ps. pyocyanea</i> .....	2	—
Gram positive bacillus (unidentified) .....	1	—

It is of interest to note that there has been a reduction in the number of dysentery stool specimens submitted for bacteriological examination. In view of the fact that the local practitioners are alive to the importance of discriminating between amoebic and bacillary dysentery this reduction in the number of dysentery specimens may be taken to indicate a genuine reduction in the incidence of dysentery particularly in the Salisbury area. No categorical statement can be made in explanation of this interesting fact, although there is a tendency amongst the municipal health authorities to ascribe the fall in the incidence of bacillary dysentery to the fact that the greater part of Salisbury is now served by a water-borne system of sewerage. There can of course be very little doubt that this up-to-date method of sewage disposal must necessarily exert a beneficent influence on the incidence of dysenteric infections, but it cannot possibly be regarded as more than a contributory factor. A "carrier state" in bacillary dysentery is widely accepted and furthermore it is recognised that such carriers are much more numerous in the tropics than elsewhere, hence any explanation of the reduction of bacillary dysentery in a given community must take cognisance of the "carrier state." On the other hand, while dysentery has declined, a sharp rise occurred in the incidence of gastro-enteritis, most marked towards the beginning of the rainy season. Under this somewhat comprehensive heading is included a condition which stands out rather sharply from the more commonly recognised form of gastro-enteritis. Briefly, the patient complains of malaise, complete anorexia, a sense of prostration, a moderate temperature, frequent pale stools and a variable amount of vomiting. The facies are sallow and muddy and considerable physical depression follows the attack. Such cases do not respond to the ordinary measures employed in the treatment of gastro-enteritis, namely initial purgation followed by kaolin therapy. It is suggested that these cases are more in the nature of a mild hepatitis with extensive catarrh of the biliary system and probably of the duodenum and related small gut. This suggestion is necessarily pure hypothesis since no opportunity arose for investigating these cases from the laboratory point of view, but it may usefully form the basis of future research on the condition.

*Urines.*—A further increase has occurred in the number of urine specimens examined during the year, the total numbering 827 (European 793; Native 34). The following results were obtained:—

	European.	Native.
<i>Bact. coli</i> .....	323	12
Coliform bacilli .....	21	—
Staphylococci, etc. ....	133	6
<i>Bact. typhosum</i> .....	3	1
<i>Bact. morgani</i> .....	1	—
Chromobacterium .....	1	—
Genus <i>Proteus</i> .....	1	—

These results are in accord with the findings in previous years and reflect the high incidence of *Bact. coli* and coliform infections amongst Europeans, particularly European women. It is felt, however, that there is a tendency to attach overmuch clinical importance to the recovery of *Bact. coli* from the urine and to overlook the necessity of correlating the bacteriological and cytological findings. The response to mandelic acid therapy has been studied in a few instances and in the main it may be said that favourable results have been obtained in cases of uncomplicated *Bact. coli* infection.



**Blood.**—The number of blood cultures carried out numbered 55 (European 54; Native 1) and the following organisms were isolated:—

	European.
<i>Bact. typhosum</i> .....	3
<i>Staphylococcus albus</i> .....	3
<i>Streptococcus viridans</i> .....	2
<i>Staphylococcus aureus</i> .....	1

The ease with which screw capped blood culture bottles can be despatched all over the country probably accounts for the steady increase in blood cultures carried out by the laboratory.

**Throat and Nasal Swabs.**—The number of throat swabs examined for the presence of *Corynebacterium diphtheriae* amounted to 1,257 and in addition to these 190 nasal swabs were similarly examined. A cultural examination for the diphtheria bacillus was carried out in each specimen although in several instances a report on the "direct smear" was asked for in addition, but in view of the unreliability of direct smear examinations such requests are definitely discouraged. *C. diphtheriae* was isolated in culture as follows:—

	Number examined.	Positive.
Throat Swabs .....	1,018	141
Nasal Swabs .....	190	40

It may be noted that virulent strains of *C. diphtheriae* were recovered from 20 Native cases showing that in the investigation of any localised outbreak of diphtheria due attention must be paid to Native sources of infection.

#### SPUTA:

623 specimens were examined for the presence of *Myco. tuberculosis* (European 199, Natives 424) and 80 positive results were obtained as follows:—

European: 20;	Native: 60.
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#### URETHRAL AND CERVICAL SMEARS:

503 smear preparations were examined for the presence of gonococci (European 334; Natives 169) which was demonstrated in 163 specimens (European 83; Natives 79)

It may be noted here, that wherever possible, cervical or vaginal secretions are examined for the presence of *Trichomonas vaginalis* and in a goodly proportion of cases of chronic leucorrhoea the condition can be ascribed to infection with these flagellates, the aetiological significance of which appears to have been overlooked in not a few instances.

#### LEPROTIC MATERIAL:

Skin snips or nasal scrapings were examined from 15 cases of suspected leprosy and 7 positive results returned. One positive finding was obtained in the case of a European.

#### CEREBRO-SPINAL FLUID:

101 specimens of cerebro-spinal fluid were examined culturally (European 20; Natives 81) and positive results obtained as follows:—

	European	Native
Meningococci .....	7	37
Pneumococci .....	2	9
Staphylococci .....	2	1
Streptococci .....	—	2
<i>H. influenzae</i> .....	—	1
<i>M. tuberculosis</i> .....	1	—

No case of *H. influenzae* meningitis was found amongst the European specimens this year. The only case recorded occurred in a young adult male Native who succumbed to the infection. It is of interest to note, however, that apparently complete recovery ensued in the European case of tuberculous meningitis

**Water and Milk.**—A further increase in the number of bacteriological analyses of water samples occurred during the year—204 as against 127 in 1936. The majority of the samples came from the Salisbury area as a sequel to attempts being made to improve the quality of the water supply in certain



sectors of the town. Only 16 samples of milk were examined bacteriologically but a very considerable increase in milk analysis is anticipated in the ensuing year as a result of the introduction of a new set of Dairy Regulations.

**Vaccines.**—112 autogenous vaccines were prepared chiefly from cases of boils, chronic bronchitis or chronic infection of the sinuses. In addition, large numbers of stock vaccines were distributed during the year. Although it is seldom possible under existing conditions to obtain adequate clinical data from cases undergoing vaccine therapy a few cases have been studied in some detail, and the impression has been formed that it is quite impossible to forecast in any given case whether vaccine therapy is likely to prove a success or a failure. In the catarrhal conditions of the respiratory tract occurring locally it may be said that autogenous vaccines which contain in addition to the usual staphylococcus, pneumococcus, streptococcus, etc., a goodly concentration of *Bact. friedlanderii* are likely to confer considerable immunity with at least a season's relief from catarrhal symptoms. The same, however, does not apply to sinus infections, although in some instances of chronic sinus infection the need for surgical intervention has been warded off by judicious vaccine therapy. In the case of recurrent boils, the position is a little easier to assess. In former years the practice has been to give autogenous vaccines only, but during this year several cases have been treated with a combination of vaccine and staphylococcal toxoid and by toxoid alone, and on the evidence available it appears that the combined method of treatment is more effective than either alone.

**Examinations of Pus, Pleural Fluid, Peritoneal Fluid, etc.**—Under this heading 164 specimens were examined and a bacteriological report issued. In addition, 15 dental swabs were examined and evidence of infection with Vincent's organism found in 7; while of 33 eye swabs, 3 showed a heavy infection with the gonococcus.

**Miscellaneous.**—The miscellaneous examinations for the year include:—

- (a) 1 Rideal Walker Coefficient determination;
- (b) the examination of 2 cough plates for the presence of *H. pertussis*.
- (c) the bacteriological examination of a dead rodent suspected of harbouring plague; the result was negative;
- (d) the examination of the bacterial content of certain wards by exposing culture plates.

## 2. SEROLOGY.

**Agglutination Tests.**—Three hundred and ninety-three tests were carried out (European, 229; native, 164) with a variety of antigens, and positive results obtained as follows (the term positive does not in this instance imply diagnostic titre):—

Antigen	European	Native
<i>Bact. typhosum</i> "H" .....	55	31
<i>Bact. typhosum</i> "O" .....	27	33
<i>Bact. paratyphosum</i> A .....	8	6
<i>Bact. paratyphosum</i> B .....	4	5
<i>Br. abortus</i> .....	4	—
<i>Bact. dysenteriae</i> Flexner .....	1	—
<i>Ps. pyocyaneus</i> .....	1	—

The Weil-Felix reaction using the *Proteus* group XK, O; X19, O and X2, O was carried out on 6 occasions, but no positive results were obtained.

**Complement Fixation Tests.**—A very substantial increase occurred in the number of serum samples submitted for the Wassermann Test. This increase is partly accounted for by the development and extension of venereal diseases clinics in the Salisbury Native Location, but there is also a steady increase from the numerous native clinics springing up in various parts of the country. Thus a total of 3,718 Wassermann tests were carried out (European, 482; native, 3,236), and the results obtained may be summarised as follows:—

	Positive	Doubtful	Negative
European .....	53	36	393
Native .....	1,047	123	2,066



In view of the heavy demands on the resources of the laboratory occasioned by the increasing popularity of the Wassermann test, the advisability of introducing some alternative test for native samples is being considered. Thus it may soon become necessary to employ the Kahn or some other accredited technique to facilitate the handling of these samples.

### 3. PARASITOLOGY :

A wealth of material continues to be submitted to the division of parasitology, but it is seldom possible to do more than identify the actual parasites present in a given specimen. It is hoped, however, that the appointment of a trained African assistant will enable the more senior members of the staff to devote more time to parasitological research.

*Faeces*.—Three thousand three hundred and thirty-two examinations were made (European, 1,236; native, 2,096) and 842 positive results, returned as follows:—

	European	Native
(a) Protozoa—		
<i>Entamoeba histolytica</i> .....	5	3
<i>Gairdia lamblia</i> .....	7	—
Dead amoebae (unidentified) .....	1	1
<i>Balantidium coli</i> .....	—	1
(b) Helminths—		
<i>Bilharzia mansoni</i> .....	49	196
<i>Bilharzia haematobium</i> .....	2	16
Hookworm .....	22	448
<i>Enterobius vermicularis</i> .....	6	5
<i>Ascaris lumbricoides</i> .....	2	9
<i>Trichuris trichiura</i> .....	4	4
<i>Taenia saginata</i> .....	2	—
<i>Taenia</i> spp. ....	4	21
<i>Trichostrongyle</i> spp. ....	1	1
<i>Strongyloides stercoralis</i> .....	—	2
<i>Hymenolepis nana</i> .....	—	14
<i>Hymenolepis diminuta</i> .....	—	1
<i>Heterodera radiculicola</i> .....	—	1

In 8 specimens Chareot-Leyden crystals were found in the absence of parasitic infections. The experience in this laboratory is that the presence of these crystals commonly indicates either chronic intestinal amoebiasis or chronic intestinal bilharziasis.

*Urine*.—Four thousand five hundred and eighty-two urine specimens were examined for evidence of parasitic infection, and the following positive results obtained:—

	European	Native
<i>Bilharzia haematobium</i> .....	111	448
<i>Trichomonas vaginalis</i> .....	2	1

*Blood*.—Two thousand one hundred and thirteen smears were stained and examined for the presence of blood parasites. The results of these examinations may be summarised as follows:—

	European	Native
<i>Plasmodium falciparum</i> (ring forms) .....	232	68
<i>Plasmodium falciparum</i> (gametocytes) .....	2	2
<i>Plasmodium malariae</i> .....	1	1
<i>Plasmodium vivax</i> .....	—	5
<i>Plasmodium ovale</i> .....	—	6
<i>Treponema recurrentis</i> .....	—	2
<i>Microfilaria perstans</i> .....	—	7

In addition, 636 blood smear preparations from animal sources were examined and the following results obtained:—

	Positive
<i>Babesia canis</i> .....	227
<i>Babesia equi</i> .....	4
<i>Anaplasma marginale</i> .....	1



## 4. BIOCHEMISTRY :

Three hundred and eighty-six Biochemical tests were carried out as follows :

(1) *Blood* :

Fasting sugar .....	61
Sugar Tolerance .....	25
Urea .....	38
Non-Protein Nitrogen .....	24
Blood Chloride .....	1
Serum Calcium .....	9
Phosphorus .....	1
Van den Bergh Reaction .....	11
Albumin .....	1
Globulin .....	1

(2) *Cerebro-Spinal Fluid* :

Lange's Colloidal Gold Test .....	3
Nonne-Apelt reaction .....	1

(3) *Urine* :

Bile .....	4
Urobilin .....	17
Diastase .....	2
Sugar (quantitative) .....	2
Urea .....	6
Di-acetic Acid .....	1
Quinine .....	1
Albumin (Esbach) .....	3
pH .....	12
Spectroscopic examination for haemoglobin derivatives .....	13

(4) *Stools* :

Occult blood .....	25
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(5) *Stomach Contents* :

Fractional Test Meals .....	124
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On 7 occasions where special apparatus was required the tests were carried out in the laboratory of the Government Analyst.

## 5. CLINICAL PATHOLOGY :

*Skin Tests.*—Skin tests, using the intradermal technique, are extensively employed in the investigation of allergic states (particularly hay fever and asthma) and suspected tuberculous infections and to ascertain susceptibility to diphtheria. The investigation of hay fever cases is facilitated by the set of extracts prepared and issued by the South African Institute for Medical Research, while asthmatical conditions are investigated by means of Bencard extracts. In some instances, however, it has been necessary to prepare the test material in the laboratory. The common causes of hay fever in the Colony are illustrated in the summarised account of the results of 43 tests :—

Mixed Grasses .....	10	Wild Als .....	1
Mixed Compositae .....	4	Pepper Tree .....	1
Mimosa Tree .....	2	Khaki Weed .....	1

The investigation of the allergic factor in asthma is, of course, a much more difficult procedure, but sensitivity was demonstrated as follows in a group of cases studied during the year :—

Animal Epidermis .....	2	Potato .....	1
Milk .....	2	Rice .....	1
Strawberries .....	2	Tomato .....	1
Pork .....	1		

*Mantoux Tests.*—Thirty-seven Mantoux tests were performed (European, 24; native, 13) and 16 positive results obtained, as follows: Europeans, 9; natives, 7.

For the initial test a 1/1,000 dilution of Old Tuberculin was employed, but a negative result was followed up by repeating the test with more concentrated preparations where necessary.



*Schick Tests.*—Ninety-five tests were performed with 30 positive results.

*Haematology.*—The growing appreciation of the frequency of the anaemic states as an explanation of chronic ill health has led to an increasing demand for haematological investigations. Thus the following table illustrates the frequency and range of these investigations:—

	European	Native
Full blood counts — — — — —	230	31
White cell counts — — — — —	272	12
Red cell counts — — — — —	262	12
Differential white cell counts — — — — —	442	103
Estimation of reticulocytes — — — — —	11	2
Platelet counts — — — — —	2	1
Sedimentation rate — — — — —	9	—
Coagulation time — — — — —	3	—
Bleeding time — — — — —	2	—
Erythrocyte fragility test — — — — —	1	—

The data derived from these examinations do not readily lend themselves to discussion in a report of this nature, but a general review of the Anaemia problem as it affects the European population of the Colony was made in 1936 and appeared in the South African Medical Journal Vol. X No. 11. The opinions expressed in that review have been amply confirmed by subsequent haematological investigations.

#### 6. BIOLOGICAL TESTS:

*Diphtheria.*—Twenty-nine strains of *C. diphtheriae* were tested for virulence by means of the usual guinea pig technique and 9 positive reactions obtained.

*Tuberculosis.*—Thirteen specimens of sputum and two specimens of urine were tested biologically for the presence of *M. tuberculosis* with negative results.

*Trypanosomiasis.*—Two white rat inoculations were performed to determine the existence of a trypanosome infection in two Europeans who had spent a few weeks hunting in one of the "fly belts." Although each of the hunters confessed to having been bitten freely by tsetse flies there was no clinical evidence of trypanosomiasis and in both cases the biological test proved negative.

*Tetanus.*—Brain tissue was examined biologically for the presence of *C. tetani* with a negative result.

*Pregnancy Diagnosis Tests.*—Friedmann's modification of the Zondek-Ascheim test was employed on 34 cases and 23 positive results recorded. It has not been possible to maintain a satisfactory check on the results of the test but the evidence available suggests that a high order of accuracy is obtained. It is proposed to employ a concentration method in certain cases whereby the follicle ripening component in the urine is precipitated by alcohol and subsequently injected into the rabbit in the form of a neutralised saline suspension. In order to conserve the supply of female rabbits as much as possible it has been the practice throughout the year to examine the ovaries by laparotomy so that the same rabbit may be employed for a similar test after a suitable interval of time. This policy necessarily renders the test a time consuming procedure and it is doubtful if the exigencies of routine work will permit of this conservative method being followed in the future.

#### 7. PASTEUR INSTITUTE REPORT:

The strain of fixed virus obtained originally from the Public Health Laboratory, Cape Town, was passaged regularly throughout the year and 92 courses of anti-rabic vaccine were prepared. 67 courses were despatched to Nyasaland, Northern Rhodesia and Portuguese Territory. The method of treatment now advocated is in accord with the recommendation of the Health Organisation of the League of Nations. This method is as follows:—

- (a) *Light and medium cases:* 14 daily injections of 2 x 2.5 c.c. of a 2 per cent. rabbit's brain emulsion in 0.5 per cent. carbol saline.
- (b) *Severe cases:* 21 daily injections of 2 x 2.5 c.c. of the same emulsion.

One case of suspected rabies occurred in Salisbury during the year. The dog in question showed a sudden change of temperament with loss of appetite and general irritability. The animal was destroyed and the brain was examined



in this Laboratory and by the Director of Veterinary Research. Although smear preparations, paraffin sections and rabbit inoculations were employed, no evidence of rabies infection could be found. It was finally decided that the animal had died of cerebral distemper. The two people who had had the misfortune to be bitten by the dog a short while before it died were each given a course of anti-rabic vaccine.

#### 8. BLOOD GROUPING:

The blood group was determined on 48 occasions and donors supplied for a considerable number of blood transfusions.

#### 9. MEDICO-LEGAL EXAMINATIONS:

These examinations are restricted mainly to the identification of blood or seminal stains and approximately 50 such stains were examined during the year.

In addition, a quantity of charred remains were examined for the presence of human bones and several readily identifiable fragments were recovered.

An increase in the amount of medico-legal post-mortem work occurred this year and is referred to under the section on pathology.

#### 10. PATHOLOGY:

The section of the laboratory concerned with histological and post-mortem examinations has been extensively reorganised and a considerable increase in work falls to be recorded.

(a) *Histological Examinations*.—Tissues submitted for examination numbered 432 and the following is an analysis of the main conditions encountered:—

##### (1) *Tumours*:

(a) *Simple*.—Fibro-adenoma, 6; Papilloma, 2; Fibroma, 9; Colloid adenoma of Thyroid, 6; Cutaneous neuro-fibromatosis (molluscum fibrosum), 1; Angio-neuro-myoma of Ruffini, 1; Haemangioblastoma of cerebellum, 1.

(b) *Malignant*.—Sarcoma: Myloid, 2; osteogenic, 1; Fibro, 1; Rodent ulcer, 1; Squamous epithelioma, 6. *Carcinoma of*: Breast, 5; cardiac gland, 1; cervix uteri, 4; Liver, 4; Lymph gland, 2; Mammary gland, 1; oesophagus, 1; ovary, 1; rectum, 1; uterus, 2.

*Adeno-carcinoma of*: cervix uteri, 2; Bartholin's gland, 1; skin, 2; stomach, 1; thyroid, 1.

Scirrhus carcinoma of skin, 1; Argentaffin tumour (carcinoid) of appendix, 1; epidermoid cancer of urinary bladder, 1; epidermoid cancer of cheek, 1; melanoma, 1; mixed tumour of salivary gland, 1; oligodendroglioma of cerebrum, 1; multiple myeloma, 1.

(2) *Acute conditions*.—Appendicitis (catarrhal and suppurative), 28; acute suppurative epididymitis, 1; acute suppurative salpingitis, 1; acute endocarditis of mitral valve, 1; acute nephrosis, 1; acute lobar pneumonia, 1; acute broncho-pneumonia, 1.

(3) *Sub-acute conditions*.—Sub-acute parenchymatous nephritis, 1; sub-acute diffuse glomerulo-nephritis, 1; sub-acute yellow atrophy, 2.

(4) *Chronic conditions*.—Chronic bacillary dysentery, 2; chronic cervicitis, 1; chronic endometritis, 8; chronic cholecystitis, 1; chronic inflammation, 7; chronic mastitis, 1; chronic ischaemic nephritis, 1; chronic diffuse glomerulo-nephritis, 1; chronic pancreatitis, 3; chronic interstitial prostatitis, 1.

(5) *Granulomata: Lymphadenoma of*: spleen, 1; lymph gland, 1; intestine, 1.

(6) *Tuberculosis of*: intestine, 2; kidney, 1; liver, 4; lungs, 7; lymph glands, 5; omentum, 2; pericardium, 1; spleen, 4; thoracic vertebrae, 1.

Syphilitic ulcers, 2; syphilitic aortitis, 1.

(7) *Parasitic infections: Bilharziasis of*: Appendix, 13, bladder, 7; epididymis, 1; intestine, 4; kidney (pelvis), 1; liver, 7; lung, 3; ovary, 1; seminal vesicles, 1; ureter, 4; vagina, 1; fallopian tube, 2.



(8) *Miscellaneous*: Multiple actinomycotic abscesses of liver, 1; sub-arachnoid haemorrhage in the pontine region of the brain, 1; cystic glandular hyperplasia of the endometrium, 8; decidua, 5; hydatidiform mole, 1; sub-dural abscess, 1; multiple metastatic abscesses of lung, 1; silicosis, 2; gangrene of gut, 1; organising thrombus in myocardium, 1.

(9) *Animal Tissues*.—A histological examination was carried out on 20 specimens of animal tissue and the following conditions encountered:—

*Tumours*: Spermatocytoma of testis, 1; squamous epithelioma, 1; adeno-carcinoma of breast, 1; round cell sarcoma, 1.

*Acute conditions*: Acute suppurative adenitis, 2.

*Parasitic infections*: Helminthic infection of the liver, 4.

*Miscellaneous*: Actinomycotic abscess of mesenteric gland, 1.

(b) *Post-mortem Examinations*:

(1) The post-mortem dissections numbered 295—medico-legal 163, Clinical 132. The great majority of the autopsies were held on native cases and the following is a summarised statement of the anatomical diagnoses rendered:—

*Pulmonary Conditions*.—

Tuberculosis .....	14
Abscess .....	6
Lobar pneumonia .....	37
Broncho-pneumonia .....	33
Silicosis .....	2

*Cardio-vascular Conditions* .....

26

*Intestinal Conditions*.—

Acute and sub-acute bacillary dysentery .....	11
Chronic bacillary dysentery .....	2
Amoebic dysentery .....	3
Bilharzial dysentery .....	2
Enteric fever .....	9
Tuberculous enteritis .....	2
Acute gastro-enteritis .....	1
Gangrene of the large gut .....	1
Acute peritonitis .....	7

*Hepatic Conditions*.—

Acute or sub-acute liver atrophy .....	6
Bilharzial cirrhosis with splenomegaly .....	3
Suppurative pyelephlebitis .....	2

*Lesions of the Urinary Tract*.—

Pyelonephritis .....	2
Hydronephrosis .....	2
Pyonephrosis .....	2
Tuberculous pyonephrosis .....	1
Urinary tuberculosis .....	1

*Cerebral Lesions*.—

Meningococcal meningitis .....	10
Pneumococcal meningitis .....	1
Acute encephalitis (following varicella) .....	1
Cysticercosis .....	3

*Tumours: Simple*.—Glioma.

*Malignant*.—

Primary carcinoma of liver .....	5
Carcinoma of thyroid .....	1
Carcinoma of urinary bladder .....	1
Periosteal sarcoma .....	1
Myelomatosis .....	1

*Miscellaneous Conditions*.—

Acute haemorrhagic pancreatitis .....	2
Acute osteomyelitis .....	2
Ovarian abscess .....	2
Congenital tracheo-oesophageal fistula .....	1
Potts' disease of the spine .....	1
Addisonian anaemia .....	1
Aplastic anaemia .....	1
Agranulocytic angina .....	1
Laryngeal diphtheria .....	1



(2) *Cases of Special Interest.*—

*Congenital Tracheo-Oesophageal Fistula.*—The patient, a European male child, died after 8 days, and on post-mortem examination it was found that the upper third of the oesophagus terminated in a blind sac at the level of the bifurcation of trachea, while the lower two-thirds communicated directly with the trachea above and the stomach below. No other congenital anomalies were found, but extensive bleeding had occurred into the gut shortly before death.

*Cysticercosis.*—Three cases of cerebral cysticercosis were encountered in the post-mortem room during the year, but one of these deserves special mention on account of the wide distribution of the cysts. The patient, an adult male native, had suffered from epileptiform fits, and had apparently died in an attack. On post-mortem examination numerous cysts were found in the following situations:—

- (a) Subcutaneous tissue of the arms and thorax;
- (b) wall of the left ventricle of the heart;
- (c) cerebral hemispheres.

While cysts are not uncommonly found in situations (a) and (c), it is of interest to note that myocardial deposits may also occur and may constitute an occasional explanation of cardiac arrhythmias or heart block in a native.

*Cardiac Aneurysm.*—Two cases of aneurysm of the heart wall were met with in natives. In both cases death was due to congestive cardiac failure, while the related pericarditis and endocardial thrombi showed that the aneurysm had followed upon a coronary thrombosis. In both cases the aetiological factor appeared to be atheroma of the coronary arteries.

*Agranulocytic Angina.*—A case of this disease occurred in a European male who had taken a number of Yeast-Vitamin Tablets. These tablets were shown to contain amidopyrin, and all the available evidence pointed to this drug as the precipitating factor.

## 11. THE RESEARCH PROGRAMME:

(1) *Malaria.*—Of special interest in relation to the malaria position was the discovery by the Field Officer, Dr. D. Blair, of a species of plasmodium which conforms morphologically to the accepted description of *Plasmodium ovale*. The parasite was found in blood smears prepared from natives of the Sebungwe area while the Field Officer was carrying out an investigation into the incidence of trypanosomiasis of man in that area. This constitutes the first occasion on which *Pl. ovale* has been found in Southern Rhodesia. *Pl. ovale* was first described by Stephens in 1922 in material obtained from East Africa. The term "ovale" refers to the fact that both the parasitized red cell and the plasmodium assume an elongated shape. The parasite bears a resemblance to *Pl. malariae* both in form and size, but it does not form distinctive bands. In contradistinction to *Pl. vivax* infections, the infected red cells are neither enlarged nor decolorized, although Schuffner's dots are very distinct. It has been shown by Yorke and Owen, and later by James, Nicol and Shute, that the distinctive morphological characters of the parasite are retained after blood inoculation and after mosquito transmission, and the latter observers claim in addition that the pigmentary arrangements in the oocyst are characteristic of the species. Thus while the majority of parasitologists are agreed on attributing specific rank to *Pl. ovale*, there are others, for example, Grovanola, who regard the parasite as a variant of *Pl. vivax* and attribute its peculiar morphology to long continued transmission. The parasite gives rise to a tertian type of malaria which is very readily suppressed by quinine therapy. Attention has been drawn by Fairley and by Mühlens to the fact that in "ovale" infections the temperature reaction occurs at night in contradistinction to the forenoon temperature of *Pl. vivax* infections. This clinical differentiation, however, is not accepted by Nocht and Mayer.

Another point of interest in regard to malaria in Southern Rhodesia is the frequency with which chronic forms of the disease are encountered. Such cases offer many difficulties in diagnosis and the routine examination of a blood film shows a high frequency of negative results. On the other hand, quinine therapy clears up the symptoms in a striking fashion, and the same applies to



atebrin therapy. Indeed, in several cases of chronic malaria, the sense of well-being following atebirin therapy has been even more apparent than after quinine. The laboratory, however, is concerned more with diagnosis than with treatment, and an effort is now being made to evolve a reasonably reliable test for the diagnosis of chronic malarial infections. In the meantime, in addition to ordinary blood smear examinations, the urine is examined for urobilin and urobilinogen and the reticulocyte percentage in the peripheral blood is estimated. An excess of urobilin and a reticulocyte count in excess of 5 per cent. under local conditions is regarded as presumptive evidence of a plasmodial infection.

(2) *Allergic Conditions.*—Special attention is now being paid to allergic states encountered under local conditions.

The most prominent allergic condition is that due to pollen sensitivity, giving rise to a condition popularly described as "hay fever." In the majority of cases studied by means of the cutaneous test the allergen is air-borne and is derived from a variety of local grasses. A further group of cases shows a sensitivity to compositae pollen and in a number of instances multiple sensitivities are encountered, the range of which has been indicated in the section dealing with the results of a series of skin tests in hay fever cases.

Where multiple sensitivities occur, however, it is generally found that there is one major allergen together with several of a "secondary" nature, hence from the therapeutic viewpoint, considerable relief from symptoms may be obtained by desensitizing the patient to the major allergen.

The pre-seasonal method of treatment appears to give satisfactory results, but it is proposed to try out the method suggested by Figley (1930), whereby the maximum protective dose of pollen extract is given at approximately monthly intervals throughout the year. It is felt that this procedure may appeal to patients who live at some distance from the laboratory and who visit town once a month or so.

The whole problem of pollenosis, however, merits much closer investigation than it is possible to carry out under existing conditions. The second allergic condition of interest is asthma. Hurst stated that by residence at a height of over 4,000 feet, 90 per cent. of asthmatics lose all or most of their symptoms within a comparatively short space of time. This, however, is not the experience in Southern Rhodesia, where asthmatics as a group experience as much distress as at lower altitudes.

It is not proposed to discuss asthma in this report, but it may be stated that the investigation of such cases can now be undertaken on a much wider scale as a result of having obtained a more representative range of allergens.

Urticaria and infantile eczema are by no means uncommon, and an effort is now being made to investigate such cases in detail. While the majority can be shown to be the result of sensitivity to some food factor, there remains a goodly proportion for which no sensitizing factor can be found.

A study of the allergic state in parasitic infections is also being made, and it is hoped that simplified methods of diagnosis may be evolved for infections such as malaria, trypanosomiasis, bilharziasis and the like.

(3) *Bilharziasis.*—Every opportunity has been taken during the year to study the anatomical distribution of bilharzial lesions, and the accumulated evidence shows that there are few regions in the body where bilharzial deposits may not be found.

Thus a review of the histological findings for the year shows that there is no section of the genito-urinary tract immune from bilharzial infection, and so far as the clinical manifestations of bilharziasis of this region is concerned, there are two features which call for comment. One is haematospermia, which is invariably due to egg deposits in and around the seminal vesicles, and the other is sterility of the male partner. This latter condition may, of course, be accounted for in a variety of ways, but in a bilharzial area the aetiological importance of this infection should be borne in mind, since in some cases a course of anti-bilharzial treatment has effected a return of potency.



In regard to the treatment of bilharzial conditions, there is a tendency to employ antimony tartrate in place of Fouadin. It has not been possible to carry out controlled therapeutic tests, but the general opinion of the local practitioners is that the relapse rate following a course of Fouadin therapy is significantly greater than after tartar emetic, and in the writer's experience Fouadin has given relatively poor results in the treatment of the intestinal form of bilharziasis.

An investigation has been initiated into the mechanism of hepatic bilharzial cirrhosis in an attempt to assess the part played (1) by the parasite and (2) by the egg in the production of this condition. This investigation is still in its early stages, so that no useful purpose can be served by discussing the matter further at present. An attempt is also being made to evolve an antigen for the bilharzial complement fixation test. While Fairley's snail antigen is invaluable in the investigation of more cryptic types of bilharzial infection, great difficulty is experienced in obtaining infected snails, thereby restricting the value of the test even in bilharzial districts. If, therefore, an efficient antigen can be evolved which can readily be obtained, then it is felt that the practical value of Fairley's test will be very materially enhanced.

No special study of the biological side of the bilharzial problem has been undertaken this year in view of Professor Leiper's impending visit to the Colony.

(4) *Staphylococcus Aureus*.—As a sequel to the bacteriological study of a series of breast abscesses, an investigation was begun in November into the possibility of producing a serological classification of the staphylococci. Twenty-five rabbits were immunised with young killed cultures of staphylococci from various sources, and after eight to ten weekly injections amounting to approximately 7.5 c.c.s. of material in all, trial bleedings showed a high agglutinin response. Work is now proceeding on cross agglutinations and about seventy-five strains of staphylococci are being studied. The initial results are promising but a sufficient number of tests has not yet been carried out.

Lyons (British Journal of Experimental Pathology, XVIII, No. 5) has shown that in 3-hour cultures at 37 degrees C. the staphylococci are demonstrable as large apparently encapsulated diplococci. Hence, for the purpose of the present investigation, it is assumed that the serological specificity most probably depends on the presence of a capsule which is apparently lost after the usual incubation period of 18 to 24 hours.

(5) *Onyala*.—A detailed haematological study has been made of an acute haemorrhagic disease of African natives commonly referred to in literature by the name *Onyala*. As a result of these studies it has been shown that *Onyala* is an acute form of essential thrombocytopenia and is probably conditioned by defective maturation of megakaryocytes of the marrow. The therapeutic value of intramuscular injections of whole blood from a healthy donor has been amply confirmed. The results obtained from these studies have been embodied in a review of the disease as a whole (see publications).

## 12. PUBLICATIONS :

- ALVES, W.—"A Case of Bacteraemia due to *Ps. pyocanea*." South African Medical Journal, Vol. XL, No. 7, 1937, p. 230.
- ALVES, W.—"*B. asiaticum*: its relation to *B. coli*." Journal of Pathology and Bacteriology, 1937. Vol. XLIV, No. 2, p. 485.
- ALVES, W., BERRY, K. E., and BEADLE, D. O. E.—"Agglutinins for the Dysentery Organisms in Natives in Southern Rhodesia." South African Medical Journal, 1937. Quart. Scientific Number, Vol. XL, No. 13, p. 480.
- BLACKIE, W. K.—"*Onyala*: A Review." Trans. Roy. Soc. Trop. Med. and Hyg., 1937. Vol. 31, No. 2, p. 207.
- BLACKIE, W. K.—"Blood Transfusion in the Treatment of Blackwater Fever." Lancet, 1937. Vol. II, p. 1124.
- BLACKIE, W. K.—"The Problem of Tumour Growth." Proceedings Rhodesia Scientific Association, 1937. Vol. XXXVI, 61.

W. K. BLACKIE,  
Director.



## (b) THE PUBLIC HEALTH LABORATORY, BULAWAYO.

There has again been a considerable increase in the number of specimens received. In 1936 these amounted to 3,605, whereas in 1937 the number has risen to 5984, an increase of 65 per cent. The increase has been general over the range of routine laboratory investigations. Figures for, and the results of, the more common procedures are as follows:—

## BLOOD:

(1) *Parasitological*:

*Malaria*.—Two hundred and ninety-six bloods were examined specifically for malarial parasites. In 46 of these *P. falciparum* was present and in 2 *P. vivax*.

*Relapsing Fever*.—*Sp. duttoni* was present in 3 bloods. These infections were in natives.

*Microfilaria*.—In one specimen of blood from a native *M. perstans* was found on routine examination. In addition, a focus of filariasis was discovered in rather an interesting manner. A European was known to have suffered from a persistent and high degree of eosinophilia for several years. He had given a positive skin reaction for filariasis, but the parasite had not been demonstrated in his blood. It was suggested that examination of the bloods of the natives in the locality might afford an indication of the infecting helminth, and specimens of the blood of 12 natives residing on or near his farm were sent to this laboratory. All showed eosinophilia ranging from 10.5 per cent. to 53.5 per cent., and in 5 *M. perstans* was demonstrated. This species is usually regarded as relatively non-pathogenic, but in the present cases complaints of general ill-health and fugitive swellings, particularly on the head, are common. These resemble the "Calabar swellings" usually associated with *M. loa loa*, but the microfilariae seen in these cases are non-sheathed and are considered to be *M. perstans*.

*Trypanosomiasis*.—In the blood of one native *T. rhodesiense* was found.

(2) *Microscopical*:

One hundred blood counts were done, and 58 differential leucocyte counts.

(3) *Culture*.—Forty-seven blood cultures were made, and from 5 *Bact. typhosus* was isolated. *Bact. faecalis alcaligenes* was present in one while the remainder showed no growth or were considered to be contaminated.

(4) *Serology: Widal Reaction*.—One hundred and forty-eight specimens of blood were submitted to the Widal Reaction; 41 of these gave a positive result against organisms of the typhoid-paratyphoid group. The somewhat high percentage of positives is explained by an outbreak of typhoid in a gang of railway natives. Seventy-five per cent. of the bloods submitted from this source gave positive results. One serum gave a positive reaction against the Brucella group and one against *Bact. dysenteriae* Flexner. Four Weil-Felix reactions were done with negative results.

*Wassermann Reaction*.—The Wassermann reaction was performed on 1,473 specimens of blood with the following results: Positive, 395; partial or doubtful, 53; negative, 1,005; anti-haemolytic or otherwise unsuitable, 20. On 74 specimens of cerebro-spinal fluid the results were: Positive, 10; negative, 63; anti-haemolytic, 1. The majority of these tests were done on natives, mostly patients in hospital or attending venereal disease clinics. The percentage of positives found (26.7 per cent. of blood Wassermann reactions) is not unduly high in such classes of patients.

In addition, 498 of the bloods submitted for the Wassermann reaction have been tested by a modification of the Rytz flocculation test. This test, which has several novel features which distinguish it from such tests as the Kahn or the Kleine, seems to be less influenced by the variability of reagents and modifications of technique. The comparative results are as follows:—

Wassermann Reaction Positive:	Rytz Reaction Positive .....	121
Wassermann Reaction Negative:	Rytz Reaction Negative .....	310



There is thus complete agreement in 431 instances or 87 per cent. Discrepancies are as follows:—

Wassermann Reaction Positive:	Rytz Reaction Negative	2
Wassermann Reaction Negative:	Rytz Reaction Positive	40
Wassermann Reaction Doubtful:	Rytz Reaction Negative	5
Wassermann Reaction Doubtful:	Rytz Reaction Positive	19
Wassermann Reaction Anti-haemolytic:	Rytz Reaction Positive	1

On these figures the sensitivity of the Rytz Reaction would appear to be high, but as regards its specificity, i.e. reacting only in syphilitic cases, further investigation is necessary. It has to be remembered that flocculation tests as a rule tend to react earlier in early cases, and later in treated cases, and many of the 40 cases in which the Wassermann reaction was negative and the Rytz reaction positive fall into either of these categories. In one case which reacted in this way and in which clinically a suspected early lesion was present, treatment was postponed for a fortnight, at the end of which period both tests were positive. Further investigations of the value of the test are in progress.

(5) *Blood Grouping*.—Eleven individuals were grouped prior to blood transfusion.

(6) *Biochemistry*.—Ten sugar tolerance tests and 28 single estimations of the fasting sugar value were made. The non-protein nitrogen content of the blood was estimated on 30 occasions.

#### URINE:

(1) *Microscopic*.—Urines examined chemically and microscopically numbered 964; urines examined specifically for the presence of ova of *B. haematobium* numbered 357, 86 of these being positive. In 2 urines *T. vaginalis* was present.

(2) *Cultural*.—The number of urines cultured was 527. In infections of the urinary tract *B. coli* or coliform organisms are, as usual, predominant. Four urines were examined for *M. tuberculosis* with negative results.

(3) *Chemical*.—In addition to the usual routine chemical analysis which is done on most of the specimens received the following examinations were made:—

Sugar and Ketose bodies	31
Diazo reaction	3
Haemoglobin	3

#### FAECES:

(1) *Microscopical and Parasitological*.—Specimens of faeces examined for the presence of ova or parasites numbered 254. The principal findings were as follows:—

<i>E. histolytica</i>	3	<i>Balantidium coli</i>	2
<i>E. coli</i>	2	Hookworm sp.	9
<i>T. hominis</i>	7	<i>B. mansoni</i>	2
<i>Ch. mesnili</i>	3	Tapeworm sp.	4

(2) *Cultural*.—Cultures were made of 145 specimens. The principal pathogens isolated were:—

<i>Bact. dysenteriae</i> Flexner	2	<i>Bact. enteritidis</i> Gaertner	1
<i>Bact. dysenteriae</i> Sonne	1	Salmonella sp.	3
Para-dysentery Bacilli	3	<i>Bact. morgani</i>	1

(3) Tests for occult blood were made on 12 specimens, 5 of which were positives.

#### CEREBRO-SPINAL FLUID:

In 31 specimens of cerebro-spinal fluid received (in addition to the 74 sent for Wassermann Reaction only), cell counts and protein and sugar estimations were done on 12. Bacteriological examination showed infection with the meningococcus in 2 and pneumococcus in 1. One fluid from a native, examined on 2 occasions, showed infection with a yeast-like organism resembling the genus *Cryptococcus*, and it is interesting to note that one species, *C. histolytica*, has been previously reported as causing meningo-encephalitis in man. *Trypanosoma rhodesiense* was demonstrated on one occasion.



# PUS, MORBID EXUDATE, ETC. :

(1) *Throat and nose swabs*.—The number of swabs examined for *C. diphtheriae* was 335, with 21 positive results. The incidence of diphtheria in the district was low, and the majority of the swabs examined were from one school in which an outbreak had occurred.

(2) *Sputa*.—The specimens examined for *M. tuberculosis* numbered 449, of which 48 were positive.

(3) *Urethral and Cervical Smears*.—The number of smears examined for gonococcal infection was 628, and 117 of these were returned as positive.

(4) *Leprotic Material*.—The number of smears examined from the skin or nasal mucosa was 27, with 10 positive results.

# OTHER :

Amongst other investigations were Pleural fluids, 22; hairs for ringworm, 8; pus for *B. anthracis*, 2 (both negative). In one specimen of pus obtained from the chest actinomyces was present, and its identification established by anaerobic culture. Another interesting finding was the presence of flagellates of the genus *Trichomonas* in pus from an ulcer on the hand of a native. The ulceration had deeply undermined the skin, and it was in pus under the skin that the parasite was present.

**RODENT EXAMINATION.**—In connection with the anti-rodent campaign carried out by the Bulawayo Municipality, 288 carcasses of rodents have been autopsied, and smears examined microscopically. There has been no evidence of plague in any, but examination of the blood shows how wide-spread is infection with *Bartonella* among these animals. This would appear to be without injurious effect. Other less prevalent blood infections are Piroplasmosis and Trypanosomiasis.

# HISTOLOGY :

The examination of sections of tissue is now undertaken by this laboratory, and 95 such examinations were made during the year. The principal histological findings are as follows :—

## (1) *Tumours* :

- (a) Benign : 17.—Included are Uterine fibroids, 3; fibroma, 2; pseudo-mucinous ovarian cystadenoma, 2; osteoma, 2; papillary cyst-adenoma of ovary, 1; ovarian dermoid, 1; fibrous epulis, 1; papilloma, 2; lutein-cyst, 1; haemangioma, 1; colloid adenoma of thyroid, 1.
- (b) Malignant : 16.—Included are Epithelioma, 10; Adenocarcinoma, 2; Sarcoma, 1; Melanoma, 1; Nephroblastoma, 1; Seminoma, 1.

(2) *Inflammatory Lesions*.—Acute or chronic appendicitis, 9; chronic mastitis, 3; endocervicitis, 3; endometritis, 2; acute lymphadenitis, 1. There were 4 specimens showing tuberculosis.

(3) *Parasites*.—Bilharzial appendicitis was present in 2 cases, and *Cysticercus cellulosae* was also demonstrated on 2 occasions.

# MISCELLANEOUS INVESTIGATIONS :

Twenty-one specimens of drinking water were examined bacteriologically, while one of algal infestation was also dealt with. Forty-two autogenous vaccines were prepared. Seven animal inoculations were performed.

G. R. ROSS,

Director.



## (C) ANNUAL REPORT OF THE GOVERNMENT ANALYST, SALISBURY.

The number of samples and exhibits which were dealt with was 1,061. They are classified as follows:—

*Exhibits in Connection with Criminal Investigations—*

Exhibits for presence of Poisons .....	316
Exhibits for presence of Blood Stains .....	16
Exhibits for presence of Seminal Stains .....	2
Miscellaneous Forensic Exhibits .....	6
<b>Total .....</b>	<b>340</b>

*Samples of Water—*

Analyses for Hygienic and General Utility Purposes and Purification Control .....	142
In connection with outbreaks of Sickness .....	3
In connection with maintenance of Swimming Baths in Hygienic Condition .....	3
<b>Total .....</b>	<b>148</b>

*Customs Control*

Wines .....	10
Brandies .....	4
Proprietary Products for Assessment .....	8
<b>Total .....</b>	<b>22</b>

Cow's Milk .....	113
Human Milk .....	8
Native Hop Beers .....	344
Kaffir Beers .....	10
Illicit Distilled Spirits ("Kachasu") .....	6
Disinfectants .....	15
Clinical Specimens .....	21
Miscellaneous .....	34
<b>Total .....</b>	<b>1,061</b>

As compared with the previous year the non-clinical specimens increased from 732 to 1,040, whilst the clinical specimens fell from 112 to 21. The latter reduction is the result of the fresh arrangement under which the simpler chemical estimations are performed at the Public Health Laboratory, and only the more complicated ones referred to us.

*Criminal Investigation.*—Co-operation between investigating officers and the Laboratory continues to develop on sound lines. The 316 toxicological exhibits were submitted in conjunction with 81 cases, the majority of which involved charges of murder by poisoning. A large proportion of these cases was elucidated by analysis, serious amounts of poison being detected in post-mortem specimens, and also in samples of food, beer, etc., which supplied cardinal evidence in establishing the identity of the guilty person. Most of the cases were in connection with natives. Arsenic, which is so widely distributed and often so indifferently supervised, was involved in 31 cases, and cyanide in 14. Antimony, morphine, opium, oil of wintergreen, strychnine, native poisons, etc., were involved in other cases. In some instances the question was whether proprietary medical preparations contained dangerous amounts of harmful drugs, and very serious issues were at stake. Analysis may remove, as well as confirm suspicion; for instance, in a case where natives were charged with killing eight head of cattle by poisoning a drinking pool with a native fish poison (pounded Jero root), we showed that although the substance was poisonous to fish it was practically harmless to warm-blooded animals, and went on to prove that the cattle had actually died from poisoning by arsenic with which the earth surrounding an old store was heavily impregnated.

Amongst the more interesting of the general criminal investigations was a case in which examination of a knife and samples of putty assisted in obtaining conviction in a charge of house-breaking, and another in which it was shown



that serious injuries to a motor engine, which were at first thought to be due to malicious addition of sugar to petrol, were due to casual contamination of entirely different character.

*Water Analysis.*—The number of samples showed an increase from 93 to 148.

They came from public and private supplies throughout the territory. The purposes of submission showed considerable variation, e.g., for ordinary routine hygienic assessment; suitability for development as public supplies; control of purification installations; elucidation of any special features (odour, taste, etc.) in the waters serving schools, hospitals, etc.; fouling of condenser tubes in power generating plants; deterioration of swimming baths, etc. As an instance of the importance of one aspect of this work we may cite a case where our investigations solved a serious scale problem in a major generating plant, and, in addition to preventing grave developments, caused a substantial decrease in fuel consumption.

Towards the end of the year considerable assistance was given in the endeavours to render the water of the Cleveland Dam (which had become of distinctly abnormal character) safe for use as an emergency supplementary town supply.

The work performed for the Department of Customs and Excise effected correct classification and tariff assessment in a number of doubtful cases.

*Milk.*—From time to time it is suggested that chemical analysis of milk is of distinctly less importance than bacteriological examination. The fact is that both are necessary to any proper system of control. In actual operation chemical analysis has an advantage in that samples can be taken by police constables, etc., without insistence on sterile conditions and by preserving samples effective control can be exercised over very remote districts.

Apart from estimation of nutritional constituents and detection of added water, which are of particular moment in a country where so many infants are bottle-fed, precise examination of any sediment often leads to important conclusions as to the hygienic character of the milk, and, as performed in this Laboratory, has led to numerous convictions for the sale of "dirty" milk.

The necessity for regular analytical control was again proved by the fact that 11 (i.e., 10 per cent.) of the 113 samples taken in Salisbury and Bulawayo were seriously below standard nutritional quality, and in some cases as much as one gallon of water had been added for each gallon of original milk.

Prosecutions were instituted and convictions secured in several cases.

The difficulties associated with endeavours to establish control in centres other than Bulawayo and Salisbury, and with certain aspects of control in these centres, again emphasised the desirability of placing these operations on a much more satisfactory basis.

*Disinfectants.*—The Government has two contracts for disinfectants—one for high-power germicides for use in all the hospitals, the other for intermediate products intended for general use.

Each tender is accompanied by a sample, and all samples are submitted to the Laboratory so that we can ensure that the one selected is satisfactory in every respect and represents the best value for money.

*Control of Sale of Intoxicants to Natives.*—This section of the work assumed such proportions during the year and members of the public appear to have such erroneous ideas with regard to it that a brief explanatory statement appears to be called for.

The first point is that hop beer is entirely different from Kaffir beer. The latter is a fermented grain product with recognised intoxicating properties, because of which it is sold under restricted conditions which are intended to prevent abuses.

Hop beer, on the other hand, when properly prepared, is a non-intoxicating beverage made from hops, sugar, etc. It is subjected to a mild degree of fermentation, with the object of making it gassy and "live" without the production



of any significant amount of alcohol. Thus prepared, it is a refreshing and unobjectionable beverage which may be regarded as a sort of home-brewed mineral water. The amount of fermentation which will take place, and the resulting percentage of alcohol and intoxicating power increases with increase in the amounts of starchy and sugary substances added, and by employing excessive amounts of these ingredients, seriously intoxicating liquors may be produced and offered for sale in the various native eating-houses, etc. It has been recognised that the production of such strong liquors by native brewers might be due in some measure to ignorance—addition of excessive quantities of fermentable substances without due appreciation of the dangers. For this reason the Laboratory has instituted an advisory service, under which any native brewer of hop beer may obtain an analysis of his product, with advice and warning where necessary, for the nominal charge of 2s. 6d. We have further worked out a hop beer formula which will yield a product which is refreshing without being intoxicating, and this is freely passed on to natives who consult us.

Very great use has been made of this service by natives in the Salisbury area, and the question may arise as to whether, with the co-operation of the Native Department, the benefits of this service might not be extended.

There are, however, numerous brewers who are prepared to run risks in order to net the extra profits which can be made from the sale of brews which are distinctly intoxicating, and it is obvious that the unrestricted sale of such products would be most inadvisable. In order to check this practice, official samples are frequently taken by the C.I.D. and Police, and prosecutions are instituted when analysis proves that the samples are intoxicating.

When the practice is persisted in, very heavy fines (e.g., from £30 to £50) are inflicted, but the fact that in the past the business has been found to be very lucrative is shown by the ease with which the natives have paid these fines (sometimes repeated on a second or third conviction), occasionally paying the greater part in small silver (sixpences and threepenny pieces) which they have received over the counter.

During the year 344 samples of hop beer were analysed and reported on. One hundred and seventy-eight were in connection with the advisory service, 147 being found to be correct and 31 being over-strength and calling for warning and advice.

Of the 166 samples taken and analysed for official control purposes, 64 were found to be over (and quite a few seriously over) the allowed maximum alcoholic strength. In all these cases convictions were obtained and fines ranging from £5 to £50 were imposed.

The total of these fines during the year was approximately £880. For a considerable time the endeavours to suppress the abuses did not appear to be meeting with any appreciable degree of success, but the latest indications do point to definite improvement in the position. It would, however, appear that the situation will require watching throughout the territory, and that it may throw a considerable onus upon the Laboratory for some time to come.

The narrow escape of a native from death by acute alcoholic poisoning led to the submission of six samples which were found to be native distilled spirits, the strength of some of which was about half that of whisky. Fines amounting to £40 were imposed, and the still was discovered and seized.

The ten Kaffir beer samples were mainly forwarded by location superintendents for purposes of control. The necessity for such control was shown by the fact that some of them were distinctly above the maximum permissible strength.



The clinical specimens were submitted by the Directors of the Public Health Laboratories of Bulawayo and Salisbury.

One phase of the laboratory's work is to provide a service for performing clinical chemical investigations which differ from the commoner routine tests.

The co-operation which obtains with regard to such matters suggests that there may be some development of this service in the future.

As usual the miscellaneous samples were of most diverse type, and space permits only a cursory reference. Among them were samples from Government quinine contract supplies for analysis as to quinine content and solubility, bottled fruit concentrates, fruit juices for metallic contamination, cement (which was being employed on a large building) for binding and setting power, bread, biscuits, soap, sewage, meat, meat preservative, mud (for algal infection), etc., etc.

*Lectures to Police.*—Lectures on the theory and practice of the scientific investigation of crime continued to be given to police recruits and refresher groups, and the results evidenced in the keen and efficient performance of the important field investigations are most gratifying.

*General Review.*—The above resume of the analyses performed will serve to indicate the intensified demands which are being made in an ever-widening field. In view of the grave nature of the issues continuously dealt with the Laboratory has to keep up to date by the consistent study and filing of the latest British and German literature. Any development in science is likely to make increased demands upon us. For instance a few years back the analyst was merely required to state whether or not a suspected stain contained blood; further research made this decision more certain by means of an improved, but more involved technique; research on agglutination then paved the way to the very important precipitin test as to human origin, and from time to time we are now requested to perform group tests (so difficult with small stains of dried blood) in order to learn whether blood stains found upon suspects can possibly be due to their own blood.

Requests and suggestions for special investigations, involving large amounts of work, are made from time to time but cannot be undertaken with the present staff of two.

Apart from major questions such as research into food factors in Rhodesia there are others which have been suggested and which would appear to call for early investigation. As an instance, the question as to whether or not inebriation has been a factor in serious motor-car accidents may be cited. The differences of opinion which have been expressed in court evidence—even by medical practitioners—as to the condition of drivers after serious accidents are notorious.

In spite of differences in individual susceptibility the proof of the presence of less than a carefully assessed minimum, or of more than a certain maximum of alcohol in the blood (or possibly urine) of any one so involved would provide basic data which would refute assertions which were grossly untrue.

An additional advantage of such procedure is that it would yield important evidence with regard to the amount of liquor which had been consumed by anyone who was killed in an accident.

A. W. FACER, B.A.(Oxon), F.I.C.,  
Government Analyst.



## CHAPTER V.—ADMINISTRATIVE.

## (1) STAFF.

1. Doctors (Permanent Establishment 25; Aided 10)	35
2. Radiologist .....	1
3. Field Officer .....	1
4. Schools Medical Officers .....	2
5. Medical Superintendents .....	3
6. Directors of Laboratories .....	2
7. Dentists .....	2
8. Government Analyst .....	1
9. Staff Matron .....	1
10. General Nurses (Qualified 139; Student 110) .....	249
11. Mental Nurses .....	22
12. Other European Staff .....	93
13. Asiatic and Native Staff .....	506
<b>Total</b> .....	<b>918</b>

## (2) SOUTHERN RHODESIA NURSING SERVICE.

The following are the results of the examinations held by the Southern Rhodesia Medical Council in the nurses' training schools at Salisbury and Bulawayo.

	Number of Candidates.	Number Successful.	Number Unsuccessful.
Preliminary examination .....	22	20	2
Final examination .....	23	22	1

Four nurses passed the final examinations with honours. A Gold Medal presented by the Mashonaland Branch of the British Medical Association was awarded to the best students in the final examinations in April and October.

The administration of the nursing service and the staffing arrangements in hospitals have been reorganised and placed in charge of a senior member of the nursing service who acts as Staff Matron. This method of control works well and efficiently and is an improvement on the old method where administrative control was in the hands of a Matron who was preoccupied in the administration of a big hospital.

## (3) MEDICAL COUNCIL.

The numbers on the registers at the end of 1937 are given below:—

	Additions 1937.	Total 31.12.37.
Medical Practitioners .....	17	174
Dental Surgeons .....	2	46
Chemists and Druggists .....	3	89
Trained Nurses .....	61	280
Midwives .....	34	70
Mental Nurses .....	4	9
Masseurs and Masseuses .....	—	4

Included in the figures for medical practitioners is one who is temporarily registered as a *locum tenens*. Of the medical practitioners registered with the Medical Council it is estimated that 106 are resident and practising their profession in Southern Rhodesia and of this number 39 are in Government Service, either whole-time, as Government Medical Officers, or part-time, as Aided Government Medical Officers. The proportion of practising doctors in the country amounts to one doctor for every 539 of the European population or one doctor for every 12,402 of the total population of the country.



## (4) HABIT-FORMING DRUGS.

*Import Certificates.*—Ninety-three permits were issued for the importation of the following drugs during 1937 as compared with sixty-seven in 1936:—

Drug.	1936. Grammes.	1937. Grammes.
Medicinal opium .....	340.0	1,498.75
Opium (in tinctures, extracts and other preparations) .....	14,060.0	7,847.0
Coca leaves .....	64.0	—
Extract cannab. indica .....	340.0	—
Morphine alkaloid .....	595.5	235.44
Diacetylmorphine (heroin) .....	104.0	2.25
Ethylmorphine .....	22.6	67.81
Cocaine .....	1,026.13	793.0
Codeine .....	115.57	352.9
Dilaudid .....	0.008	—
Eucodal .....	—	0.35

*Export Certificates.*—Twenty-six permits were issued for the exportation of the following drugs during 1937 as compared with twenty-three in 1936:—

Drug.	1936. Grammes.	1937. Grammes.
Medicinal opium .....	491.0	—
Opium (in tinctures, extracts and other preparations) .....	702.3	1,132.2
Coca leaves .....	128.0	—
Morphine alkaloid .....	15.7	21.595
Diacetylmorphine (heroin) .....	0.95	3.1
Ethylmorphine .....	0.8	—
Crude Cocaine .....	2.0	—
Cocaine .....	2.2	28.5
Codeine .....	1.4	34.3

Four permits were issued by the Veterinary Department in 1937 for the purchase of 44 ounces of tincture of opium, as against one in 1936 for 20 ounces.

## (5) TRAINING OF NATIVE HOSPITAL ORDERLIES.

In terms of Government Notice No. 417 of 1937 the Medical Council of Southern Rhodesia were required to open and maintain a register of native hospital orderlies. A definite course of study and the consequent examinations have been laid down. During the year the following examinations were passed:—

	Number of Candidates.	Number Successful.
Lower examination .....	14	14

I have the honour to be, Sir,

Your obedient servant,

ANDREW PATON MARTIN, M.B., Ch.B.,

Medical Director.



## THIRTY YEARS' WORK.

This table is reproduced in graphic form in the body of the Report.

Year.	European.		Native Hospitals.		Native Dispensaries.		Lab- oratory Services.
	In-P.	Out-P.	In-P.	Out-P.	In-P.	Out-P.	
1908 - - -	1,581	No records of European out-patients available.	1,617	No records of Native out-patients available.			
1909 - - -	2,361		1,648				33
1910 - - -	2,121		2,437				70
1911 - - -	2,177		2,251				153
1912 - - -	2,313		2,797				—
1913 - - -	2,258		2,927		37	559	393
1914 - - -	2,149		2,201		91	1,092	478
1915 - - -	2,415		2,023		61	935	883
1916 - - -	2,073		2,204				—
1917 - - -	2,384		2,518		Work ceased		—
1918 - - -	2,805		2,364		during the		339
1919 - - -	2,868		2,330		years of the		761
1920 - - -	3,123		2,949		Great War.		560
1921 - - -	2,273		3,196		79	467	814
1922 - - -	2,976		3,053		196	877	807
1923 - - -	3,310		3,015		No separate		1,457
1924 - - -	2,833		3,991		records of		1,714
1925 - - -	3,524		4,301		work of the		2,309
1926 - - -	3,827		5,168		Native		3,464
1927 - - -	4,231		5,178		Dispensaries.		5,612
1928 - - -	4,995		6,137		372	3,136	7,006
1929 - - -	5,041		6,663		544		6,062
1930 - - -	5,522		8,180		657		8,599
1931 - - -	5,093	10,504	7,466	7,363	775		9,295
1932 - - -	5,369	8,594	7,924	13,487	625	132	15,921
1933 - - -	5,972	8,996	10,057	13,563	4,522	9,553	19,173
1934 - - -	6,264	10,135	10,230	27,273	6,062	14,777	21,036
1935 - - -	6,820	11,866	11,468	24,700	11,490	23,987	24,390
1936 - - -	7,642	14,345	13,318	36,895	11,744	22,704	36,006
1937 - - -	8,040	22,685	13,704	44,521	21,490	46,155	39,137

## CLASSIFICATION OF DEATHS (EUROPEAN), 1937.

Deaths classified according to the International Classification of Causes of Sickness and Death.

## I.—INFECTIOUS AND PARASITIC DISEASES.

Classification No.	Disease.						No. of Deaths.
1	Typhoid fever	—	—	—	—	—	4
3	Typhus fever	—	—	—	—	—	1
7	Measles	—	—	—	—	—	3
9	Whooping cough	—	—	—	—	—	1
10	Diphtheria	—	—	—	—	—	6
11	Influenza	—	—	—	—	—	25
13	Dysentery	—	—	—	—	—	2
18	Cerebro-spinal fever	—	—	—	—	—	3
23	Tuberculosis of respiratory system	—	—	—	—	—	3
34	Syphilis	—	—	—	—	—	2
35	Other venereal diseases	—	—	—	—	—	1
36	Purulent infection, septicaemia	—	—	—	—	—	6
38	Malaria	—	—	—	—	—	26
44	Other infectious diseases (tick fever)	—	—	—	—	—	1
44:6	Blackwater fever	—	—	—	—	—	11

## II.—CANCER AND OTHER TUMOURS.

45	Cancer of buccal cavity and pharynx	—	—	—	—	3
46	Cancer of the digestive organs and peritoneum	—	—	—	—	29
47	Cancer of the respiratory organs	—	—	—	—	3
48	Cancer of the uterus	—	—	—	—	1
49	Cancer of other female genital organs	—	—	—	—	1
50	Cancer of the breast	—	—	—	—	4
51	Cancer of the male genito-urinary organs	—	—	—	—	7
53	Cancer of other or unspecified organs	—	—	—	—	6
55	Tumours of undetermined nature	—	—	—	—	2



### III.—RHEUMATISM, DISEASES OF NUTRITION AND OF ENDOCRINE GLANDS, AND OTHER GENERAL DISEASES.

Classification No.	Disease.	No. of Deaths.
56	Rheumatic fever	2
57	Chronic rheumatism, Osteo-arthritis	5
59	Diabetes	9
67	Diseases of the thymus	2

### IV.—DISEASES OF THE BLOOD AND BLOOD-FORMING ORGANS.

70	Haemorrhagic conditions	1
71	Anaemia, Chlorosis	4
72	Leukaemia, Aleukaemia	4
73	Diseases of the spleen	1
74	Other diseases of the blood and blood-forming organs	2

### V.—CHRONIC POISONING.

75	Alcoholism	1
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### VI.—DISEASES OF THE NERVOUS SYSTEM AND SENSE ORGANS.

78	Encephalitis	3
81	Other diseases of the spinal cord	3
82	Cerebral haemorrhage, apoplexy	12
85	Epilepsy	2
86	Infantile convulsions (age under 5 years)	1
87	Other diseases of the nervous system	1
89	Diseases of the ear and mastoid sinus	1

### VII.—DISEASES OF THE CIRCULATORY SYSTEM.

91	Acute endocarditis	2
92	Chronic endocarditis, valvular disease	18
93	Diseases of the Myocardium	38
94	Diseases of the coronary arteries, angina pectoris	14
95	Other diseases of the heart	5
96	Aneurysm	2
97	Arterio-sclerosis	8
99	Other diseases of the arteries	2
100	Diseases of the veins	1
102	Abnormalities of blood-pressure	7

### VIII.—DISEASES OF THE RESPIRATORY SYSTEM.

106	Bronchitis	2
107	Broncho-pneumonia	13
108	Lobar pneumonia	21
109	Pneumonia (not otherwise defined)	10
111	Congestion and haemorrhagic infarct of lung, etc.	3
112	Asthma	3
114	Other diseases of the respiratory system	3

### IX.—DISEASES OF THE DIGESTIVE SYSTEM.

115	Diseases of the buccal cavity, pharynx, etc.	2
116	Diseases of the oesophagus	1
117	Ulcer of the stomach or duodenum	6
119-120	Diarrhoea and enteritis	8
121	Appendicitis	12
122	Hernia, intestinal obstruction	8
124	Cirrhosis of the liver	5
125	Other diseases of the liver	2
126	Biliary calculi	1
127	Other diseases of the gall bladder and ducts	1
128	Diseases of the pancreas	2
129	Peritonitis, without stated cause	2

### X.—NON-VENEREAL DISEASES OF THE GENITO-URINARY SYSTEM AND ANNEXA.

130	Acute nephritis	1
131	Chronic nephritis	10
132	Nephritis, not stated to be acute or chronic	2
133	Other diseases of the kidney and annexa	5
135	Diseases of the bladder	1
137	Diseases of the prostate	4
139	Diseases of the female genital organs	1

### XI.—DISEASES OF PREGNANCY, CHILDBIRTH AND THE PUERPERAL STATE.

141	Abortion not returned as septic	3
142	Ectopic gestation	1
147	Other toxæmias of pregnancy	3
150	Other or unspecified conditions of the puerperal state	1



## XIII.—DISEASES OF THE BONES AND ORGANS OF LOCOMOTION.

Classification No.	Disease.	No. of Deaths.
154	Acute infective osteomyelitis and periostitis — — — — —	2
156	Diseases of the joints and other organs of locomotion — — — — —	2

## XIV.—CONGENITAL MALFORMATIONS.

157	Congenital malformations — — — — —	9
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## XV.—DISEASES OF EARLY INFANCY.

158	Congenital debility — — — — —	3
159	Premature birth — — — — —	18
161	Other diseases peculiar to early infancy — — — — —	6

## XVI.—OLD AGE.

162	Old age — — — — —	8
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## XVII.—DEATHS FROM VIOLENCE.

163	Suicide by solid or liquid poisons and corrosive substances — — — — —	6
165	Suicide by hanging or strangulation — — — — —	1
167	Suicide by firearms — — — — —	6
175	Homicide by other means — — — — —	1
179	Other acute accidental poisoning (not by gas) — — — — —	1
183	Accidental drowning — — — — —	5
184	Accidental injury by firearms — — — — —	1
186	Accidental injury by fall, crushing, etc. — — — — —	15
193	Electricity (lightning excepted) — — — — —	2
194	Other and unstated forms of accidental violence — — — — —	3
195	Violent deaths of unstated nature — — — — —	4
196	Wounds of war — — — — —	1

## XVIII.—ILL-DEFINED DISEASES.

199	Sudden death — — — — —	1
200	Cause of death unstated or ill-defined — — — — —	2
Total — — — — —		536

## DETAILS OF DEATHS CLASSIFIED UNDER NOS. 186, 194 AND 195 OF THE INTERNATIONAL LIST.

186	Accidental injury by fall, crushing, etc.—	
	Mining accidents — — — — —	5
	Motor accidents — — — — —	7
	Fall down stairs — — — — —	1
	Collapse of electric standard on which deceased was working — — — — —	1
	Accidental fall (no further particulars) — — — — —	1
		15
194	Other and unstated forms of accidental violence—	
	Explosion of detonators held by deceased — — — — —	1
	Severe injuries to left forearm with compound fracture; gas gangrene — — — — —	1
	Exposure — — — — —	1
		3
195	Violent deaths of unstated nature—	
	Fractured neck of femur — — — — —	1
	Poisoning, not stated whether due to accident, suicide or homicide — — — — —	3
		4



TABLE SHOWING PATIENTS TREATED IN NATIVE DISPENSARIES AND CLINICS.

Native Clinic.	No. admitted to Hospital.			Inpatient Units Maintained.			Deaths.			Outpatients			Treatments.		
	V.D.	Other.	Total.	V.D.	Other.	Total.	V.D.	Other.	Total.	V.D.	Other.	Total.	V.D.	Other.	Total.
Ndanga Native Hospital	559	769	1,328	27,635	36,643	64,278	—	—	34	160	42	202	No Record		
"A" Dispensary, Ndanga	856	217	1,073	27,552	6,888	34,440	—	—	5	1,920	483	2,403	"		
"B" Dispensary, Ndanga	624	158	782	20,552	5,141	25,693	—	—	7	384	97	481	"		
"C" Dispensary, Ndanga	536	136	672	20,544	4,936	25,480	—	—	7	744	194	938	"		
"G" Dispensary, Ndanga	942	240	1,182	34,216	8,554	42,770	—	—	4	3,360	847	4,207	"		
Bikita Native Dispensary	608	154	762	27,360	6,847	34,207	—	—	9	1,416	361	1,777	"		
Chiehidza Native Dispensary	824	210	1,034	19,000	4,750	23,750	—	—	9	720	188	908	"		
Matibi No. 2 Clinic	240	61	301	8,000	2,007	10,007	—	—	4	200	57	257	"		
Total Ndanga Unit	5,189	1,945	7,134	184,859	75,766	260,625	—	—	79	8,904	2,269	11,173	—	—	—
Chingombi Clinic (lately Alheit)	142	842	984	—	4	4	—	1	1	(Details unknown)		980	852	2,294	3,146
Chibi Clinic	(Details unknown)	1,621	1,621	33,275	12,574	45,849	—	—	—	(Details unknown)		1,572	—	—	—
Chilimanzi Clinic	157	153	310	5,894	5,054	10,948	2	3	5	40	622	662	240	4,525	4,765
Concession Clinic (lately Aman-das)	224	438	662	11,426	11,331	22,757	3	29	32	58	476	534	290	922	1,212
Filabusi Clinic	165	198	363	5,298	3,138	8,436	5	11	16	42	280	322	126	560	686
Fort Usher (lately Lees Memorial)	266	40	306	9,414	1,270	10,684	4	8	12	176	2,045	2,221	539	5,929	6,468
Gatoona V.D. Clinic	1,427	22	1,449	71,864	583	72,447	8	—	8	23	1	24	102	2	104
Jena Clinic	—	—	—	—	—	—	—	3	3	393	2,057	2,450	2,820	5,430	8,250
Kezi Clinic	3	317	320	—	93	93	—	—	3	3	313	316	3	790	793
Kutama Clinic	16	215	231	267	2,310	2,577	—	—	4	374	2,716	3,090	2,543	8,137	10,680
Marandellas Clinic	839	372	1,211	29,365	10,416	39,781	5	10	15	—	629	629	—	3,774	3,774
Makumbi Clinic	19	314	333	438	4,903	5,341	—	—	4	4	2,140	2,144	36	5,722	5,758
Mount Darwin Clinic	80	1,104	1,184	2,240	11,801	14,041	—	—	9	17	421	438	350	1,419	1,769
Mreva Clinic	180	637	817	6,109	12,319	18,428	5	20	25	—	4,395	4,395	—	6,057	6,057
Plumtree Clinic	328	532	860	9,970	12,044	22,014	9	15	24	214	884	1,098	1,284	2,652	3,936
Rusapi Clinic	63	176	239	2,723	4,635	7,358	—	—	22	3	85	88	36	538	574*
Selukwe Clinic	351	420	771	14,863	6,790	21,653	2	35	37	179	430	609	533	6,498	7,031
Sipolilo Clinic	48	125	173	3,044	2,729	5,773	1	2	3	39	1,006	1,045	390	7,201	7,591
Tjolotjo Clinic (lately Gwaai Reserve)	38	478	516	1,044	4,067	5,111	—	—	10	14	3,050	3,064	84	18,300	18,384
Tzonzo Clinic	42	265	307	733	4,826	5,559	—	—	3	519	5,050	5,569	2,076	15,450	17,526
Umvuma Clinic	72	138	210	1,907	2,455	4,362	—	—	6	86	760	846	2,236	5,450	7,686
Lukosi Clinic (lately Wankie)	350	268	618	5,900	1,329	7,229	—	—	3	829	871	1,700	8,853	7,068	15,921
Wedza Clinic	206	466	672	4,019	7,116	11,135	2	4	6	408	615	1,023	2,143	3,971	6,114
Totals	10,205	9,465	21,291	404,652	197,553	602,205	46	205	330	12,325	31,115	45,992	25,536	112,689	138,225



Name of hospital.	Staff nursing.		No. of beds.		No. of cases treated.		Daily average of patients treated.		No. of units patients maintained.		Average No. of days each patient was in hospital.	
	E.	N.	European.	Coloured and native.	European.	Coloured and native.	European.	Coloured and native.	European.	Coloured and native.	European.	Coloured and native.
Salisbury ...	95	21	120	125	3,140	2,915	6,055	101.46	124.63	226.09	37,034	45,375
Bulawayo ...	67	14	129	153	2,359	3,865	6,224	94.57	172.50	267.07	34,518	62,961
Umtali ...	12	9	39	48	707	980	1,687	17.70	53.64	71.34	6,461	19,580
Gwelo ...	11	10	22	72	442	1,160	1,602	11.98	63.34	75.32	4,373	23,118
Gatooma ...	9	13	29	100	639	1,538	2,177	12.98	87.11	100.09	4,739	31,795
Fort Victoria	5	7	13	33	295	670	965	6.68	32.70	39.38	2,437	11,934
Gwanda ...	5	5	9	84	168	1,086	1,254	3.37	99.96	103.33	1,232	36,486
Enkeldoorn	4	6	12	43	128	607	735	3.40	1.66?	2.01?	1,242	10,995
Shamva ...	3	6	6	36	31	729	760	0.56	28.49	29.05	206	10,399
Sinoia ...	5	4	12	21	171	682	853	3.71	27.86	31.57	1,353	10,170
Ingutsheni	21	27	126	350	1589	4789	6368	102.58	317.12	419.70	37,442	115,750
Que Que ...	3	3	6	—	78	—	78	2.02	—	2.02	738	—
Bindura ...	3	7	6	25	44	122	166	2.77	22.76	25.53	338	2,777
Totals	243	132	529	1,090	8,360	14,832	23,192	363.78	1,031.77	1,392.50	132,113	381,340
											513,453	346.82
												455.93

\* 36.2 \* 33.6

RETURN OF FREE PATIENTS IN HOSPITALS, 1937.

Name of hospital.	Number of free patients maintained.			No. of free patients units.		
	European.	Coloured and native.	Total.	European.	Coloured and native.	Total.
Salisbury ...	517	2,051	2,568	10,726	33,457	44,183
Bulawayo ...	802	3,640	4,442	11,316	41,693	53,009
Umtali ...	99	736	835	1,368	16,252	17,620
Gwelo ...	67	671	738	904	16,088	16,992
Gatooma ...	50	628	678	616	17,730	18,346
Fort Victoria	113	865	978	615	10,414	11,029
Gwanda ...	34	485	519	228	9,307	9,535
Enkeldoorn	39	466	505	525	10,796	11,321
Shamva ...	9	481	490	93	6,720	6,813
Sinoia ...	22	252	274	166	3,989	4,155
Ingutsheni	98	429	527	26,732	102,974	129,706
Que Que ...	9	—	9	61	—	61
Bindura ...	1	122	123	1	1,875	1,876
Totals	1,860	10,826	12,686	53,351	271,295	324,646



Table showing number of Inpatients and Outpatients treated at Medical Missions, together with number of Units maintained, Deaths and Treatments, both Venereal Diseases and General, during the year 1937.

Mission.	Admissions.		Total.		Inpatients Units		Total.		Deaths.		Total.		Outpatients.		Total.		Treatments.	
	V.D.	Other.	V.D.	Other.	V.D.	Other.	V.D.	Other.	V.D.	Other.	V.D.	Other.	V.D.	Other.	V.D.	Other.	V.D.	Other.
Chikore Mission	27	285	312	436	2,408	2,844	1	3	4	47	1,221	1,268	206	2,082	2,288	2,288		
Empandeni Mission	—	119	119	—	633	633	—	3	3	—	2,091	2,091	—	3,141	3,141	3,141		
Epworth Mission	—	—	—	—	—	—	—	—	—	—	934	934	—	2,543	2,543	2,543		
Fairfield Girls' School	12	60	72	90	364	454	—	—	—	75	725	800	390	2,139	2,529	2,529		
D.R.C. Mission, Gutu	56	182	238	1,721	2,724	4,445	2	9	11	183	3,046	3,229	—	Not recorded				
Muene Mission	903	698	1,601	29,087	19,347	48,434	3	32	35	104	565	669	751	3,021	3,772	3,772		
Mount Silinda Mission	119	940	1,059	2,856	14,169	17,025	7	19	26	44	2,363	2,407	176	5,820	5,996	5,996		
D.R.C. Mission, Morgenster	—	472	472	—	5,812	5,812	—	31	31	611	4,065	4,676	—	—	—	—		
Monte Cassino Mission	(Details unknown)	61	61	(Details unknown)	784	784	8	5	13	(Details unknown)	5,864	5,864	(Details unknown)	1,538	1,538	1,538		
Mase Mission	790	242	1,032	23,248	5,051	28,299	—	13	13	115	393	508	1,008	3,437	4,445	4,445		
Mtshabezi Mission	148	219	367	2,997	4,970	7,967	1	4	5	368	901	1,269	1,209	5,911	7,120	7,120		
Mutumbara Mission	35	631	666	1,782	11,641	13,423	2	27	29	(Details unknown)	12,236	12,236	(Details unknown)	16,622	16,622	16,622		
Nyadiri Mission	13	1,447	1,460	25	8,661	8,686	—	7	7	—	2,684	2,684	—	27,163	27,163	27,163		
Old Untali Mission	198	695	893	2,994	9,861	12,855	3	4	7	753	3,262	4,015	4,329	17,346	21,675	21,675		
St. Patrick's Mission	—	17	17	—	162	162	—	—	—	128	1,397	1,525	767	3,632	4,399	4,399		
St. Benedict's Mission	—	—	—	—	—	—	—	3	3	—	148	148	—	3,095	3,095	3,095		
Lower Gwelo Mission	—	119	119	—	1,204	1,204	—	6	6	460	3,277	3,737	476	7,483	7,959	7,959		
Waddilove Mission	—	229	229	—	3,729	3,729	—	8	8	—	1,496	1,496	—	5,640	5,640	5,640		
Zambesi Industrial Mission	—	—	—	—	—	—	—	—	—	—	647	647	—	988	988	988		
Semokwe Mission	—	12	12	—	133	133	—	2	2	—	—	—	—	4,795	4,795	4,795		
Triashill Mission	1	274	275	10	3,631	3,641	—	14	14	—	1,482	1,482	—	5,928	5,928	5,928		
Driefontein Mission	—	42	42	—	743	743	—	8	8	18	5,496	5,514	180	22,734	22,914	22,914		
Howard Training Institute	—	75	75	—	1,170	1,170	—	4	4	—	14	14	44	11,855	11,899	11,899		
St. Mary's Mission	350	260	610	5,900	1,329	7,299	—	3	3	829	871	1,700	8,853	7,068	15,921	15,921		
Solusi Mission	—	—	—	—	—	—	—	—	—	206	1,212	1,418	871	7,241	8,112	8,112		
St. Barbara Mission	—	469	469	—	6,592	6,592	—	2	2	—	—	—	—	12,864	12,864	12,864		
Kwenda Mission	—	7	7	—	396	396	—	5	5	—	1,011	1,011	—	1,803	1,803	1,803		
Ingwenya Mission	—	174	174	Not available	—	—	—	1	1	—	170	170	—	400	400	400		
Total	2,652	7,668	10,381	71,146	104,730	176,730	27	213	240	3,941	39,471	61,512	19,260	168,129	205,549	205,549		