

Annual report of the Department of Public Health / Union of South Africa.

Contributors

South Africa. Department of Health.

Publication/Creation

Pretoria : Government Printing and Stationery Office., [1941]

Persistent URL

<https://wellcomecollection.org/works/vg7zrkcn>

License and attribution

This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.



Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
<https://wellcomecollection.org>



UNION OF SOUTH AFRICA

ANNUAL REPORT

OF THE

Department of Public Health

YEAR ENDED 30th JUNE, 1941



Published by Authority

Price 4s.

Printed in the Union of South Africa by the Government Printer, Pretoria
1941

1941.
1941-2-1,250
110. 0s. 2d.

OFFICIAL PUBLICATIONS.

THE following Official Publications in addition to Blue Books and Papers, printed by order of Parliament, are obtainable from the Government Printer, at Pretoria and Cape Town. Cheques, Money Orders and Postal Orders should be payable to the Government Printer and crossed "South African Reserve Bank".
A printed List of Publications will be sent post free on application.

STATUTES OF THE UNION OF SOUTH AFRICA.

Bilingual, Bound Half-calf, with the exception of 1914 which is bound in full green cloth.

	PRICE (Post Free within the Union).	
	s.	d.
1914	5	0
1915	7	6
1916	7	6
1919	10	6
1920	10	6
1921	12	6
1922	12	6
1923	12	6
1924	10	6
1925	15	0
1926	15	0
1927, Volume I (Acts Nos. 1 to 39)	12	6
1927-28, Volume II (Acts Nos. 40 to 44, 1927; Acts, Nos. 1 to 30, 1928)	12	6
1929	10	6
1930	12	6
1931	12	6
1932	10	6
1933	10	6
1934	12	6
1935	12	6
1936	12	6
1937	12	6
1938	10	6
1939	12	6
1940	12	6

Revised Statutes of the Union of South Africa, 1910-1929, with amendments annotated to 1933 (7 Volumes):—

- Volume I.—1910-1912.
- Volume II.—1913-1916.
- Volume III.—1917-1920.
- Volume IV.—1921-1924.
- Volume V.—1925-1926.
- Volume VI.—1927-1929.
- Volume VII.—Index.

Price £5. 5s. 0d. per set of seven volumes. Separate volumes can be supplied, price £1. 1s. 0d. per volume. The Index Volume No. 7, which can be used with ordinary Statutes up to and including 1934.

ACTS, 1940.

	s.	d.
Additional Appropriation, 1940 (Act No. 1)	0	3
Additional Appropriation, 1940/41 (Act No. 33)	0	3
Additional Taxation, 1940 (Act No. 34)	0	3
Appropriation Act, 1940 (Act No. 30)	0	6
Advertising on Roads and Ribbon Development (Act No. 21)	0	6
Bospoort Irrigation District Amendment (Act No. 16)	0	6
Constitution (Prevention of Disabilities) (Act No. 19)	0	3
Crawfish Export (Act No. 9)	0	3
Customs Tariff Amendment (Act No. 18)	2	9
Defence Special Pensions and Moratorium (Act No. 29)	0	3
Diseases of Stock Amendment (Act No. 17)	0	3
Electoral Laws Amendment (Act No. 20)	0	6
Fencing Amendment (Act No. 11)	0	3
Finance (Act No. 27)	0	6
Industrial Development (Act No. 22)	0	6
Income Tax (Act No. 25)	0	3
Land Bank Amendment (Act No. 12)	0	3
Life Insurance Amendment (Act No. 35)	0	3
Part Appropriation, 1940 (Act No. 5)	0	3
Public Health Amendment (Act No. 14)	0	3
Pensions (Supplementary) (Act No. 28)	0	6
Railway Construction (Act No. 24)	0	3
Rents Amendment (Act No. 26)	0	3
Second Additional Appropriation, 1940 (Act No. 3)	0	3
S.A.R. & H. Additional Appropriation (Act No. 2)	0	3
S.A.R. & H. Part Appropriation (Act No. 6)	0	3
S.A.R. & H. Unauthorised Expenditure (Act No. 7)	0	3
Sea Fisheries (Act No. 10)	0	3
S.A.R. & H. Pensions and Service Amendment (Act No. 15)	0	6
S.A.R. & H. Appropriation, 1940 (Act No. 31)	0	3
Unauthorized Expenditure (Act No. 4)	0	3
Weights and Measures Amendment (Act No. 8)	0	3
War Measures (Act No. 13)	0	3
War Measures Amendment (Act No. 32)	0	3
Wine and Spirit Control Amendment (Act No. 23)	0	6

MISCELLANEOUS HANDBOOKS OF ACTS AND REGULATIONS.

Aliens Act and Regulations, 1937	...
Aviation Act No. 16 of 1933, as Amended to 1933	...
Apprenticeship Act No. 26, 1922, as Amended to 1933	...
Births, Marriages, and Deaths—Act, Regulations, and Instructions regarding the Registration	...
British Nationality in the Union Act No. 18, 1926, as Amended to 1933	...
Cigarette Excise and Surtax Act No. 16, 1911, as Amended to 1933	...
Criminal Procedure and Evidence Act No. 31, 1917, as Amended to 1933	...
Currency and Banking Act No. 31, 1920, as Amended to 1933	...
Coinage Act No. 31, 1922, as Amended to 1933	...
Customs Management Act No. 9, 1913, with Amending Acts and Regulations	...
Dairy Industry Act No. 16, 1918, as Amended to 1933	...
Deeds Registries Act No. 47 of 1937 together with Regulations	...
Diseases of Stock Act No. 14, 1911, as Amended to 1933	...
Death Duties Act No. 29, 1922, as Amended by Act No. 31, 1925	...
Diamond Cutting Act No. 38, 1919, as Amended by Act No. 2, 1927, with Regulations thereunder	...
Dipping Tanks Advances Act No. 20, 1911, with Amending Acts	...
Electoral Act No. 12, 1918, as Amended by Act No. 11, 1926, and Act No. 24, 1928	...
Electricity Act No. 41, 1922, as Amended to 1933	...
Exchequer and Audit Act No. 21, 1911, as Amended by Act No. 31, 1916, and Act No. 37, 1922	...
Factories Act No. 28, 1918, with Regulations thereunder	...
Foods, Drugs, and Disinfectants Act No. 13, 1926—Regulations thereunder	...
Girls and Mentally Defective Women's Protection Act No. 3, 1916, as Amended to 1933	...
Higher Education Act No. 30, 1923, as Amended to 1933	...
Industrial Conciliation Act, 1937, and Regulations	...
Irrigation and Conservation of Waters Act No. 8, 1912, as Amended by Act No. 26, 1916	...
Iron and Steel Industry Encouragement Act No. 41, 1922, as Amended to 1933	...
Interpretation Act No. 5, 1910, as Amended to 1933	...
Land Settlement Act No. 12, 1912, with Amending Acts	...
Land Survey Act No. 9, 1927, with Regulations thereunder (bound full cloth)	...
Licences Consolidation Act No. 32, 1925, as Amended by Act No. 26, 1927	...
Liquor Act No. 30, 1928—Regulations under the	...
Miners' Phthisis Act No. 35, 1925, as Amended to 1933	...
Mines and Works Act No. 12, 1911, as Amended to 1933	...
Magistrates' Court Act No. 32, 1917, as Amended to 1933	...
Mental Disorders Act No. 38, 1916, as Amended to 1933	...
Native Representation Act, 1936, and Regulations	...
Native Labour Regulation Act No. 15, 1911, as Amended to 1933	...
Native Affairs Act No. 23, 1920, as Amended to 1933	...
Native Administration Act No. 38, 1927, as Amended by Act No. 9, 1929	...
Native Taxation Acts Handbook, as Amended to 1933	...
Native Urban Areas Act No. 21, 1923, as Amended to 1936	...
Old-Age Pensions Act No. 22, 1928, as Amended by Act No. 34, 1931	...
Public Service Act No. 27, 1923, with Regulations thereunder	...
Patents, Designs, Trade Marks and Copyright Act No. 9, 1916—Regulations under the	...
Precious Stones Act No. 44, 1927—Regulations under the	...



DEPARTMENT OF PUBLIC HEALTH
UNION OF SOUTH AFRICA

ANNUAL REPORT

OF THE

Department of Public Health

YEAR ENDED 30th JUNE, 1941

Published by Authority

Printed in the Union of South Africa by the Government Printer, Pretoria
1941

U.G. No. 46, 1941.
S.P. 8.7525—1941-2—1,250

UNION OF SOUTH AFRICA

ANNUAL REPORT

OF THE

Department of Public Health

YEAR ENDED 30th JUNE 1941

Printed by authority

Published by the Government Printer, Union of South Africa, 1941

DEPARTMENT OF PUBLIC HEALTH.

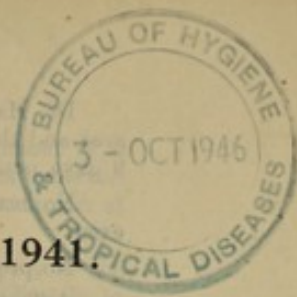
TABLE OF CONTENTS.

	PAGE
I. INTRODUCTORY.....	5
II. VITAL STATISTICS.....	7
III. ADMINISTRATIVE MATTERS—	
1. Staff.....	10
2. District Surgeoney System.....	12
3. Local Authorities and their Health Staffs.....	12
IV. WORK OF THE DEPARTMENT—	
1. Inspections, Investigations and Field Work.....	13
2. Publications by Members of Staff.....	13
3. Health Education and Propaganda.....	14
4. Laboratories.....	16
5. Biological Control Laboratories.....	17
6. Port Health Administration.....	19
V. INFECTIOUS AND PREVENTABLE DISEASES—	
1. Notifications.....	20
2. Bilharziasis or Schistosomiasis.....	21
3. Diphtheria.....	21
4. Leprosy.....	23
5. Malaria—	
(a) Natal and Zululand.....	24
(b) Transvaal.....	26
6. Plague.....	27
7. Sleeping Sickness.....	31
8. Smallpox.....	32
9. Tropical Ulcer.....	34
10. Tuberculosis.....	34
11. Typhoid or Enteric Fever.....	38
12. Typhus or Rickettsiosis.....	40
13. Venereal Disease.....	41
14. Yellow Fever.....	45
VI. OTHER DISEASES—	
1. Endemic Fluorosis.....	46
2. Cancer.....	47
VII. GENERAL—	
1. Housing and Slum Elimination.....	48
2. Abattoirs.....	51
3. Rural and Periurban Sanitary Conditions.....	52
4. Native Health Services.....	55
5. Infant Welfare.....	58
6. Maternal Welfare.....	60
7. Nursing and Maternity Homes.....	63
8. District Nursing Services.....	65
9. General Hospitals.....	68
10. Dental Services.....	68
11. South African Medical Council: Résumé of Business for Year ended 30th June, 1941.....	69
12. South African Pharmacy Board: Résumé of Business for Year ended 30th June, 1941.....	71
13. Administration of the Medical, Dental and Pharmacy Act, No. 13 of 1928..	72
14. Administration of the Food, Drugs and Disinfectants Act (No. 13 of 1929)..	73
15. Action taken under Port Health Regulation No. 28 and Unsound Foodstuffs Regulations (Public Health Act No. 36 of 1919).....	75
16. Nutrition and Dietetics.....	75
17. Blood Transfusion.....	75
18. Solar Radiation Survey.....	76
19. Health Services in the Transkei.....	76
VIII. ACKNOWLEDGMENTS.....	80

TABLES.

	PAGE
1. Summary of Vital Statistics of European Population, 1920-1940.....	8
2. Survival Rate or Rate of Natural Increase of Europeans in the Union.....	9
3. Comparison of Birth, Death and Natural Increase Rates among Europeans in the Union with other Countries.....	9
4. Infantile Mortality Rates: Comparison with other Countries.....	9
Staff Chart of the Union Health Department.....	11
5. District Surgeoncies and Additional District Surgeoncies as at 30th June, 1941.....	12
6. Local Authorities under the Public Health Act (1919) as at 30th June, 1941.....	12
7. Pathological Laboratories: Analyses and Examinations, Year ended 30th June, 1941..	16
8. Therapeutic Substances Regulations: Examinations during the Year ended 30th June, 1941.....	17
9. Therapeutic Substances Regulations: Licences issued during the Year ended 30th June, 1941.....	18
10. Food, Drugs and Disinfectants Act, No. 13 of 1929: Examinations carried out during the Year ended 30th June, 1941.....	19
11. Notification of Diseases by Medical Practitioners during the Year ended 30th June, 1941	20
12. Leprosy: Patients in Institutions on 30th June, 1941.....	24
13. Leprosy: First Admissions, Recrudesced Cases, Discharges and Deaths, Year ended 30th June, 1941.....	24
14. Leprosy Cases remaining in their own Homes on 30th June, 1941.....	24
15. Distribution of Human Plague among the Districts of the two affected Provinces during Year ended 30th June, 1941.....	29
16. Smallpox: Cases and Deaths during Year ended 30th June, 1941.....	32
17. Smallpox: Vaccination of Infants and Children, Year ended 30th June, 1941.....	33
18. Tuberculosis: King George V Hospital for Tuberculosis: Admissions, Discharges, Deaths during Year ended 30th June, 1941.....	34
19. Tuberculosis: Nelspoort Sanatorium: Admissions, Discharges, Deaths during Year ended 30th June, 1941.....	37
20. Typhoid or Enteric Fever: Distribution of Cases reported during Year ended 30th June, 1941.....	39
21. Typhoid or Enteric Fever: Notifications and Incidence in certain Local Authority Areas during Year ended 30th June, 1941.....	40
22. Typhus Fever: Cases and Deaths reported during the Year ended 30th June, 1941..	41
23. Venereal Disease: Cases treated and Attendances, Year ended 30th June, 1941.....	44
24. Housing Act No. 35 of 1920: Working of Act since Promulgation.....	49
25. European Infants: Births and Deaths under one Year Registered and Infantile Mortality Rate.....	59
26. Infantile Mortality: Asiatics and Mixed: 1940.....	60
27. Maternal Mortality: Europeans.....	60
28. Maternal Mortality: Asiatics and Mixed.....	60
29. European Deaths from Puerperal Causes by Age Groups.....	62
30. Nursing and Maternity Homes Inspected.....	64
31. Nursing Homes Registered with Department.....	64
32. Nursing Homes: Bed Accommodation available.....	64
33. Nursing Homes: Personnel.....	64
34. District Nursing Services: Nurses, Midwives and non-European Nursing Assistants as at 30th June, 1941.....	67
35. Medical, Dental and Pharmacy Act, No. 13 of 1928: Prosecutions and Convictions under Laws relating to Habit-forming Drugs, Year ended 30th June, 1941.....	72
36. Food, Drugs and Disinfectants Act, No. 13 of 1929: Samples taken for examination or analysis during Year ended 30th June, 1941.....	73

DEPARTMENT OF PUBLIC HEALTH.



Report for the Year ended 30th June, 1941.

TO THE HONOURABLE THE MINISTER OF PUBLIC HEALTH,
PRETORIA.

Sir,

I have the honour to submit for your information the following report on the public health of the Union and on the work of the Department for the year ended 30th June, 1941.

I.—INTRODUCTORY.

In last year's annual report, attention was drawn to various departmental problems and in this year's report the same procedure will be followed.

Two formidable epidemic diseases have been a source of anxiety:—

- (1) Smallpox, and (2) Pneumonic plague.

Smallpox.

Six cases of smallpox were found on ships arriving at Cape Town from India. With one exception all the patients had been vaccinated at some time or other and had a comparatively mild illness; the sixth case had never been vaccinated and his disease assumed the confluent form. After a very severe illness this patient recovered.

Smallpox has been rife in the Union apart from these imported cases. In South Africa the disease is often found in a modified form, which is quite as infectious as in more severe forms, but diagnosis is often missed or confused with chickenpox. The Department has been urging people to be vaccinated and in the larger towns the response has been excellent; in the country districts the response has not been so satisfactory. It is only by active co-operation by the people with the Department in its efforts to ensure adequate protection by vaccination that the disease can be controlled.

Plague.

A sharp outbreak of pneumonic plague occurred in Morokwen Location in the Vryburg area. There were 37 cases of which 36 died. A new living attenuated vaccine was used for contacts. A full account of the outbreak is given elsewhere in this report.

A careful watch is being kept on two other diseases, viz., *Yellow Fever* and *Sleeping Sickness*.

In 1940 there was a severe outbreak of yellow fever in the Nuba Mountains area of the Sudan which drew attention to the danger from this disease in Africa generally. The regulations in regard to health inspections of aircraft are being stringently applied. A source of danger, however, is the increasing amount of motor transport from Central Africa to the coast. With improved roads it is possible for infected mosquitoes to be transported to the coast by motor vehicles.

The vector *Aedes aegypti* is prevalent in many areas of the Union, and it is impossible, owing to its habits, to eradicate this mosquito.

A vaccine which protects against this dread disease is now being made. A supply of vaccine was obtained from the Rockefeller Institute in America, but it was felt that in the event of an outbreak of yellow fever, facilities for the manufacture of the vaccine should be provided in the Union.

Dr. G. M. Findlay, a world famous authority on yellow fever, visited the Union in March, 1941, and advantage was taken of his visit to discuss the problem, and steps to be taken in the event of a threatened outbreak. Arrangements have been made to produce the specific vaccine in the Union.

Sleeping Sickness (Human Trypanosomiasis).

Like the other three diseases mentioned above, sleeping sickness is a formidable epidemic disease.

The Department has for many years kept watch over the occurrence of sleeping sickness in territories beyond the borders of the Union. It recently obtained a copy of a report by Dr. I. W. MacKichan of the Colonial Medical Service in respect of a survey which he carried out in 1939-40, into sleeping sickness in Northern Bechuanaland and the Caprivi Zipfel, and it is apparent therefrom that the fly-belt is extending southwards.

Dr. MacKichan examined 20,855 persons in Ngamiland including the Chobe area and the Caprivi Strip, and found 12 of them with sleeping sickness of which 9 gave positive blood tests.

No healthy human carriers were found but it is strongly suspected that these exist.

No proof was found that the game act as a reservoir.

A Tsetse fly survey is being carried out by the Bechuanaland Administration on its north-eastern borders. In collaboration with the Veterinary Department a close watch is being observed on the north-eastern borders of the Union as the Tsetse fly is very prevalent in Zululand.

Medical Services.

The position of the Department in regard to medical services in general, was dealt with in the annual report for the year ended 30th June, 1940. As will be seen from this account the functions of the Department have continuously increased and although the main object, namely the prevention of disease, has never been lost sight of the Department has gradually taken an increasingly active part in the treatment of disease. The provision of free medical services to paupers which was previously undertaken by the District Surgeon service on behalf of the Provincial Administrations is now a direct function of the Department in the Cape Province, Transvaal and Orange Free State. Negotiations are in progress for the taking over from the Department of Social Welfare of certain services at present carried out by that Department which are considered to be primarily of a medical nature.

Considerable prominence has been given, especially by the medical profession, to a demand that medical services should undergo radical changes. It is said that the public is dissatisfied with the existing arrangements. There is no doubt that the cost of medical services often falls very heavily on people with moderate incomes and prolonged illness proves a financial millstone round the necks of many unfortunate sufferers. In the rural areas conditions are even more difficult because the cost of medical services is greater for people living on farms, while in the Native territories there is a serious lack of adequate medical facilities for the large Native population.

In discussing the position of the Department in relation to medical work in last year's report reference was made to the report of the Departmental Committee of Enquiry on National Health Insurance. It is not proposed to reiterate what was written there nor is it suggested that the scheme submitted by that committee is necessarily the best solution of the problem. The report, however, was the considered opinion of a responsible committee which had made an exhaustive enquiry into the subject. The recommendations regarding national health insurance and the supplementary constructive suggestions for improved services in the rural areas and the Native territories were considered the most practicable measures in the circumstances then existing. For financial reasons previous Governments have not seen fit to establish a scheme for national health insurance and it has only been possible to give effect to a limited extent to the other recommendations of the committee.

The present is considered to be a suitable time for exploring the whole position anew and preparing for post-war reconstruction. The form which health reconstruction schemes should take is, however, a matter for careful deliberation and the Department is arranging to set up a special section to deal with these and other matters affecting the public health. Important problems in regard to which particular attention will be paid are the combating of tuberculosis and venereal disease. The Department is fully alive to the present day and post-war problems and is making every effort to ensure that the public health is safeguarded.

The opportunity is taken of pointing out that in various ways the Department is expanding its health and nursing services and, as will be seen later in this report, a great deal is being done for the welfare of both the European and Native races. These matters are dealt with under the appropriate headings and need not be further discussed at this stage except to refer to the increased services undertaken by our District Surgeon staff and the developments in clinic and nursing services which have taken place during the last few years and to point out that the Public Health vote has increased greatly during this period.

Transkeian Health Services.

The health position in the Transkei is specially featured in this issue. This section is of interest as it summarises the nursing and other health activities in operation in that area. As will be seen a major development during the past year was the establishment of a full-time experimental Native nursing service in the Umtata district supervised by a full-time medical officer. The establishment of this unit was made possible through the generosity of the Native Recruiting Corporation.

Nutrition and Dietetics.

Mention was made in last year's Annual Report of the establishment of a National Nutrition Council and the Committees appointed by it to investigate the matter of malnutrition. The function of the Council is laid down in section 6 of Act No. 14 of 1940 and reads as follows:—

“The function of the Council shall be to investigate and report to the Minister of Public Health upon all matters relating directly or indirectly to the prevention of malnutrition in and the improvement of the diet of the inhabitants of the Union, which, in its opinion, should be investigated or which the said Minister may refer to it for investigation”.

The following standing Committees were appointed:—

- (1) War Emergency Committee.
- (2) Research Committee.
- (3) Agriculture and Economics Committee.
- (4) Education and Propaganda Committee.

These Committees are functioning now, but in view of the international situation the work of the War Emergency Committee was given priority. This Committee, which was intended primarily to advise the Department of Defence regarding the food of the army in the Union, met on five occasions, between July, 1940, and January, 1941. In addition several meetings of sub-committees took place.

To ensure effective co-operation between the Committee and the Department of Defence a representative of the Directorate of Medical Services was appointed in addition to the representatives of the Quartermaster-General and the Director-General of War Supplies.

The ration scales drawn up by the Department of Defence were considered by the Committee and recommendations were made to that Department on various aspects of the matter. Many important subjects were dealt with, *inter alia* dehydrated vegetables, vitamin assays of foodstuffs, vitaminised peanut butter, milk powder, etc. The investigations carried out and decisions arrived at in connection with these and other matters in the course of the Committee's war work will be of great value to the Council in carrying out its long term functions.

When malnutrition is present in a community the reason therefor must be sought and when found it is possible to make a start in tackling the problem on a rational basis. It is hoped, however, that the researches now being carried out will give us more knowledge on which to work. The essential foods can be produced in this country, viz., dairy produce, wholemeal bread, green vegetables and potatoes. The finer points regarding the best means of utilizing these and other products will be dealt with as more information becomes available.

Much publicity has been given to the fact that malnutrition exists in our midst and equal publicity should be given to the simple remedies. There are, of course, many difficulties to overcome, but in the main they are economic. The Nutrition Council is a means to an end and it is hoped that methods will be devised of impressing upon the public the necessity for adequate and well-balanced diets and of ensuring that assistance will be given to those who are not in a position to provide adequately for themselves.

The Department of Public Health has on its staff three dietitians. The Senior Dietitian was seconded to the Department of Defence as from February, 1941, to deal with the catering in military hospitals in the Union. The other two dietitians are employed at present at Pretoria and Durban respectively, and their activities are dealt with more fully later on in this report.

II.—VITAL STATISTICS.

At 31st December, 1940, that is, the middle of the report year, the Census Department estimated the total population of the Union to be 10,341,200, of which 2,152,700 were Europeans. The non-European population was made up of 7,124,100 Bantu, 234,800 Asiatics and 829,600 Coloureds.

Tables 1 and 2, summarise the principal vital statistics for Europeans for the calendar year 1940. Tables 3 and 4 are interesting from the point of view of international comparisons.

It is satisfactory to note that there has been a steady decrease in the maternal mortality rate over the last five years; this matter is dealt with more fully in the appropriate section of the report. Attention is also drawn to the fact that the death rate from tuberculosis has diminished considerably during the last fifteen years and this, coupled with the fact that the number of beds for tuberculosics has been greatly increased during that period, indicates a much more satisfactory state of affairs than that which prevailed a decade or more ago.

TABLE 1.—UNION OF SOUTH AFRICA: SUMMARY OF VITAL STATISTICS OF EUROPEAN POPULATION, 1920-1940.

Calendar Year.	European Population (estimated).	Birth Rate per 1,000 of Population.	Death Rate per 1,000 of Population.		Death Rate per 100,000 of Population from				Percentage of Total Deaths, the Cause of which was Medically Certified.	Infantile Mortality Rate (Deaths of Infants under One Year per 1,000 Live Births Registered).	Maternal Mortality Rate (Deaths of Mothers in connection with Pregnancy or Childbirth per Live Births Registered).	Survival Rate or Rate of Natural Increase (Excess of Births over Deaths per 1,000 of Population).
			Actual or Crude.	Standardized.*	Diseases of Heart and Circulatory System.	Pneumonia and Bronchitis.	Cancer.	Tuberculosis (all forms).§				
1920.....	1,499,911	28.97	11.09	12.15	95.67†	113.87†	58.94†	46.00†	79.78	90.07	4.10†	17.88
1921.....	1,519,488†	28.44	10.41	11.43	102.91	136.15	69.09	58.26	80.76	77.09	4.94	18.03
1922.....	1,556,241	27.52	9.48	10.41	97.99	127.24	70.88	47.74	82.96	72.91	5.21	18.04
1923.....	1,579,733	26.70	9.77	10.65	108.50	120.72	78.94	46.40	82.77	74.42	5.22	16.93
1924.....	1,610,774	26.29	9.62	10.44	123.92	123.79	76.36	51.59	84.74	73.73	4.75	16.67
1925.....	1,637,472	26.51	9.39	10.15	128.86	97.04	72.86	52.70	86.45	68.39	5.62	17.12
1926.....	1,676,690‡	26.16	9.59	10.28	127.21	113.44	71.18	53.41	87.76	64.82	4.66	16.57
1927.....	1,708,035	25.95	9.73	10.34	133.53	110.42	73.20	50.50	89.93	70.62	4.80	16.22
1928.....	1,738,937	25.77	10.15	10.69	127.72	127.72	77.52	50.95	89.93	70.49	4.98	16.62
1929.....	1,767,719	26.15	9.51	9.98	127.11	104.04	77.44	48.37	90.19	64.22	5.26	16.64
1930.....	1,797,000	26.44	9.69	10.08	132.33	112.87	82.62	46.76	91.15	66.84	5.26	16.75
1931.....	1,829,300	25.38	9.37	9.56	131.52	103.75	85.55	44.22	90.46	63.07	4.70	16.01
1932.....	1,859,400	24.17	9.97	9.98	137.52	113.75	89.06	42.33	90.84	68.57	5.31	14.20
1933.....	1,890,200	23.55	9.35	9.27	142.52	100.30	95.33	40.68	91.45	61.01	4.81	14.20
1934.....	1,914,700	23.44	9.68	9.55	156.21	94.53	92.39	39.54	91.91	60.79	5.29	13.70
1935.....	1,973,700	24.18	10.45	10.28	169.58	131.98	95.76	40.44	92.55	62.81	4.73	13.72
1936.....	2,008,700	24.21	9.57	9.50	154.38	106.19	97.28	34.40	92.88	59.06	5.10	14.64
1937.....	2,043,700	24.90	10.08	9.66	172.97	113.62	106.57	36.40	93.17	56.57	4.38	14.81
1938.....	2,081,400	25.01	9.48	8.93	153.55	103.53	103.44	38.34	94.20	51.69	3.69	15.63
1939.....	2,116,500	25.29	9.40	8.75	170.42	90.05	104.75	36.19	94.32	49.48	3.61	16.88
1940.....	2,152,700	25.29	9.42	**	190.18	89.93	102.80	35.95	94.75	50.06	3.37	15.87

* The rate which would have obtained had the age and sex distribution of the population been the same as that of England and Wales at the 1901 census, the standard usually taken for international comparisons.

† Medically certified deaths only.

‡ Actual (per census).

§ Includes Miners' Phthisis combined with Pulmonary Tuberculosis.

** Not yet available.

In any community in which deaths from preventable diseases are controlled in an increasing measure it is to be expected that the death rate from diseases of the heart and circulatory system will increase as these are mainly diseases of middle and later life.

TABLE 2.—SURVIVAL RATE OR RATE OF NATURAL INCREASE AMONG EUROPEANS IN THE UNION PER 1,000 OF THE POPULATION.

Year.	Birth-rate.	Death-rate.	Natural Increase.
1911.....	32.2	10.4	21.8
1912.....	32.2	10.3	21.9
1913.....	31.7	10.3	21.4
1914.....	30.2	9.5	20.7
1915.....	29.3	10.3	19.0
1916.....	29.3	10.2	19.1
1917.....	29.0	10.3	18.7
1918.....	28.6	17.2	11.4
1919.....	26.9	11.9	15.0
1920.....	29.0	11.1	17.9
1921.....	28.4	10.4	18.0
1922.....	27.5	9.5	18.0
1923.....	26.7	9.8	16.9
1924.....	26.3	9.6	16.7
1925.....	26.5	9.4	17.1
1926.....	26.2	9.6	16.6
1927.....	25.9	9.7	16.2
1928.....	25.8	10.2	15.6
1929.....	26.1	9.5	16.6
1930.....	26.4	9.7	16.7
1931.....	25.4	9.4	16.0
1932.....	24.2	10.0	14.2
1933.....	23.5	9.3	14.2
1934.....	23.4	9.7	13.7
1935.....	24.2	10.5	13.7
1936.....	24.2	9.6	14.6
1937.....	24.9	10.1	14.8
1938.....	25.0	9.5	15.5
1939.....	25.3	9.4	15.9
1940.....	25.3	9.4	15.9

TABLE 3.—COMPARISON OF BIRTH, DEATH AND NATURAL INCREASE RATES AMONG EUROPEANS IN THE UNION WITH OTHER COUNTRIES. AVERAGE RATES FOR THREE-YEARLY PERIODS (BASED ON LATEST AVAILABLE INFORMATION).

Countries.	Birth-rate.	Death-rate.	Natural Increase.
Union of South Africa.....	25.2	9.4	15.8
Holland.....	20.4	8.7	11.7
Portugal.....	26.8	15.7	11.1
Canada.....	20.2	9.8	10.4
Italy.....	23.4	13.9	9.5
New Zealand.....	18.0	9.3	8.7
Australia.....	17.5	9.6	7.9
United States of America.....	17.3	11.1	6.2
Germany.....	19.7	11.0	7.8
England and Wales.....	15.2	12.1	3.1
France.....	14.7	15.7	*

* Decrease of 1.0.

TABLE 4.—INFANTILE MORTALITY RATES: EUROPEANS IN THE UNION, COMPARED WITH OTHER COUNTRIES. AVERAGE RATES FOR THREE-YEARLY PERIODS (BASED ON LATEST AVAILABLE INFORMATION).

New Zealand.....	33
Holland.....	36
Australia.....	38
Union of South Africa.....	51
England and Wales.....	57
Germany.....	61
France.....	66
Canada.....	67
Belgium.....	77
Italy.....	104
Lithuania.....	118
Portugal.....	143

It must again be emphasised as in previous years that accurate records for Natives are entirely lacking and that this is a very serious deficiency in our statistical data as the Natives constitute so large a proportion of our population. The policy of any state in relation to public health should be built up on the evidence which is furnished by statistical data in order that proper consideration can be given to those problems which merit it and a due sense of proportion can be maintained in regard to the expenditure of public funds. It may be said that the knowledge afforded by vital statistics is as necessary in the formulation of a public health policy as the keeping of accounts is necessary in the conduct of a business concern. Without accurate knowledge regarding that section of our population which is numerically far the greatest we do not know with any degree of certainty what is most required in our public health program nor what results our efforts to improve the health of the community are having. Mere impressions are fallacious and the basing of a health policy on such impressions is unscientific.

The Natives constitute not only the bulk of the population but also that portion of it in which preventable disease is most prone to occur. We know from general observations and from those somewhat scanty and unreliable records which are available that such diseases as infantile diarrhoea and tuberculosis are common among Natives and that they take a heavy toll of Native life. Statistical evidence of a reliable nature is, however, entirely lacking, except with regard to certain specific groups of Natives. We, therefore, do not know how prevalent these conditions are even in the urban areas and in regard to the bulk of the Native population, which lives in the Native territories and rural areas, we are entirely dependent on general impressions. Until much more information of a reliable nature is available regarding the Native population the foundations on which our national public health policy is built up must of necessity be based on the statistical evidence which we have for Europeans, Coloureds and Asiatics and on our general knowledge regarding health conditions among the Natives.

III.—ADMINISTRATIVE MATTERS.

1. STAFF.

The staff chart included in this section shows at a glance the departmental organisation.

As stated in the previous annual report, the Department has again had to suffer heavy losses through the retirement on superannuation of several senior officers. These were Messrs. A. Stuart, Under Secretary; R. S. Gordon, Chief Clerk in the General Branch; P. I. Phelan, Accountant; J. A. Macdonald, Superintendent (Chief Clerk) of the Emjanyana Leper Institution and J. Sanders, Principal Clerk, who acted as Secretary to the Central Housing Board. All these officers who had been in the Department since its inception, had specialised knowledge of their particular spheres of work and have contributed in no small degree to its efficient working.

Mr. H. F. Cuff, departmental Chief Clerk was promoted to Under Secretary and Mr. N. A. G. Reeler, who earlier in the year had been transferred from the Infectious Diseases Branch to the post of Chief Clerk, General Branch, *vice* Mr. R. S. Gordon, was promoted to succeed him as departmental Chief Clerk. Mr. D. J. M. Marais was transferred from the office of the Public Service Commission to fill the resulting vacancy in the General Branch. Mr. W. J. van der Merwe, Assistant Accountant, was promoted to Accountant and Mr. H. C. Bellew, Superintendent (Principal Clerk) of the Mkambati Leper Institution, was promoted to Superintendent of the Emjanyana Leper Institution.

On the 11th June, 1941, Mr. H. F. Cuff was seconded to the Department of the Interior as Deputy Director of Internment Camps and Mr. A. Stuart was re-appointed, in a temporary capacity, as Acting Under Secretary.

2. DISTRICT SURGEONCY SYSTEM.

The district surgeons have continued to render valuable service within the scope of the duties for which they are appointed. The functions and duties of this service were described in the last annual report. In common with all other members of the medical profession the district surgeons have been heavily taxed owing to the fact that so many medical practitioners are serving in the military forces. Many other members of the profession are anxious to offer their services to the military but in the case of district surgeons it has often been necessary to refuse to grant permission for this step as their services are indispensable to the civilian population. Those who find themselves placed in this position and the public whom they serve must realise that they are engaged on an essential national service and it is desired to offer a word of appreciation and encouragement to those district surgeons who are carrying out an arduous task under difficult conditions.

Table 5 summarises the present distribution of district surgeoncies. It will be seen that owing to war conditions it has not been possible to increase the number of whole-time posts and the general position remains very similar to that reflected in last year's report. The Department has, however, not lost sight of the necessity for the appointment of more full-time district surgeons where circumstances warrant such appointments.

TABLE 5.—DISTRICT SURGEONCIES AND ADDITIONAL DISTRICT SURGEONCIES AS AT 30TH JUNE, 1941.

Province.	Whole-time.	Whole-time, but jointly with local authority or public body.	Part-time.			Total.
			On inclusive annual salary.		On annual salary with certain supplementary fees and allowances.	
			District Surgeons.	Additional District Surgeons.		
Cape.....	6	5	—	31	134	176
Natal.....	3	—	—	2	43	48
Transvaal.....	18	1	1	22	52	94
Orange Free State..	2	—	—	15	46	63
UNION.....	29	6	1	70	275	381

The twenty-nine whole-time posts are those at Capetown (2); Durban (3); East London; Port Elizabeth; Pretoria (4) (one at Bronkhorstspuit); Johannesburg (4); Pietersburg (2); Bloemfontein (2); Wynberg; Knysna; Heidelberg (Tvl.); Nigel; Vereeniging; Nylstroom, (2); Rustenburg (2); and De Lagersdrift (District Middelburg, Tvl.).

The system of rural medical tours referred to in previous reports is being extended.

3. LOCAL AUTHORITIES AND THEIR HEALTH STAFFS.

The Department strongly encourages the appointment of whole-time qualified health inspectors, health visitors and medical officers of health wherever the circumstances justify such posts. Their value is evidenced by the rapid improvements which have been noticed in the general aspects of health and sanitation following such appointments. The war has resulted in a considerable depletion in the health staffs of many local authorities who have released men for active service. While the Department is, of course, entirely sympathetic towards the motives which have prompted such action it is considered that it is necessary to sound a warning note. It is as essential in war time as in times of peace that the health services which are rendered to the civilian population should be maintained on an adequate basis.

TABLE 6.—LOCAL AUTHORITIES UNDER THE PUBLIC HEALTH ACT (1919) AS AT 30TH JUNE, 1941.

Province.	Municipalities.	Village Management Boards.	Local Boards.	Village Councils.	Health Committees.	Local Administration and Health Boards.	Magistrates.	Divisional Councils.	Board of Health.	Mining Commissioners.	Total.
Cape.....	138	90	22	—	—	—	29	95	1	1	376
Natal.....	11	—	18	—	24	7	44	—	—	—	104
Transvaal.....	35	—	—	31	34	—	42	—	—	3	145
Orange Free State	64	4	—	—	—	—	36	—	—	1	105
UNION.....	248	94	40	31	58	7	151	95	1	5	730

IV.—WORK OF THE DEPARTMENT.

1. INSPECTIONS, INVESTIGATIONS AND FIELD WORK.

The year has been a particularly arduous one for the staff of the department which is working under the strain of war conditions. Where it has been possible to do so certain members of the staff have been released for military service and this has naturally resulted in more work being thrown on the remainder of the staff in all sections of the department. As far as possible, however, the field work has been carried out as in the past although under the circumstances it has been necessary to curtail routine systematic inspections to some extent. Emergency work in connection with the prevention and control of infectious diseases, more particularly plague, smallpox, typhus and malaria, forms a considerable proportion of the department's field activities. This essential work is constantly being carried out in co-operation with the local authorities concerned and the advice and assistance of the technical officers of the department is always readily available in this connection.

2. PUBLICATIONS BY MEMBERS OF THE STAFF.

The following list indicates the articles which were published during the year:—

Dr. Peter Allan, Secretary for Public Health and Chief Health Officer for the Union of South Africa.

"The Changing Order in Medicine". *South African Medical Journal*, 14th June, 1941.

"Tuberculosis". Read at the Annual Meeting of the National Health Education Committee, Johannesburg, 23rd January, 1941.

"Development of Nursing Services". Read to the Pretoria General Hospital Staff, 4th December, 1940.

Dr. B. F. Sampson, Officer-in-Charge, Pathological Laboratories, Durban.

"Primary Infective Polyneuritis". *South African Medical Journal*, 25th January, 1941.

Dr. B. A. Dormer, Medical Superintendent, King George V Jubilee Hospital for Tuberculosis, Durban.

"The Use of Native Health Assistants for Survey Work in Native Reserves". *The Leech*, October, 1940.

"A Case for Diagnosis" (with Dr. J. Friedlander and Mr. M. Gibson). *The Leech*, October, 1940.

"Leuco-erythroblastic Anaemia—A Case Report" (with Dr. J. Friedlander and Mr. M. Gibson). *The Leech*, February, 1941.

"A Comparison between the Mantoux Intradermal Test and the Tuberculin Patch Test" (with Dr. J. Friedlander). *The British Journal of Tuberculosis*, January, 1941.

"Fungus-Infection of the Chest—Case Report" (with Dr. J. Friedlander). *The British Journal of Tuberculosis*, April, 1941.

"Physical Efficiency and Tuberculosis" (with Drs. J. Friedlander and E. Jokl). Read at the annual general meeting of the South African Association for the Advancement of Science, 30th June, 1941.

Dr. M. H. Finlayson, Officer-in-Charge, Biological Control Laboratories, Cape Town.

"Vaccination against Epidemic Typhus in South Africa" (with Mr. J. M. Grobler). *South African Medical Journal*, 12th April, 1941.

Dr. T. Ockerse, Dental Health Officer, Pretoria.

"Endemic Fluorosis in the Pilandsberg Area and the Occurrence of Fluorine in the Saltpan, Pretoria District" (with Mr. H. P. Meyer). *South African Dental Journal*, March, 1941.

"The Effect of the Calcium and Phosphorus Intake of School Children upon Dental Caries, body weights and heights" (with Dr. A. I. Malan). *South African Dental Journal*, June, 1941.

"Endemic Fluorosis in the Kenhardt and Gordonia Districts, Cape Province, South Africa". *Journal of the American Dental Association*, June, 1941.

Dr. A. H. Shapiro, Additional Assistant Pathologist, Pathological Laboratories, Cape Town.

"Paralysis Produced in White Rats by a Rachitogenic Diet". *Nature*, 22nd March, 1941.

Dr. J. Friedlander, Medical Officer, King George V Jubilee Hospital for Tuberculosis, Durban.

"A Case for Diagnosis" (with Dr. B. A. Dormer and Mr. M. Gibson). *The Leech*, October, 1940.

"Leuco-erythroblastic Anaemia—A Case Report" (with Dr. B. A. Dormer and Mr. M. Gibson). *The Leech*, February, 1941.

"A Comparison between the Mantoux Intradermal Test and the Tuberculin Patch Test" (with Dr. B. A. Dormer). *The British Journal of Tuberculosis*, January, 1941.

"Fungus-Infection of the Chest—Case Report" (with Dr. B. A. Dormer). *The British Journal of Tuberculosis*, April, 1941.

"Physical Efficiency and Tuberculosis" (with Drs. B. A. Dormer and E. Jokl). Read at the annual general meeting of the South African Association for the Advancement of Science, 30th June, 1941.

Mr. D. H. S. Davis, Ecologist and Chief Rodent Officer, Johannesburg.

"Gerbille Control: An aid to crop protection and plague prevention" (with Dr. A. D. Thomas). *Zoological Survey Vermin Control Series No. 1*, Department of Agriculture and Forestry Bulletin No. 233, 1941.

Miss Gertrud Riemerschmid, Physicist, Onderstepoort.

"Solar Radiation Survey: Results obtained at Onderstepoort and Armoedsvlakte during the year 1940" (with Mr. S. J. Richards). February, 1941.

Miss Marguerite Malherbe, Acting Senior Dietitian, Pretoria.

"A Study of Some Indian Family Diets in Durban". *The South African Journal of Economics*, March, 1941.

Mr. M. Gibson, Radiographer, King George V Jubilee Hospital for Tuberculosis, Durban.

"A Case for Diagnosis" (with Drs. B. A. Dormer and J. Friedlander). *The Leech*, October, 1940.

"Leuco-erythroblastic Anaemia—A Case Report" (with Drs. B. A. Dormer and J. Friedlander). *The Leech*, February, 1941.

Mr. J. M. Grobler, Technical Assistant, Biological Control Laboratories, Cape Town.

"Vaccination against Epidemic Typhus in South Africa" (with Dr. M. H. Finlayson). *South African Medical Journal*, 12th April, 1941.

Mr. S. J. Richards, Temporary Assistant Physicist, Onderstepoort.

"Solar Radiation Survey: Results obtained at Onderstepoort and Armoedsvlakte during the year 1940" (with Miss Gertrud Riemerschmid). February, 1941.

3. HEALTH EDUCATION AND PROPAGANDA.

It is now well recognised that the education of the individual in matters of hygiene in its widest sense and the prevention of disease in all its aspects form one of the most important measures in any public health campaign. As indicated in previous reports this matter of health education has been delegated to the South African Red Cross Society and this body is subsidised by the Department to carry out health propaganda work. The reasons for this delegation were fully described in the annual report for the Department for the year ended June, 1938, and it is not proposed to reiterate what was written there. It should be mentioned, however, that the main reasons prompting the Department to take this course were that it was considered that the appeal to the public would be greater if it came from a voluntary organisation such as the Red Cross Society, than if it came from an official Government Department, and secondly that the South African Red Cross Society was a well established body with branch organisations in different parts of the country and with the necessary machinery for distributing propaganda material and carrying out health education work.

A great deal of preliminary work had to be done before the actual production of material could take place. The National Committee for Health Education, a subsidiary committee of the South African Red Cross Society, was formed and the work of actual production of material was delegated to this body. The other aspect of the work, that of the distribution of the material and the carrying out of health propaganda in the form of lectures, the organisation of health days or weeks or other such matters was and remained a function of the provincial branches of the Red Cross Society. The preliminary work had hardly been completed and

the National Health Education Committee was just beginning to function as a producing body when the work was interrupted by the outbreak of the war. The difficulties arising therefrom have, however, been overcome to a considerable extent and the machinery has again been set in motion and the production of material has been recommenced.

The material produced by the National Health Education Committee consists of three types, namely literature in the form of pamphlets and leaflets, posters for public display and charts for use in schools in the teaching of hygiene and allied subjects, and films and filmlets of an educational nature for display both in public cinemas and privately in such places as mine compounds. The material produced appears in both English and Afrikaans. The Native races have not been overlooked and the advice of experts has been invoked and much of the material produced has been adapted for Native use and appears in various Native languages.

The Red Cross Society has not had an easy task in launching its campaign for health education and propaganda, but it has produced a considerable amount of propaganda material and has a great deal more in course of preparation. It is anticipated that during the next six months a large amount of material of all the types mentioned will be made available to the public and that the campaign for health education and propaganda will receive a definite impetus. The following is a list of the propaganda material produced and in course of production by the National Health Education Committee of the Red Cross Society:—

Posters for Public Display—

"Kill that Fly".....	English and Afrikaans.
"Clean Milk".....	English and Afrikaans.
"Clean Tips for Food Handlers".....	English and Afrikaans.
"Venereal Disease".....	English, Xosa, Sesutu and Zulu.
"Cleanliness".....	English, Xosa, Sesutu and Zulu.
"Tuberculosis" (Spit into Cloth).....	English, Xosa, Sesutu and Zulu.
"Tuberculosis" (Spit into Fire)..	English, Xosa, Sesutu and Zulu.
"Domestic Pests".....	English and Afrikaans.

There is also a series of eight posters on "Posture" in the course of preparation.

Charts for Use in Schools—

"The Skeleton".....	Explanatory keys to these school charts are obtainable in English and Afrikaans.
"Arrest of Haemorrhage".....	
"Triangular Bandage".....	
"Fractures".....	
"Artificial Respiration".....	
"The Fly".....	Nutrition Charts.—The departmental pamphlet "Food and Health" will be distributed with these charts.
"The Mosquito".....	
"The Bodyguard".....	
"The Body Builder".....	
"The Body Warmer".....	

There are also four Dental Charts being prepared.

Pamphlets and Leaflets—

"Food Facts and Daily Diet".....	English and Afrikaans.
"Teeth".....	Afrikaans.
"Facts on Sex for Men".....	English and Afrikaans.
"Sex in Wartime" (A leaflet for Women).....	English and Afrikaans.
"Typhoid or Enteric Fever"....	English and Afrikaans.
"Diet and Cooking Notes".....	English.

The leaflet "Facts on Sex for Men" is being translated into three Native languages. In addition the following leaflets are being written:—

- "The Common Cold".
- "Diet and Nutrition".
- "Correct Clothing".
- "Malaria".
- "Bilharzia".
- "Care of the Sick Child".
- "Community Health and the Individual".
- "The House or Typhoid Fly".
- "What can be done in the Home to Guard against Infection and its spread?".

Films.—

The film on venereal diseases for non-Europeans, entitled "The Two Brothers" is obtainable in both 35 mm. and 16 mm. copies. This is a silent film with captions in English and Afrikaans. The commentary can be spoken in whatever language is desired to suit the audience.

A nutrition film for non-Europeans is being prepared.

Filmlets.

These are all in course of preparation :—

- "Plague".
- "Water and Sanitation".
- "Flies and Disease".
- "Teeth".
- "Maternal and Child Welfare".
- "Diet and Nutrition".
- "Hygiene and Child Welfare".

These filmlets are from 120 to 150 feet in length and are to be shown in practically all the theatres in the Union. They are all sound films.

Apart from the work of the South African Red Cross Society the Department itself has a great deal of health propaganda material, in the form of films and pamphlets, which is available for exhibition by local authorities and other responsible bodies. The films are kept by the Film Bureau of the Union Department of Education and are circulated by that body acting in consultation with the Department. Full information regarding the material available may be obtained on application to the Department.

It is realised that much good from a public health point of view can be achieved by an intensive educational and health propaganda campaign and it is felt that the time is ripe for a special effort in this direction. Accordingly the Department is arranging a special section to organise a National Health Campaign in 1942.

4. LABORATORIES.

During the year under review additions have been made to the Government Laboratories at Durban. The work done by the two Government Laboratories at Cape Town and Durban and that carried out on behalf of the Government at the South African Institute for Medical Research, Johannesburg and Port Elizabeth and at the Frere Hospital Laboratory, East London, is shown in Table 7.

TABLE 7.—PATHOLOGICAL LABORATORIES: ANALYSES AND EXAMINATIONS, YEAR ENDED 30TH JUNE, 1941.

Particulars.	Laboratories.		South African Institute for Medical Research.		East London Hospital Board.
	Cape Town.	Durban.	Johannesburg.	Port Elizabeth Branch.	East London and Border Pathological Laboratory.
Specimens examined for Government Departments—					
Agriculture.....	12	—	(b)	(b)	—
Customs and Excise.....	18	—	—	—	—
Defence.....	6,153	2,198	29,954	1,169	58
Interior (Mental Hospitals, etc.).....	1,439	541	2,046	1,367	2
Justice.....	1,429	585	2,953	282	6
Prisons.....					
Mines (including Miners' Phthisis).....	—	—	17,043	—	—
Posts and Telegraphs.....	—	—	—	—	—
Public Health (including Leper Institutions).....	9,790	7,115	77,292	7,764	2,482
Public Works.....	2	4	(b)	(b)	—
South African Railways and Harbours	138	1,014	(b)	(b)	—
Other Government Work.....	—	285(a)	280	32	—
General Hospitals (Provincial).....	6,563	36,100	68,923	13,201	—
Local Authorities.....	43,628	7,951	8,151	30,151	—
Medical Practitioners.....	12,383	14,809	15,947	1,884	—
Other Governments or Administrations.	54	—	5,907	—	—
Others.....	—	—	27,458(c)	30	—
TOTAL.....	81,609	70,602	255,954	55,880	2,548
Manufactures and Issues—					
Autogenous Vaccines..... c.c.	60	—	1,028	111	—
Bacterial Vaccines (Stock)..... c.c.	—	—	242,001	(f)	—
Tuberculin Dilutions..... c.c.	—	—	—	6	—
Sera (various), Bacterial Filtrates..... c.c.	—	—	1,919,580	(f)	—
Anti-rabic Vaccine..... c.c.	16,750	—	—	—	—
Chaulmoogra Oil Preparations..... c.c.	21,800	—	—	—	—
Smallpox Vaccine—					
Calf Lymph (prepared at Vaccine Institute, Rosebank)..... tubes	2,379,200	—	665,816	525	—
Others..... doses	1,238,850(e)	—	51,975(d)	—	—
Attendances at Courts of Law by Members of Staff.....	320	5	—	—	—
Total Days' absence entailed by such attendances.....	135	5	—	—	—

(a) Natal Education Department: 281; Natal Roads Department: 4.

(b) Included in Other Government Work.

(c) Includes 27,246 examinations for the Mining Industry.

(d) Oral Vaccines.

(e) Iodized ethyl esters (238,850 c.c.) and chick membrane lymph-smallpox vaccine (1,000,000 tubes on hand).

(f) Included in Johannesburg figures.

5. BIOLOGICAL CONTROL LABORATORIES.

Although the personnel of this unit has been depleted on account of the war, the number of examinations of therapeutic substances has been well maintained. The results of the examinations of therapeutic substances are shown in Table 8.

Four samples of arsphenamines were found to be unsatisfactory and their sale in the Union was prohibited.

The table also shows that investigations were started by the laboratories in connection with vitamin-containing preparations. The assay of vitamins and vitamin-containing preparations has been established as a routine procedure.

The laboratories have also investigated the vitamin D content of certain South African products, viz., certain fish liver oils, and butter. Certain high grade liver oils have been detected, e.g., snoek liver oils, while certain other fish liver oils low in vitamin D have been found. These, e.g., shark liver oil, are high in vitamin A content and should prove of great value for blending purposes.

These investigations are of great importance from the standpoint of public health as they come at a time when the importation of these necessary vitamins is becoming increasingly difficult.

The vitamin D content of a sample of first grade South African butter has been found to fall well within the range generally recognised for butter overseas. Research work on the mode of action of vitamin D has suggested that this vitamin is of importance in the nutrition of the mammalian nervous system.

The numbers of licences issued under the Therapeutic Substances Regulations are shown in Table 9.

The examinations carried out under the Food, Drugs and Disinfectants Act are shown in Table 10. The results clearly show a marked improvement in the quality of tincture of digitalis at present sold to the public. The position with regard to tincture of strophanthus is not so satisfactory at present.

TABLE 8.—EXAMINATIONS CARRIED OUT UNDER THE THERAPEUTIC SUBSTANCES REGULATIONS, YEAR ENDED 30TH JUNE, 1941.

Name of Product Examined.	Manufactured in Union.	Imported into the Union.	Number unsatisfactory
Bacterial Vaccines.....	33	4	—
Schick Test Toxin.....	—	1	—
Diphtheria Prophylactic.....	2	2	1
Tuberculin.....	—	—	—
Diphtheria Antitoxin.....	13	4	1
Tetanus Antitoxin.....	10	3	—
Arsphenamines and Derivatives.....	—	6	4
Insulin.....	—	9	—
Pituitary (Post. Lobe) Extract.....	—	19	—
Sterilised Surgical Sutures.....	—	18	—
Sex Hormones and Sex Hormone preparations..	—	8	—
Vitamins and vitamin-containing preparations....	12	—	—
Antivenomous Sera.....	—	—	—
TOTAL.....	70	74	5

TABLE 9.—LICENCES ISSUED UNDER THE THERAPEUTIC SUBSTANCES REGULATIONS (GOVERNMENT NOTICE No. 1131 OF 1935).

Therapeutic Substance.	Manufacturing Licences.			Import Licences.			Research Licences.			Vitamin Permits.		
	Issued 1940-41.	Cancelled 1940-41.	In Force 30/6/41.	Issued 1940-41.	Cancelled 1940-41.	In Force 30/6/41.	Issued 1940-41.	Cancelled 1940-41.	In Force 30/6/41.	Issued 1940-41.	Cancelled 1940-41.	In Force 30/6/41.
Antitoxic and bacterial sera.....	—	—	2	3	2	12	—	—	11	—	—	—
Antigens and bacterial vaccines.....	—	—	15	2	2	15	—	—	11	—	—	—
Arsphenamines and arsphenamine derivatives	—	—	—	6	2	9	—	—	11	—	—	—
Insulin.....	—	—	—	2	1	12	—	—	11	—	—	—
Pituitary (Post. Lobe) Extract.....	—	—	—	4	5	11	—	—	11	—	—	—
Sterilised Surgical Ligatures and Sutures....	—	—	—	4	3	9	—	—	11	—	—	—
Sex Hormones and sex hormone preparations	—	—	—	5	4	16	—	—	—	—	—	—
Vitamins and vitamin-containing preparations	—	—	—	1	—	6	—	—	—	—	2	17
Antivenomous Sera.....	—	—	—	1	1	1	—	—	—	3	—	—

TABLE 10.—EXAMINATIONS CARRIED OUT UNDER THE FOOD, DRUGS AND DISINFECTANTS ACT, No. 13 OF 1929.

Name of Product.	Number Examined.		Number Unsatisfactory.	
	1939-40.	1940-41.	1939-40.	1940-41.
Digitalis Powder.....	—	—	—	—
Tincture of Digitalis.....	16	33	—	—
Tincture of Strophanthus.....	27	6	7	2
Adrenaline B.P.....	—	—	—	—
TOTAL.....	43	39	7	2

6. PORT HEALTH ADMINISTRATION.

The past year was the first full year under war conditions. The number of ships dealt with at the various ports has greatly increased owing to the diversion from the Mediterranean to the South African route of shipping passing to and from the East.

At Cape Town the Port Health Staff had to deal with a number of smallpox cases which were brought from the East in several different ships. The dock area was quarantined and extensive vaccination was carried out. Stringent precautions were taken immediately the first case was diagnosed and had the effect of controlling the outbreak.

Vigorous anti-rodent measures have been enforced and the rodent position is much the same as it was before the war. Rat shields have been used on all vessels calling at the port during the year as under war conditions it is difficult to ascertain whether vessels have called at plague infected ports. Deratisation and Exemption Certificates of all deep-sea vessels entering the port were carefully examined. Regular and strict attention has been given to the rodent position in all vessels including coastwise and harbour and mine-sweeping craft and all necessary measures have been taken to keep them in a rat free condition.

At Durban during the year under review the only Convention disease introduced into the port was a case of typhus fever which was landed to hospital from a ship which had arrived from Port Elizabeth. Cholera and smallpox had, however, occurred on vessels bound for Durban but the ships concerned had landed these cases at intermediate ports. All necessary precautions were taken as regards contacts on arrival of the ships at Durban.

The danger of the introduction of smallpox has greatly increased since the outbreak of war due to the far greater number of ships coming to Durban from the East, many of which have taken less than 14 days on the voyage. The disease has also occurred at certain ports on the East African Coast during the year and it has been necessary to keep a careful watch on all ships arriving from North and East African ports as well as those from the East.

All vessels arriving from plague infected ports or suspect plague ports or ports serving plague infected hinterlands have been systematically examined both on arrival, before pratique is granted, and again during discharge of the cargo. Under war conditions precautionary measures at infected ports may not be as strictly carried out as is normally the case and for this reason a very careful watch has to be maintained to prevent the introduction of rodent plague.

The danger of the introduction of yellow fever has considerably increased as a result of the war and passengers arriving at Durban from yellow fever areas are questioned and all certificates of inoculation examined.

During the year a large number of flying boats arrived from Central and East African ports. Many of these had landed at Vaaldam, which is now a sanitary airport, before arrival at Durban and in such cases anti-mosquito measures were taken at that airport and were not again carried out at Durban. In all other cases, however, the flying boats were sprayed out with disinsecticide immediately on arrival, the whole process taking about 8 minutes. Passengers arriving from suspected yellow fever areas are subject to medical examination and in addition their destination is notified to the Medical Officer of Health of the town to which they are going and they are subject to medical surveillance by the local authority concerned. It has not been found necessary to quarantine any passengers for yellow fever during the year.

V.—INFECTIOUS AND PREVENTABLE DISEASES.

1. NOTIFICATIONS.

Table 11 shows the numbers of infectious diseases reported during the year. The totals for the previous year are also given for comparison. It must be borne in mind, however, that many cases, particularly amongst the Natives, are never seen by a medical practitioner and are, consequently, not notified.

TABLE 11.—NOTIFICATION OF DISEASES BY MEDICAL PRACTITIONERS DURING THE YEARS ENDED 30TH JUNE, 1940 AND 30TH JUNE, 1941.

Disease.	Year Ended 30th June, 1940.		Year Ended 30th June, 1941.											
	Union.	Total.	Cape Province, excluding Transkei.		Transkei.		Natal.		Orange Free State.		Transvaal.			
			European.	Non-European.	European.	Non-European.	European.	Non-European.	European.	Non-European.	European.	Non-European.		
Anthrax.....	65		7	15	—	—	—	—	4	19	—	15		
Diphtheria.....	3,050		1,012	430	15	—	410	—	98	43	682	136		
Encephalitis, Infective.....	30		21	43	—	—	—	—	—	—	—	3		
Enteric or Typhoid Fever.....	2,835		382	777	16	182	63	—	110	362	367	729		
Erysipelas.....	404		70	65	8	6	26	—	5	1	133	66		
Lead Poisoning.....	2		4	1	—	—	—	—	—	—	—	4		
Leprosy.....	776		2	50	—	—	—	—	2	—	4	250		
Malta Fever.....	14		2	—	—	—	2	—	—	—	3	5		
Meningitis, Epidemic Cerebro-spinal.....	808		266	172	—	—	74	—	7	10	164	237		
Ophthalmia, Gonorrhoeal.....	144		4	26	—	—	10	—	—	—	5	21		
Ophthalmia Neonatorum.....	578		31	204	—	—	5	—	6	10	88	208		
Plague (for detailed list of cases and deaths, see Table 15).....	47		1	41	—	—	—	—	9	38	—	12		
Poliomyelitis, Acute.....	62		16	14	—	—	6	—	4	—	39	148		
Puerperal Fever, including Puerperal Sepsis.....	600		65	138	1	—	9	—	1	19	104	11		
Rabies.....	2		2	1	—	—	—	—	18	9	1,185	19		
Scarlatina or Scarlet Fever.....	2,040		513	43	3	—	150	—	69	2	—	—		
Smallpox (for detailed list of cases and deaths, see Table 16).....	681		—	1	—	—	—	—	6	580	2	310		
Trachoma.....	136		13	52	—	—	3	—	1	1	1	30		
Tuberculosis.....	15,162		844	5,330	6	3,602	144	—	16	181	206	2,703		
Typhus Fever (for detailed list of cases and deaths, see Table 22).....	841		18	56	1	541	3	—	—	45	1	43		
TOTALS.....	28,277		3,293	7,459	52	4,936	911		356	1,389	2,997	4,950		

2. BILHARZIASIS OR SCHISTOSOMIASIS.

While there is no evidence that the distribution of this disease has extended it has to be recorded that during the year a number of cases were found in the Mpuzana location in the Umtata District and a few cases in the Humansdorp District.

Although these areas are known to be endemic the disease has been relatively rare in them for a number of years, and the discovery of these foci of infection is probably due to propaganda which led to the seeking of medical advice.

The Transvaal Bilharzia Committee continues to carry out the major portion of the work against the disease and the mobile unit which was recently brought into being is proving of considerable importance in affording facilities for investigation, treatment and the carrying out of propaganda work in the rural areas. The Committee is also working in collaboration with the medical authorities of the Bechuanaland Protectorate with a view to simultaneous action being taken in the north-western Transvaal and in the Bakhatla Native Reserve to a certain portion of which the disease is stated to be confined. This spirit of co-operation with the territories bordering on the Union in connection with the suppression of preventable disease is much appreciated by the Department. The system of sustained propaganda the display of warning notices, assistance in providing swimming baths and the provision of bilharzia free water at schools is being continued by the Committee.

3. DIPHTHERIA.

Diphtheria is one of the most serious infectious diseases with which we in South Africa have to contend. It takes a heavy toll each year and is one of the three commonest diseases notified. The incidence has shown an increase over the last few years and when it is realised that the vast majority of cases are in young children and that many of these cases are fatal the gravity of the position will be appreciated. It may be mentioned that the mortality depends very largely on the stage of the disease at which a case comes under adequate treatment. In cases in which large doses of antitoxin are given on the first day of the disease the mortality is virtually nil, whereas with each succeeding day on which the giving of antitoxin is delayed the mortality rises rapidly. A large number of fatal cases occur each year among children who would otherwise have grown up to be useful citizens while there is a great deal of invalidity caused by the disease and a considerable amount of chronic ill-health resulting from its after effects. These tragic facts are brought into proper perspective when one appreciates that the disease is easily preventable.

In successive annual reports attention has been drawn to the necessity for the much greater use of active immunisation against diphtheria but although some slight progress is being made in this direction the bulk of the public and even the majority of local authorities responsible for the health of the people in their areas are still apparently indifferent to the matter. The immunisation of children against diphtheria should be looked upon by parents as one of their fundamental and essential duties. The process is so simple, so devoid of danger and so efficient that every enlightened parent should have his or her child immunised without the least hesitation. In fact it is no exaggeration to say that, in the light of modern knowledge, neglect of this simple precaution amounts to neglect of parental responsibility. This method of protecting our child population against diphtheria has been available for many years and yet the response by the public, even in those areas where immunisation is offered free by municipalities, has been so poor that in certain quarters it has been suggested that it should be made compulsory by law.

The matter is of such importance that in the Public Health Amendment Act of 1938 provision was made for the Department to refund to local authorities one-half of the expenditure incurred in providing material for active immunisation against diphtheria. Advantage has been taken of this facility to a certain extent but as yet it has not been used to anything like the extent to which it should have been. The matter was discussed at the meeting of the Council of Public Health in February, 1941. It was felt that steps should be taken to urge upon local authorities the necessity for active immunisation and emphasis was laid on the necessity for this being done during early childhood. It was recommended that the total cost of the material should be borne by the Department.

During the past few years a variety of substances has been used for immunisation. The procedure is now, however, fairly standardised and either anatoxin or alum-precipitated toxoid (A.P.T.) is used in the great majority of cases. Both these substances are made in this country and are obtainable from the South African Institute for Medical Research. Immunisation with anatoxin is carried out by three successive doses given subcutaneously at intervals of three and two weeks respectively. Reactions are almost invariably negligible in young children but are somewhat more prone to occur in older children and more particularly in adults.

With alum-precipitated toxoid immunisation is carried out with two injections given at a longer interval; it is recommended that this should be at least six weeks. Reactions are slight but both local and general reactions are apt to be a little more noticeable than is the case with the use of anatoxin. The method of choice is a matter of individual preference and there is no appreciable difference in the degree of immunity produced. At one time it was hoped that it would be possible to produce a satisfactory immunity with one dose of A.P.T. If this were so it would greatly simplify the procedure especially when carried out on large numbers of children at public clinics. Unfortunately early hopes regarding the "one shot" method with A.P.T. have not been realised and it is now generally recognised that two injections are necessary to produce a lasting and satisfactory degree of immunity.

Young infants possess inherited immunity which is transmitted from the mother and which persists in a diminishing degree during the first year of life. This renders them less suitable for the production of artificial immunity for at least the first six months. In other words young babies are naturally immune to diphtheria and as a result it is difficult to produce in them a lasting and high degree of active artificial immunity by the methods described. For this reason it is recommended that the process of artificial immunisation should not be commenced until a baby is at least eight or nine months old; in fact, about one year of age is the most suitable time for artificial immunisation. In children not immunised the degree of susceptibility increases rapidly and is at its maximum from about the age of a year until the child is four or five. It is at this stage that children are most liable to develop diphtheria and it is at this time of life, in the pre-school child, that diphtheria takes its greatest toll. For this reason it is felt very strongly that immunisation should be carried out at the age of about one year and that if this has not been done, immunisation should certainly be done early in the pre-school period.

As children grow older, after the pre-school age, the degree of susceptibility becomes progressively less and from the age of about eight a fair proportion of children are immune to the disease. The numbers which are immune become greater with increasing years and in adult life a large proportion of people is immune. The proportion of people which is immune varies considerably in different communities depending on the degree to which they have come into contact with the infection. Children in large towns, especially those living in slum areas, come into contact with the diphtheria bacillus early in life by mixing with other children, some of whom may be "carriers" of the bacilli. Frequent small doses of pathogenic organisms, which are not in sufficient numbers to produce disease, stimulate the body to protective action and this in fact is the method of the establishment of natural immunity. If these children are fortunate enough to escape an attack of the disease they gradually develop a degree of immunity which increases as they grow older. In rural areas on the other hand and even in urban areas in the children of the well-to-do classes the degree of contact with the diphtheria bacillus is much less and therefore the percentage of children in any age group who have acquired immunity in this manner is much lower.

In view of the fact that from about the age of eight a fair proportion of children are immune and as the likelihood of unpleasant reactions increases in older children it is advisable to ascertain whether or not a child over this age or an adult is susceptible to the disease before embarking on immunisation. Fortunately this can easily be done by means of the Schick test and this should be carried out in such cases. In these cases it is also advisable to do a Moloney test at the same time as the Schick test as by this means it can readily be ascertained whether the individual is sensitive to anatoxin and, if this is the case, toxoid-antitoxin floccules can be used if immunisation is necessary. In younger children of the pre-school age, when immunisation ought to be done, the use of the Schick test may well be dispensed with as at this time of life the great majority of children are susceptible. In addition to this, in the immunisation of large numbers of children as is done at a municipal or other clinic, it is obviously advisable to give as few injections as possible and to make the procedure as simple as one can, because there is always a certain percentage of the children which does not return for a second or third injection.

This matter is of such importance that it is the duty of every parent to take the necessary steps without delay to protect his or her children against this dread disease. Local authorities which have not already done so are urged to provide facilities for immunisation at their infant welfare clinics and to encourage the use of such facilities in every possible way.

*Extract from Annual Report of Deputy Chief Health Officer (Railways):
Diphtheria.*

Although this continued to be the most prevalent of infectious diseases in Railway staff and their dependants, there was an appreciable decrease in the actual number of cases notified. It is anticipated that the position will continue to improve as a result of the free immunisation of susceptible staff and dependants recently more widely offered.

As an example of the benefits of antidiphtheric vaccination, I would again quote the case of the Model Villages where all children are immunised as a routine measure and where, during the past five years, not a single case of diphtheria has occurred in the residents.

It is pleasing to note that Railway Medical Officers and the Sick Fund are taking a more active interest in this precaution and, where members request it, free treatment is given. The advantages of immunisation should, however, be made widely known and the measure popularised amongst the staff. In the latter connection health visitors have begun to play an important part. To quote an example, a little propaganda undertaken at Cookhouse recently by a health visitor working in co-operation with the Railway Medical Officer, after four cases of diphtheria had occurred there, resulted in the voluntary immunisation of 120 children in the camp.

4. LEPROSY.

The routine treatment of leprosy has during recent years made considerable progress and the best judges of this progress are the patients in our institutions. Although we have compulsory segregation of leprosy in South Africa, the segregated patients cannot be compelled to submit themselves for anti-leprotic treatment. Until a few years ago medical officers spent much of their time persuading patients to present themselves for treatment and in those days only a small proportion of the inmates attended for injections. The picture has, however, entirely changed and to-day most of the patients receive active anti-leprotic treatment.

A recent analysis of statistical summaries of treatment showed that the following percentages of patients were receiving routine injections of chaulmoogra oil and its preparations at the respective institutions:—

Pretoria.....	About 77 per cent.
Emjanyana.....	About 90 per cent.
Amatikulu.....	About 65 per cent.
Mkambati.....	About 99 per cent.
Bochem.....	About 79 per cent.

It is not intended that the above figures as they stand should be used as a comparison between the work done at the various institutions as allowances should still be made for local conditions and particularly the type of case which varies greatly in the different localities and races served by these institutions.

In addition to injections by chaulmoogra oil and its derivatives there are other forms of treatment which have their own popularity at the different institutions. Inunction with chaulmoogra oil has always been a feature at Mkambati, while Bochem patients prefer the oil by mouth. Stress is laid on hygiene of the mouth and nasopharynx at Mkambati and Emjanyana. The medical officers at the Pretoria Institution are again particularly on the alert for the reactionary phase in the disease during which the administration of Fouadin has beneficial results.

The routine treatment of leprosy has, however, become the intradermal injection of iodised ethyl esters. There remains no doubt of the very rapid and satisfactory changes brought about in the local lesions by this form of treatment. Isolated local lesions of the neural and tuberculoid varieties are entirely obliterated within a month or two with the result that early cases of the disease are often rendered free of their clinical symptoms while bacteriological evidence of the disease disappears in a comparatively short time.

The iodised ethyl esters which is the preparation favoured by both patients and medical officers has unfortunately a cosmetic effect which rapidly obliterate an important index on which medical boards in the past depended for an assessment of the progress of the disease.

Case records have, however, become much more elaborate and provide more information, particularly in respect of bacteriological investigations which are intended to offset the cosmetic effect of modern treatment, in case this might mask lesions which are still active.

Until a few years ago cases were rarely discharged until they had gone through a twelve months period of special observation in the classification A3. With the success of modern methods of treatment and the admission into our institutions of earlier cases, the medical board has considered that it would be unfair to retain in the institutions for a further twelve months patients in whom the disease would obviously be arrested in a comparatively short time. The term A4 (provisional) which gives the institution medical officer the right to discharge the patient after a further six months of satisfactory treatment and bacteriological investigation has therefore come into use.

An analysis of the discharge rates shows a certain consistency in the annual "turnover", particularly in our larger institutions. This consistency can also be claimed for the group A3 and A4 (provisional) which are in fact all "cases recommended for special observation". It is therefore not so much a question of having discharged more cases during recent years as having reduced the institution life of the majority of those patients who are responding satisfactorily to treatment.

This speeding up of discharges is already showing its effect on our leprosy policy. The general outlook of the patients has become a much more hopeful one. The medical and nursing staffs are also encouraged by the success of their efforts and there is no doubt of the economy and "propaganda" value of this change in procedure. Against these general advantages we must, however, place a possible individual risk of recrudescence after insufficient treatment. It is however confidently anticipated that time will justify the present procedure and prove the assessment of the past to have been overcautious.

Tables Nos. 12, 13 and 14 summarise the position of leprosy in the Union:—

TABLE 12.—LEPER INSTITUTIONS: PATIENTS THEREIN ON 30TH JUNE, 1941.

Institution.	Europeans.		Native.		Mixed Coloured.		Asiatic.		TOTAL.		Persons.
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
Pretoria.....	48	29	472	241	60	23	6	5	586	298	884
Mkambati.....	—	—	99	95	—	—	—	—	99	95	194
Emjanyana.....	—	—	319	279	—	—	—	—	319	279	598
Amatikulu.....	—	—	249	173	—	—	—	—	249	173	422
Bochem.....	—	—	59	50	—	1	—	—	59	51	110
TOTAL.....	48	29	1,198	838	60	24	6	5	1,312	896	2,208

TABLE 13.—LEPROSY: FIRST ADMISSIONS, RECRUDESCED CASES, DISCHARGES AND DEATHS, YEAR ENDED 30TH JUNE, 1941.

Institution.	Admissions for first time.	Recrudesced.	Discharged.	Died.
Pretoria.....	318	24	234	85
Mkambati.....	54	15	80	18
Emjanyana.....	181	28	264	59
Amatikulu.....	123	12	143	49
Bochem.....	23	1	11	4
TOTAL.....	699	80	732	215

TABLE 14.—LEPROSY CASES REMAINING IN THEIR OWN HOMES ON 30TH JUNE, 1941.

	Certified and Awaiting Removal to Leprosy Institution.	Home Segregated.	Discharged from Leprosy Institutions.		Total.
			Still under Surveillance.	Released from Surveillance.	
Cape Province (excluding Transkei)	1	1	181	556	739
Transkei.....	16	2	812	1,132	1,962
Transvaal.....	3	2	736	981	1,722
Natal.....	9	—	352	700	1,061
Orange Free State.....	3	2	150	218	373
UNION.....	32	7	2,231	3,587	5,857

5. MALARIA.

Section A: Natal and Zululand.

The latter half of the year under review was marked by drought conditions with unusually hot weather which continued from January to June. As a result of this prolonged dry period local streams, particularly in the coastal areas, ceased to flow and the subsidence of the larger rivers gave rise to the formation of pools in streams and river courses. Intermittent light rains during this dry spell were insufficient to have any flushing effect and only served to create more favourable conditions for the breeding of *A. gambiae*. In the late autumn and early winter the breeding of this vector became general in the coastal areas and extended further inland up the river valleys than has been the case for some years. It is of interest to note that *A. gambiae* breeding in saline water along the edges of lagoons formed by sand-banks at river mouths has been more prolific than usual.

From figures compiled in the Durban office of collections of mosquito larvae and adults made in areas under organised control, it is shown that active vector breeding and infestation of human habitations by adult mosquitoes occurs throughout the year. Of the total of 27,804 adult vectors collected only 28 were from outside human habitations, while of the 2,355 adults of other species 1,767 were collected outside human habitations.

The incidence of malaria during the year was comparatively low and was restricted to isolated cases throughout the northern coastal areas of Zululand. The death occurred from malaria of one European living in the controlled areas during the year.

The Government Laboratory at Durban provides a free service for the examination of blood slides for malaria. The number of slides in which malaria parasites have been found over the past ten years provides a fair indication of the malaria position over this period.

Year Ending.	1932.	1933.	1934.	1935.	1936.	1937.	1938.	1939.	1940.	1941.
Number of positive slides.	3,789	4,605	3,256	426	329	462	450	449	135	220

Of the 220 for the current year, 66 were from Europeans and 154 from Natives. Of the 66 from Europeans, 33 were imported cases mostly off ships arriving at Durban from East and West African ports. The predominant type of malaria was subtertian, accounting for 199 of the total.

The position in the Native Reserves is reflected in the information compiled from reports by the staff of 54 trained Native Assistants operating in the malarious areas of 20 magisterial districts with an aggregate Native population of approximately 750,000. For comparison the numbers of cases and deaths reported over the past ten years from these areas are given:—

Year Ending.	1932.	1933.	1934.	1935.	1936.	1937.	1938.	1939.	1940.	1941.
Cases.....	38,889	28,651	31,270	10,836	3,171	2,571	1,912	1,557	428	698
Deaths.....	3,677	1,000	1,003	119	72	115	46	40	13	12

Over the same period the amount of quinine issued free has decreased from almost 3,000,000 \times 5 grain tablets in 1932 to approximately 300,000 \times 5 grain tablets during the current year. While most of this quinine was issued in Native areas the figures also include issues to indigent Europeans.

Malaria control on an organised basis has been undertaken by 40 local authorities, 20 statutory malaria committees, 4 Voluntary groups, the South African Railways and by this Department during the year. The methods employed, as in the past, embrace seasonal anti-larval and anti-adult measures applied at weekly or fortnightly intervals in the case of the former and from once to thrice weekly in the latter depending on local conditions.

The policy of maintaining close observation on potential *A. gambiae* breeding places and the application of control measures to such places throughout the year is now in general operation in this province, and is considered essential for effective malaria control.

The Department, by means of inspectors stationed at Durban, Stanger, Eshowe, Empangeni, Greytown and Vryheid co-ordinates control measures and ensures co-operation between local inspectors employed by contiguous bodies, while assuming full responsibility for all control measures in Native areas.

During the year the following inspections in connection with malaria control were carried out departmentally:—

Local Authorities.	Malaria Committees.	Voluntary Groups.	Native Reserves.	Farms.
110	145	16	606	515

In the Natal areas in which 122 local sprayers were employed, 13,500 gallons of anti-malaria oil and 12,000 gallons of insecticide were used. Huts brought under systematic weekly anti-adult control numbered 27,500, representing a population of approximately 80,000 Natives. In addition, 40,000 huts were sprayed by the Native Malaria Assistants in the course of their investigations during the year.

An additional 120 acres of gum trees (*Eucalyptus Saligna*) were planted by the Native Affairs Department as a permanent means of drying out swampy land, bringing the total acreage so far established to over 600.

Farmers in the malarious sections of Natal and Zululand outside the statutory controlled areas were visited by the departmental inspectors at intervals throughout the season. The demonstration of adult vectors in dwellings and of breeding centres has proved of great value in persuading apathetic residents to adopt the control measures recommended.

The weekly bulletins published in the press and the issue of monthly circulars to all control organisations, showing the localities from which vectors have been identified, serve to maintain interest in the work.

Close contact is maintained with the various bodies comprising the organisation, with Magistrates or Native Commissioners and other Government Departments, and with the Provincial Administration. The co-operation thus obtained is largely responsible for the success that has been achieved in the control of malaria in this Province.

Section B: Transvaal.

During the year under review an epidemic of malaria occurred on the Springbok flats and in the Elands and Olifants river valleys. Throughout the other malarious areas of the Transvaal the incidence has been normal and in some places below normal.

During November and December, 1940, heavy rainfall occurred throughout the malarious areas and indicated the possibility that wide-spread breeding of *A. gambiae* would take place. Fortunately, however, in the Zoutpansberg, Barberton, Lydenburg, Nelspruit, Sabie and Pilgrimsrest areas the rainfall during the three critical months of January, February and March was far below normal, resulting in a low malaria incidence in these areas. In the Springbok flats area, however, the position was not so satisfactory. Heavy rainfall occurred in the eastern portion of the Waterberg, Potgietersrust and Pietersburg districts and innumerable mosquito breeding places were formed. This was particularly so on the Springbok flats where owing to the level nature of the ground there is practically no run off and ideal conditions were formed for the breeding of *A. gambiae* throughout a wide area. It was therefore to be expected that an epidemic would occur in these regions. The field inspectorate staff operating in this area reported the finding of *A. gambiae* as early as December. New infections of malaria were reported during January and within a month fresh cases were occurring in the Native locations situated along the Elandsriver. By March it was clear that the region was again in the throes of a malaria epidemic. The Native Malaria Scheme was put into operation and two quinine runners were appointed to operate in the locations together with the two Native Malaria Assistants stationed there. The assistance of Native school teachers and school children was also made use of in the locations. Under the direction of the field inspectorate staff the treatment of the sick and both anti-larval and anti-adult measures against mosquitoes were carried out. By the end of March the malaria position in the locations was considerably improved and under control. This was not, however, the case on the farms. By this time the farming community was bearing the brunt of the epidemic and the Native labourers and squatters were the greatest sufferers, although the infectivity rate among the European population was also high. Pyagra and quinine depots were established at strategic points throughout the area and the inspectorate staff, including health visitors, worked among the farmers locating the sources of infection, advising the necessary action to be taken and initiating treatment. Experience here again confirmed the view that in an epidemic it is unwise to rely on measures being taken by the resident population for the protection of themselves and their employees.

Propaganda and educational work were carried on as in previous years. The departmental malaria film was shown at several points throughout the Transvaal malaria areas. Malaria classes were held at different times of the year at Tzaneen for Railway Health Inspectors, school teachers and in connection with the post-graduate class in tropical medicine from the Witwatersrand University. At Schildpadfontein the annual class for Native school teachers was again held. It is hoped that this educational work will cause the public to take a more active interest in measures for combating the disease.

Extracts from Annual Report of Deputy Chief Health Officer (Railways).

Malaria.

Anti-malaria measures were favoured by the unusual weather conditions which prevailed in certain areas of the Union. In Natal abnormally dry conditions prevented widespread breeding. In the Transvaal meteorological conditions were favourable, but anti-malaria measures were intensive and results throughout the province were good, especially when compared with conditions outside controlled areas.

Train Spraying.

On both Systems night passenger trains which travelled in climatic areas and trains which left malarious for non-malarious areas were regularly sprayed by train staff, health staff or station staff. The biweekly Native train from Portuguese territory to Johannesburg, which received particular attention, was sprayed out en route between Kaapmuiden and Nelspruit by health staff.

Malaria Incidence.

In Natal the malaria incidence during the season under review was the lowest on record. No fresh infections took place. Of a total of 10 cases only 2 occurred on the north coast. The remaining 8 were reported from Durban and inland centres. This was the fifth successive year in which the south coast section was entirely free from malaria.

In the Transvaal, where conditions were little changed from previous years, 118 cases were recorded. Of this total, 48 were members resident in uncontrolled areas and only 31 cases or 26 per cent. were confirmed by bloodsmears. Actually therefore, the number of cases which occurred in the controlled areas was 70 and of this number only 31 were confirmed by bloodsmears. The reason for the unusually small number of smears taken may be attributed to the fact that a considerable number of Railway Medical Officers left for military service and were temporarily replaced by medical practitioners who were not accustomed to the policy of taking bloodsmears.

6. PLAGUE.

During the year under review 90 cases of human plague with 70 deaths were reported. They are summarised in Table 15. Of the total, 39 were bubonic in type with 20 deaths; 5 were septicaemic, with 5 deaths; and 46 were pneumonic, with 45 deaths.

The wide-spread distribution of the outbreaks recorded is still disquieting, indicating as it does that plague infection among veld rodents is present over a very wide area of the Union. Although this fact has been known for some considerable time and it is now over 20 years since the veld rodent reservoir of plague was discovered, there is still a great deal that needs elucidation in regard to the transference of the disease from rodents to human beings. The prevalence of human plague justifies the policy of the Department, acting on the recommendation of the Council of Public Health, in making permanent the appointment of an ecologist who will make a continuous study of the complex factors involved. As far as is possible the Department keeps a watch on the epizootics of plague as they occur among veld rodents and this gives some degree of warning of the likelihood of human outbreaks as, in the great majority of such outbreaks, some evidence of antecedent rodent plague is to be found. Owing to the vast extent of the rodent plague infected areas, however, it is not always possible to know exactly the position in regard to rodent infection.

During the year there were two severe outbreaks of pneumonic plague in the Bothaville and Vryburg districts respectively. In the Bothaville outbreak eight Europeans died while in the Vryburg epidemic there were 36 deaths, all among Natives. In the latter outbreak but for the scant and scattered nature of the population and, probably, the fact that the outbreak was in summer and not in winter, the results might have been even more disastrous. Even so, this was the most severe outbreak, traced to a single source, which has occurred in this country since 1904, and as such merits detailed description.

On the 22nd January, 1941, the station commander at Morokwen, a remote outpost of the South African Police in the Kalahari, received a report that six Natives had died within a few days of each other at a village some 12 miles to the west. The Natives suspected witchcraft. The police sergeant's suspicions were nearer the mark, and with commendable promptitude he despatched a special messenger to the nearest telephone, 45 miles distant. The next day the district surgeon of Vryburg, which is 100 miles away, was on the scene and from a post-mortem examination of two of the bodies made a provisional diagnosis of pneumonic plague as the cause of death. It happened that no Natives were ill at the time of his visit, either at the original village or any other near at hand, although—and this was not discovered until 10 days later—on that very day a Native woman who had visited the infected village had died at a farm some 20 miles away. She and another woman died of pneumonic plague in a hut only a few hundred feet from a European homestead, and were buried without any idea that they had died from plague. The diagnosis was established subsequently by post-mortem findings.

The district surgeon's diagnosis was confirmed by bacteriological findings at the South African Institute for Medical Research, and the Department at once detailed an Assistant Health Officer to investigate the extent to which the outbreak had spread and to prevent its further spread. He was accompanied by a rodent inspector of the Department, and at a later stage a second rodent inspector was also sent. On arrival at the scene of the outbreak these officers ascertained that the infection had already been carried to three other Native villages where seven more Natives had died and a number were ill.

The whole of the Morokwen Native Reserve was at once placed in quarantine and guards were stationed at the main points of egress. Then followed a most arduous search, amid the waterless and almost trackless wastes of the Kalahari, along all possible further avenues of spread. In this work the officers of the Department were ably and unstintingly assisted by officers of the Native Affairs Department and by the police, whose knowledge of the local geography was invaluable. Three more villages, in addition to those previously mentioned, including one 25 miles from the scene of the original outbreak, were now discovered to be infected. As already noted, two Native women were found to have died on a European farm some six miles from the boundary of the Reserve. These were the only cases which occurred outside the Reserve and there was no doubt that they had acquired the infection within the Reserve.

The outbreak came to an end on the 16th February, by which time 36 persons, all Natives, had died. All these cases and another which recovered could be traced back to a Native who died on the 10th January from pneumonic plague. They were all pneumonic in type with one exception. This was the case of a young man who, living in a hut with known pneumonic cases but with no evidence of rodent or flea infestation, was infected through a scratch on his face. He developed severe buboes in the neck, and died on the eighth day of his illness.

The outbreak has been described in detail in a communication*, to the medical press but several interesting features may here be presented. The origin of the outbreak was obscure. There was clear evidence of a severe plague epizootic among veld rodents in this area during the preceding two or three years, but no direct evidence could be secured of contact between the first human case and any dead or sick rodents. As far as could be ascertained from Native witnesses the first case was not bubonic and died with pneumonic symptoms. It is difficult to account for the first human case in a series being pneumonic in type. In the outbreak at Bothaville in November, 1940, the first case was also pneumonic whilst at Viljoenskroon, in an outbreak in July, 1941, the first case was again pneumonic. The reason why these three outbreaks started with pneumonic cases is not clearly understood and gives rise to considerable conjecture. It is possible that, due either to an increased virulence or a great number of the infecting organisms or the lowered resistance of the patient, infection took place in the ordinary way through a flea bite resulting in septicaemia and terminating in a broncho-pneumonic condition. On the other hand it seems possible that pneumonic infection may have resulted from inhalation of dust infected with the bacillus by the dejecta or decomposing bodies of rodents and fleas. The Native custom of sleeping on the floors of huts infested with rodents such as multi-mammate mice might account for an outbreak of pneumonic plague starting in this way.

In view of the generally high diffusive power of pneumonic plague, and the deadly nature of this form of the disease, such hypotheses are very disquieting, particularly if one pictures an outbreak starting in this way in a crowded location. The Viljoenskroon outbreak, already mentioned, did in fact occur in an urban Native location and only a prompt diagnosis by a district surgeon mindful of the possibility of the occurrence of pneumonic plague in his area prevented what might have been a disastrous epidemic. All these considerations add weight to the many others which exist in favour of an increase of the medical services available to Natives and of the education of Natives in their proper use, until it becomes the rule rather than, as at present, the exception for cases of illness among Natives to be seen promptly by a qualified medical practitioner.

An interesting feature of the Morokwen outbreak was that, unlike most outbreaks of pneumonic plague, it occurred during the warm season of the year. Had it not been for this circumstance it is probable that there would have been many more cases.

During this outbreak living avirulent plague vaccine, supplied by the South African Institute for Medical Research, was used on a large scale for the first time in South Africa although it has been used extensively in other parts of Africa and in the East. At Morokwen over a thousand persons were vaccinated. This vaccine has the advantages that only one injection is necessary and that there is little or no painful or febrile reaction. Laboratory experiments indicate that the degree of immunity conferred is greater than with vaccine of killed virulent organisms.

Another interesting feature was that there was complete recovery from what, on epidemiological and clinical grounds, appeared to be an undoubted case of pneumonic plague—the last of the series at Morokwen. Unfortunately, owing to the difficulties of transport of material to a laboratory, bacteriological confirmation of the diagnosis was not obtained. The patient had been given plague vaccine nine days prior to the onset of her illness, and was treated during the illness with anti-plague serum. Recovery from pneumonic plague is so rare that the very claim that it has occurred at once throws doubt on the diagnosis if there has been

* "An Outbreak of Pneumonic Plague in the Kalahari", S.A.M.J., Vol. 15, No. 19.

no bacteriological confirmation. The possibility of recovery was, however, fully demonstrated in the outbreak at Viljoenskroon, where an elderly Native woman recovered after having been given vaccine and also inoculated with anti-plague serum prior to the development of the symptoms of pneumonic plague. Conclusive proof was obtained by laboratory methods of the presence of plague bacilli in the sputum in this case. A third case may be recorded in which recovery took place and although at the time the diagnosis was regarded as doubtful, in the light of the subsequent experiences of the two cases mentioned above, it now seems likely that the disease was pneumonic plague. The patient was an elderly European woman, a known contact of pneumonic cases in the Bothaville outbreak, who was seriously ill with typical pneumonic symptoms. She was treated with sulphapyridine as well as with anti-plague serum, and eventually recovered. Bacteriological confirmation of the diagnosis, however, was lacking.

During November, 1940, in an outbreak on two farms adjacent to each other in the Bothaville district, there were eight fatal pneumonic cases among Europeans, all of which could be traced back to a child who had handled a dead or dying rodent discovered on the outskirts of the homestead. This tragic occurrence illustrates forcibly the necessity for educating children as well as adults in the natural history of plague.

Officers of the Department who during the past year have carried out inspections of towns and villages in the plague infected areas have been compelled to report most unfavourably on the observance, or non-observance, of the Government Rodent Proofing Regulations. It is now over 10 years since these regulations were first promulgated, and there has been time enough for their strict observance to have been enforced throughout the country. Apart from any question of legal obligations, it should be realised by all concerned that failure to build out rodents from premises which attract and afford harbourage and breeding places for them, means failure in a duty of good citizenship. The storekeeper or miller in a plague infected area who fails in this duty inflicts the gravest risks upon the entire community, which may at any time be called upon to pay in the form of a virulent epidemic, for the neglect of a few of its members.

TABLE 15.—DISTRIBUTION OF HUMAN PLAGUE AMONG THE DISTRICTS OF THE TWO AFFECTED PROVINCES DURING THE YEAR ENDED 30TH JUNE, 1941.

PROVINCE.	EUROPEAN.		NON-EUROPEAN.		TOTAL.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
<i>Cape</i> :—						
Britstown.....	—	—	3	1	3	1
Glen Grey.....	—	—	1	—	1	—
Mafeking.....	1	1	—	—	1	1
Middelburg.....	—	—	1	1	1	1
Vryburg.....	—	—	37	36	37	36
5 Districts.....	1	1	42	38	43	39
<i>Natal</i>	—	—	—	—	—	—
<i>Transvaal</i>	—	—	—	—	—	—
<i>Orange Free State</i> :—						
Bothaville.....	8	8	12	7	20	15
Heilbron.....	—	—	2	—	2	—
Hoopstad.....	—	—	1	1	1	1
Kroonstad.....	—	—	7	4	7	4
Philippolis.....	—	—	2	2	2	2
Senekal.....	—	—	1	1	1	1
Trompsburg.....	—	—	1	—	1	—
Ventersburg.....	1	—	5	4	6	4
Vredefort.....	—	—	7	4	7	4
9 Districts.....	9	8	38	23	47	31
UNION.....	10	9	80	61	90	70

Survey and Inspection in the South-Western Cape.

During 1939 and 1940 plague epizootics affected the rodents throughout the Karroo. A small number of human outbreaks at widely scattered points reflected the general infection. In November, 1940, in the Doornbosch area of the Clanwilliam district several hares were found dead. Plague bacilli were isolated from one of them. The mortality in hares had been preceded by general mortality among other rodents, notably namaqua gerbilles and karroo rats, whose nests and burrows were deserted. Mortality was evident further west on the Olifants River side of the Cedarberg mountain range between Clanwilliam and Klaver, but, though suspicious, no proof that the mortality had been caused by an epizootic of plague was found. The rodents to the west of the river in that part of the Clanwilliam district between

the coast and the Olifants River, and to the north of the rodent-free protective belt between Eland's Bay and Citrusdal, appeared to have been unaffected. In consequence of the recrudescence of plague in the endemic Karroo areas bordering the plague-free parts of the south-western Cape to the north and east of Cape Town, a stretch of the Wolsley valley was cleared of rodents as a precautionary measure.

The rodent inspector stationed at Cape Town carried out a large number of inspections of towns and villages throughout the plague-free areas and elsewhere and gave demonstrations and advice on methods of rat destruction and rodent-proofing to local authorities and farmers. Interest in the problems of rat control has been widely aroused and the Department's advisory services have been made use of to an increasing extent. The Divisional Councils of Paarl and Malmesbury, in consultation with the Department, have been carrying out anti-rat operations on farms in connection with the campaign against murine typhus, which has shown itself sporadically in that area for eight years. The fact that murine typhus is carried from domestic rats (*Rattus rattus*) to man by one of the most efficient plague-carrying fleas known—*Xenopsylla cheopis*—leaves no shadow of doubt that many cases of human plague would result should the rodents in the grain growing areas ever become infected with plague.

Field Research.

The population density of gerbilles in the Ermelo district remained high and caused concern, loss and distress to the agricultural community. The problem was important from the agricultural point of view and also threatened to become a serious menace to the health of the community should plague break out. A joint investigation with the Division of Veterinary Services under the auspices of the Zoological Survey was arranged. Dr. A. D. Thomas and the Department's Ecologist carried out a three-months investigation on Nooitgedacht Experimental Farm, near Ermelo. Tried and new methods of control were tested quantitatively. No new methods were discovered but the unsatisfactory results from large scale poisoning with strychnine impregnated grain were explained by the abundance of the gerbilles' staple food—the corms (uintjies) of water-grass (a sedge, *Cyperus esculentus*)—in all cultivated lands, and to a lesser extent in grass veld. During ploughing many gerbilles come to the surface and can be killed. At the same time the superficial burrow systems are destroyed and the food supply upset. Poisoning and trapping immediately after ploughing were found to be very effective provided the work was done at once. If a week went by, the gerbilles had again dug themselves in and were scattered instead of being concentrated in a few deep burrows. A bulletin has been published* giving details of the methods and practices recommended.

Field investigations into the inter-relationship of the plague reservoir in gerbilles on the one hand and of the associated veld and domestic rodents and man on the other were continued on a reduced scale. Census observations begun during an epizootic of plague in gerbilles (*Tatera brantsi*) in the Rooiwal area of the northern Orange Free State were supplemented by similar work in the Holfontein area—the scene of intensive investigations into the biology of plague-carrying rodents during 1938–39. The epizootic at Rooiwal came to an end in November with the virtual extinction of the gerbille population. Towards the beginning of the following winter, in April and May, certain of the areas under observation began to be recolonised and census operations were resumed to follow the cycle of increase and to determine the point at which plague makes its appearance. Gerbille numbers in the Holfontein area had reached a high level by 1940, but they began to decline towards the end of the year. In spite of proof of infection in gerbilles and their fleas and in water-rats (*Otomys irroratus*) at scattered points, the reduction was less sweeping than in the Rooiwal area, and by May and June a steady increase was again under way.

Laboratory Research.

During the year investigations aiming at the standardisation of bacteriological methods in the study of plague were done at the South African Institute for Medical Research by Dr. J. F. Murray in collaboration with the Ecologist. Laboratory-bred multimammate mice (*Mastomys coucha*) were adopted as standard laboratory animals after they had been found to be uniformly susceptible to very small doses of *Pasteurella pestis*. Some forty strains of *P. pestis* isolated during the year were inoculated in different low dilutions into batches of *Mastomys*. The preliminary results showed that thirty or more plague bacilli were enough to kill all of the animals inoculated. None of the strains used showed any marked difference in virulence. The comparative susceptibility of several species of commoner wild rodents were also examined by this method. Only one, the namaqua gerbille (*Desmodillus auricularis*) showed any degree of resistance—a result which was in agreement with Dr. Harvey Pirie's earlier work.

* Davis, D. H. S. and Thomas, A. D. (1941), Gerbille Control: An aid to crop protection and plague prevention. Zoological Survey (Vermin Control Series No. 1), Department of Agriculture and Forestry, Bulletin No. 233.

Uncertainty concerning the reliability of guinea-pigs as test animals for plague has been felt for some time. On many occasions anomalous results have been obtained which have been put down to their great variation in susceptibility. A series of parallel experiments in which *Mastomys* was inoculated along with guinea-pigs with material received for routine examination showed that in a few instances *Mastomys* died with typical plague, while the guinea-pigs showed no sign of infection, having resisted it.

7. SLEEPING SICKNESS.

It has been evident for many years that there is a certain danger of sleeping sickness being introduced into this country. The disease is endemic in parts of Northern Rhodesia, Portuguese East Africa and Nyasaland. It also occurs in Tanganyika Territory and two outbreaks have been recognised in Southern Rhodesia while during recent years a considerable number of cases have been brought to light in the Bechuanaland Protectorate. The danger of its being introduced into the Union by Natives or others from these parts is considerable and in fact this has actually happened in certain instances which will be referred to later. Tsetse flies, which are the vectors of the disease, are prevalent in certain parts of Zululand and if these insects became infected the disease might become established in that part of the country. The cases which have thus far been introduced into the Union have fortunately only reached the Rand and Pretoria where tsetse flies are of course unknown.

The position in regard to Bechuanaland is of considerable interest and importance. It had long been suspected that sleeping sickness existed in the northern part of the Bechuanaland Protectorate but it was not until 1934 that the first cases, two Native constables, were definitely proved to be suffering from the disease. No further cases were known to occur until the latter part of 1938 when two Europeans and two Natives were found to be suffering from sleeping sickness. These four cases all came from Ngamiland in Northern Bechuanaland. One of the Natives was a recruit to the Witwatersrand gold mines and the disease was diagnosed here. Of the Europeans one was the wife of a Government official who came to Pretoria for medical treatment and the other was a young boy who was brought to Johannesburg for treatment.

As a result of the finding of these cases the Bechuanaland Protectorate Administration decided to carry out a sleeping sickness survey of the northern part of the territory. Dr. I. W. MacKichan of the Colonial Medical Service, was seconded for this work and carried out a survey of Ngamiland, the Chobe area and part of the Caprivi Zipfel between June, 1939, and July, 1940. It should be remembered that the Caprivi Zipfel now falls under the administration of the Union Government. Dr. MacKichan's report, which has become available during the year under review, is a comprehensive document and makes very interesting reading. During the survey 20,855 persons were examined and 12 were found to be suffering from sleeping sickness, of whom 9 gave positive blood smears. The conclusions arrived at were that the disease had probably been endemic in Ngamiland for many years but that the fly belt had extended and as a result further contacts had been established between the tsetse fly and human beings, thus accounting for the spread of the disease. Although no healthy human carriers were found it was thought that the outbreaks were probably due to carriers and reference is made to the fact that healthy human carriers caused a similar outbreak which occurred in Southern Rhodesia. No proof was forthcoming that game acted as a reservoir of the disease. Dr. MacKichan made certain recommendations for the control of the disease in Bechuanaland but as these do not directly affect the Union they need only be briefly mentioned. He recommended that the inhabitants of those Native villages which were within the fly belt should be transferred to fly free areas and that the establishment of new villages in the fly belt should be prohibited. He considered, however, that restriction of entry into the fly belt was impracticable, would create hardship and should not be enforced. He also recommended the establishment of a sleeping sickness patrol, working under the supervision of the medical officer at Maun, to keep a close watch on the danger areas.

In the Union the only cases of sleeping sickness known to have occurred have been introduced into the country from Bechuanaland. As previously mentioned, however, there are tsetse flies in Zululand; these belong to the species *Glossina pallidipes* and *brevipalpis*. *Glossina morsitans* is the vector of the disease in Bechuanaland, Northern Rhodesia and Portuguese East Africa and although the species in Zululand are different it is considered that these are also potential hosts of the *trypanosoma rhodesiensi*. It is possible, therefore, that if the tsetse flies in Zululand became infected an epidemic might result. Under the provisions of the Public Health Act sleeping sickness is a formidable epidemic disease. The regulations regarding it prohibit any person suffering from or believed or suspected to be harbouring the infection from entering the Union without the written permission of the Secretary for Public Health and any such person is not permitted under any circumstances to enter the area in Natal where the tsetse fly is known to exist. The regulations also provide for the immediate notification of cases of sleeping sickness and their removal, detention and treatment in a place of isolation.

As the question of tsetse fly infestation is of great importance to the Department of Agriculture as well as to this Department the matter is being fully investigated in close co-operation with the Division of Veterinary Services. It is considered that in the light of our present knowledge the possibility of the introduction of sleeping sickness from Northern Bechuanaland into the Union does not constitute an immediate threat in view of the large tracts of barren country between the sleeping sickness area and the Union border. It is known, however, that the tsetse fly infested areas of Bechuanaland have spread very markedly during the last twenty years and a survey is now being carried out by the Bechuanaland Administration. Further evidence regarding the possible danger from this source will be available when this is completed. Attention has, however, been drawn to the fact that there is a greater danger of the introduction of sleeping sickness from Portuguese East Africa and that this in fact constitutes the most immediate threat. Evidence has been forthcoming through the kind assistance of the Southern Rhodesian Government that there is a comparatively rapid spread of tsetse fly in Portuguese territory along the eastern border of Southern Rhodesia towards the north-eastern extremity of the Transvaal. It appears that before the rinderpest epidemic the fly belt extended very much further south than it does at present but that after this epidemic, in which large numbers of cattle died, the belt receded to the north. It seems, however, that the fly belt is again spreading southwards in Portuguese territory. It is known that the fly belt may spread at the rate of ten miles per annum in favourable country and as it is now only about a hundred miles from the nearest point on the Transvaal border it seems possible that it may reach the Union in about 10 years' time. There is also the possibility of wild game acting as carriers and in this connection it must be remembered that game wander freely between Portuguese East Africa and the Union.

It is therefore considered that the position requires further investigation with a view to preventing spread of the tsetse fly into the Union with the increased danger which that would imply. With this object in view arrangements are being made with the Southern Rhodesian Government and the Government of Portuguese East Africa for representatives from each of these countries and from the Union to meet in Portuguese territory in order to discuss the matter on the spot. The Union Government will be represented by members of both the Division of Veterinary Services and of this Department.

8. SMALLPOX.

The incidence of smallpox during the year under review was higher than for some years past and outbreaks occurred in all four provinces at widely scattered points, but mainly in areas where there are aggregations of Natives.

Failure on the part of medical men to recognise the disease, failure on the part of employers of non-European labour to ensure that their employees and their families are vaccinated and the migratory habit of Natives in search of work, are the chief causes of the widespread occurrence of the disease. These factors make the location and appropriate treatment of contacts an almost impossible task and the only practicable measure left was the vaccination of all persons found in an affected area.

In addition to the local infection, smallpox was introduced into Cape Town by members of the crews of ships from India. In all six such cases were landed and developed smallpox within a few days. These cases were responsible for infecting three persons locally. Isolation of cases and contacts combined with vaccination on a large scale in the Cape Peninsula effectively controlled the outbreak and prevented further spread.

In the northern part of the Union the disease occurred chiefly in the northern Free State, the south-eastern Transvaal and northern Natal.

The disease has fortunately maintained a mild form and the death rate for the year is less than 1 per cent.

Table 16 summarises the distribution of cases, and Table 17 shows the number of vaccinations of infants and children in the classes of the population which register births:—

TABLE 16.—SMALLPOX: CASES AND DEATHS REPORTED DURING THE YEAR ENDED 30TH JUNE, 1941.

Province.	Number of Districts in which Outbreaks Occurred.	European.		Non-European.		Total.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cape.....	2	4	—	6	1	10	1
Natal.....	7	—	—	115	1	115	1
Orange Free State.....	14	6	—	580	4	586	4
Transvaal.....	20	2	—	310	2	312	2
UNION.....	43	12	—	1,011	8	1,023	8

TABLE 17.—VACCINATION OF INFANTS AND CHILDREN IN THE CLASSES OF THE POPULATION WHICH REGISTER BIRTHS, YEAR ENDED 30TH JUNE, 1941.

Particulars.	Cape.		Transvaal.		Natal.			Orange Free State.	Union.
	Cape District.	Remainder of Province.	Rand Area.	Remainder of Province.	Durban.	Pietermaritzburg.	Remainder of Province.		
Births entered in Vaccination Register.....	13,415	41,051	15,501	12,610	3,190	811	1,789	4,457	92,824
Successfully vaccinated.....	6,242	3,309	2,594	2,423	1,003	296	479	1,221	17,567
In susceptible to vaccination.....	3	47	112	61	91	18	25	7	364
Vaccination postponed owing to illness.....	63	192	314	413	214	32	128	283	1,639
Previously had smallpox.....	—	1	—	—	—	—	—	—	1
Deaths of infants under two years registered.....	2,048	6,647	1,273	908	279	67	161	291	11,674
Exempted under Section 10, Act No. 15 of 1928.....	28	66	154	79	132	11	24	40	534

9. TROPICAL ULCER.

Tropical ulcer is still wide-spread in the Northern and Eastern Transvaal although somewhat fewer cases have been seen recently. The disease occurs largely amongst Natives although a few European cases have been seen. The ulcer is generally situated on the lower extremity below the level of the knee but a few cases on the upper extremity have been recorded and photographed.

There is nothing to add regarding the bacteriology of the disease; at the Malaria Research Station at Tzaneen the organisms of Vincent's angina, spirochaetes and fusiform bacilli, have always been found together with varying numbers of other organisms regarded as a secondary infection. In view of the suggestion that autoinfection from the sputum and nasal discharges may take place it is interesting to note that the following results were obtained from investigations carried out on the throats of ulcer cases and normal controls.

	Tropical Ulcer Cases.	Controls.
Number examined.....	54	45
Positive Spirochaetes and Fusiform Bacilli.....	12	16
Fusiform Bacilli only.....	15	12
Spirochaetes only.....	—	3
Negative.....	27	14

In this series of cases spirochaetes and fusiform bacilli were no more common in the throats of ulcer cases than in those of normal people. The numbers referred to are too few for conclusions to be drawn but work is proceeding along these lines.

The ultimate healing of these ulcers is still a lengthy process and relapses are relatively common. The usual treatment consists of general cleanliness and the application of various drugs and ointments with or without immobilisation of the affected part. In a few hundred cases treated at the Malaria Research Station, Tzaneen, the quickest results were obtained by dusting the wound, after thorough initial cleansing, with any one of the proprietary organic arsenical compounds commonly used in treatment of syphilis. Strangely enough intravenous therapy with the arsenicals had no effect. Wassermann tests are constantly negative in uncomplicated cases. The local application of arsenicals was referred to by Lister and Thompson in a publication on this condition in 1921.

Very little is known about any underlying nutritional factor. Our evidence shows that well-to-do children, such as those of the chiefs, and poor Natives are equally affected. The incidence is highest among males and all ages are affected.

Geographically the condition is found most commonly in the warmer parts of the country and this is, of course, in accordance with the distribution of the disease in other parts of the world. It is possible that the debilitating effects of other diseases such as malaria and bilharzia may be a contributing cause in preventing healing.

10. TUBERCULOSIS.

The following information regarding various institutions which make provision for cases of tuberculosis may be of interest.

King George V Hospital, Durban.

A full account of the work of this hospital was given in last year's annual report and a brief summary of activities for the year under review is now presented.

TABLE 18.—ADMISSIONS, DISCHARGES AND DEATHS.

Race.	Patients in residence at 1/7/40.			Patients admitted during year.			Patients discharged during year.			Patients died during year.			Patients in residence at 30/6/41.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
European.....	39	20	59	84	60	144	63	40	103	16	13	29	44	27	71
Coloured.....	17	11	28	20	14	34	14	6	20	9	6	15	14	13	27
Indian.....	16	8	24	31	11	42	21	8	29	8	4	12	18	7	25
Native.....	—	1	1	—	—	—	—	1	1	—	—	—	—	—	—
Chinese.....	—	1	1	—	—	—	—	—	—	—	1	1	—	—	—
TOTAL.....	72	41	113	135	85	220	98	55	153	33	24	57	76	47	123

M—Male. F—Female. T—Total.

Average Stay of Patients—

European..... 129 days.
Non-European..... 139 days.

Twenty-four full-paying and three part-paying patients were admitted to the hospital. These were all Europeans.

Condition of Patients on Admission.

T.B. MINUS GROUP.

Race.	STAGE 1.		STAGE 2.		STAGE 3.		Total.
	M.	F.	M.	F.	M.	F.	
European.....	5	2	1	2	3	—	13
Non-European.....	5	3	2	4	1	—	15
TOTAL.....	10	5	3	6	4	—	28

T.B. PLUS GROUP.

Race.	STAGE 1.		STAGE 2.		STAGE 3.		Total.
	M.	F.	M.	F.	M.	F.	
European.....	1	2	8	12	54	29	106
Non-European.....	—	—	2	—	34	17	53
TOTAL.....	1	2	10	12	88	46	159

Extra Pulmonary T.B.—1 (Non-European, M.).

There were 32 admissions of patients suffering from conditions other than tuberculosis. Of these 25 were Europeans and 7 non-Europeans.

Treatment.

The following tables summarise the treatment carried out for tuberculous patients in the hospital.

Surgical.

Artificial Pneumothorax Therapy.

	T.B. MINUS GROUP.		T.B. PLUS GROUP.	
	No. Attempted.	No. Successful.	No. Attempted.	No. Successful.
Group 1.....	—	—	1	1
Group 2.....	1	1	11	6
Group 3.....	—	—	47	33
TOTALS.....	1	1	59	40

Total number artificial pneumothorax refills.... 1451

Other Operations.

Phrenicectomy.....	32	As part of A.P. 22. Independent therapy 10.
Thoracoscopy.....	1	
Thoracoscopy and Intrapleural Pneumolysis.....	7	
Extrapleural Pneumothorax....	3	
Thoracoplasty.....	22	No. of patients 15.
Monaldi's Transpleural Cavity Aspiration.....	2	
Injection of Dorsal Intercostal Nerves.....	2	

NON-SURGICAL THERAPY.

Therapeutic Agent—	No. of Patients.
Gold.....	51
Copper.....	7
Cadmium.....	20
Bismuth.....	8
Thiosulphate.....	7
Sodium Tannate.....	5
Formic Acid.....	66
Toxoid (Grasset).....	64
Intravenous Methylene Blue.....	13
Intravenous Flavine.....	6

The following table represents the results of a follow-up of patients discharged during the years ending June, 1939, and June, 1940, as at 30th June, 1941 :—

	Total.	Alive.	Dead.	Not traced.
Europeans.....	58	49	7	2
Coloured.....	33	24	7	2
Asiatic.....	10	7	3	—
Native.....	1	—	—	1

In addition to work at the King George V Hospital the Medical Superintendent visits various other institutions.

King Edward VIII Hospital.

During the year 97 visits were paid to the King Edward VIII Hospital where all tuberculous cases and all chest cases on which an opinion was required were seen. The tuberculous cases which are fit for treatment are sent to the McCord Zulu Hospital while the advanced cases are sent to the Depôt Hospital to be in an environment where they are comfortably housed and where they are not a source of infection to others.

Children suffering from tuberculosis are admitted to the Umlazi Mission Hospital where there are some 40 beds available for such cases.

The King Edward VIII Hospital is the largest Provincial Hospital for Natives in Natal, and 75 per cent. of the total cases of pulmonary tuberculosis come from the town of Durban or within 30 miles of the town.

During the year 1,592 cases were examined and of these 955 were diagnosed as cases of tuberculosis in a communicable form.

McCord Zulu Hospital.

The Department of Public Health subsidises some 60 beds at this institution. During the year 56 visits by departmental officers were paid to this hospital which is doing valuable work.

Sixty successful artificial pneumothorax inductions were carried out, 22 phrenic operations and three thorascopies with cauterization of adhesions were done. Every week all artificial pneumothorax cases are screened and a clinic is held to screen suspect tuberculosis cases in out-patients and Natives referred for examination by employers of labour—2,000 persons were examined at these clinics.

The accommodation at the McCord Hospital is regarded as the Bantu section of the King George V Hospital and all cases are selected as suitable for treatment from the large number of patients seen in other hospitals.

The work has been singularly successful from the propaganda viewpoint and more and more Natives are seeking advice and asking for active treatment on European lines.

In both Natives and Indians there is a high percentage of miliary tuberculosis and tuberculosis of the acute childhood type which supports the theory that these races are slow in developing much resistance to the disease.

In the Transkei on the other hand the Natives show a greater degree of resistance to tuberculosis than the Natives in Natal.

Nelspoort Sanatorium.

During the year a further 100 beds were provided, bringing the total number up to 274. The new beds are primarily intended for military cases. They were not ready at the end of June, but were brought into use in October, 1941. The institution is now equipped with modern x-ray plant and also a modern operating theatre.

The number of beds available at 30th June, 1941, was 174, of which 106 were for Europeans and 68 for Coloureds. Of the beds for Europeans 18 are in two separate solaria (9 each for males and females) and are used for patients whose condition is quiescent. They are therefore not always filled.

The daily average number of patients was 154 ; 92 Europeans and 62 Coloured. The average length of stay was 198 days for Europeans and 161 days for Coloureds. Details regarding length of stay are shown in the following table :—

	MALE.		FEMALE.	
	European.	Coloured.	European.	Coloured.
Stayed under 1 month.....	1	—	1	—
Stayed 1 to 2 months.....	5	5	6	5
Stayed 3 to 6 months.....	52	54	32	30
Stayed 7 to 9 months.....	23	16	15	10
Stayed 10 to 12 months.....	10	1	15	4
Stayed over 12 months.....	2	1	6	1
TOTAL.....	93	77	75	50

TABLE 19.—ADMISSIONS, DISCHARGES AND DEATHS.

	Total.	EUROPEANS.			COLOURED.		
		M.	F.	T.	M.	F.	T.
In Sanatorium, 1/7/1940.....	154	47	47	94	41	19	60
Admitted during year.....	308	90	74	164	77	67	144
Died during year.....	15	2	1	3	9	3	12
Discharged during year.....	295	93	75	168	77	50	127
In Sanatorium, 30/6/1941.....	149	39	46	85	32	32	64

Condition of Patients Admitted.

	T.B. MINUS GROUP.			T.B. PLUS GROUP.								
				STAGE I.			STAGE II.			STAGE III.		
	M.	F.	T.	M.	F.	T.	M.	F.	T.	M.	F.	T.
Europeans.....	4	3	7	5	2	7	50	49	99	30	17	47
Coloured.....	7	5	12	2	6	8	37	36	73	31	20	51
TOTAL.....	11	8	19	7	8	15	87	85	172	61	37	98
Percentage.....	3.6	2.6	6.2	2.3	2.6	4.9	28.6	28	56.6	20.1	12.2	32.3

Routine sanatorium treatment remains the mainstay in pulmonary tuberculosis. This implies an abundance of rest, a rational dietary, fresh air, a suitable climate, and the treatment of symptoms by drugs, etc.

Tuberculin treatment has been found of value in softening the walls of cavities which remain patent in spite of free collapse treatment. Several such cases were rendered tubercle free during the year.

Artificial pneumothorax treatment remained the best of all methods of collapse. It was only where artificial pneumothorax treatment failed that the use of other methods was invoked.

During the year 75 Europeans and 36 Coloureds were receiving artificial pneumothorax treatment. Of the European cases 23 were started before admission to Nelspoort. This leaves 52 European cases selected at Nelspoort. Two of these cases were having bilateral artificial pneumothorax treatment.

RESULTING COLLAPSE OBTAINED.

EUROPEANS.

Collapse.	T.B. MINUS GROUP.		T.B. PLUS GROUP.					
			GROUP 1.		GROUP 2.		GROUP 3.	
	M.	F.	M.	F.	M.	F.	M.	F.
Complete (approximately).....	—	—	1	2	7	8	1	1
Partial.....	—	—	2	1	10	4	3	6
Failure.....	—	—	—	—	1	—	3	2

It is interesting to note that as many as 75 per cent. of the cases with positive sputum before the induction of artificial pneumothorax had negative or no sputum after the treatment.

Coloured.—Of the 36 Coloured patients having this form of treatment, 29 were selected at Nelspoort.

Resulting Collapse Obtained.

Collapse.	T.B. MINUS GROUP.		T.B. PLUS GROUP.					
			GROUP 1.		GROUP 2.		GROUP 3.	
	M.	F.	M.	F.	M.	F.	M.	F.
Complete (practically)..	—	—	—	1	4	3	1	1
Partial.....	—	—	6	1	1	1	1	—
Failure.....	—	—	—	—	5	1	3	—

Failures were due to total or partial obliteration of the pleural cavities by adherency or adhesions so that in the former no artificial pneumothorax could be established, in the latter, the collapse was useless and had to be discontinued.

Patients were sent to Cape Town, Johannesburg and Durban and had the following operations performed :—

	EUROPEAN.		COLOURED.	
	Male.	Female.	Male.	Female.
Phrenic evulsion.....	1	4	1	1
Adhesion section.....	1	4	—	2

Rietfontein Tuberculosis Hospital, Johannesburg.

The accommodation in this hospital is for 48 cases for non-Europeans. The daily average number of patients was 46.83 and during the year 158 patients were treated. There were 38 deaths.

This hospital is serving a most useful purpose and there is an ever increasing demand for admission. More accommodation is urgently required to deal with the tuberculosis problem on the Rand and the question of increasing the number of beds by a further 100 is under consideration.

Macvicar Tuberculosis Hospital, Lovedale.

This hospital of 100 beds for Natives is now in full operation.

Tuberculosis Hospital, Springbok.

This hospital of 30 beds is nearing completion.

Paarl.

The extended hospital of 50 beds is now open. This type of hospital is to be encouraged as it is much cheaper to run than the specialised hospitals and yet provides for isolation of infectious cases.

Similar schemes are contemplated at Beaufort West and Worcester.

11. TYPHOID OR ENTERIC FEVER.

The amount of typhoid fever or, as it is commonly called, enteric fever, which occurs in any area is rightly considered a good index of the sanitary state of that community. Typhoid fever is caused by swallowing water, food, or milk contaminated with typhoid bacilli which have been passed in the faeces or urine of a patient or "carrier" of the disease. The bacilli may be conveyed to food or drink either directly by insanitary habits or by means of flies. It is, therefore, a disease which is eminently preventable by good sanitation and the provision of a pure water supply. A high incidence of the disease should not be tolerated by any enlightened public body which is responsible for the health of the people in its area.

In the larger urban areas, where typhoid was prevalent years ago, it is becoming progressively less common as the result of improved sanitation and the introduction of more satisfactory water supplies. A perusal of the Department's annual reports shows clearly that the disease is one primarily of the semirural and rural areas

and there is no doubt that the reduction in the incidence which has taken place in urban areas has not occurred to anything like the same extent in the country districts and Native territories. Lists are published each year showing the prevalence of typhoid fever in different local authority areas and it is evident from year to year that in the small country towns and villages the disease takes a far greater toll than it does in the larger centres. The control of typhoid in the country as a whole will only ultimately be brought about when each individual local authority puts its house in order in regard to sanitation and water supplies, and when great improvements have been made in regard to these matters in the rural areas.

The importance of pure water supplies cannot be emphasised too strongly. On farms, irrigation settlements and in some villages the communities are often dependent for their domestic water on streams, irrigation furrows and wells. These supplies are often subject to gross pollution by human excreta. This is especially the case in regard to streams and irrigation furrows along which there are trees and bushes because, in the absence of satisfactory sanitation, irresponsible persons often defaecate under cover of such vegetation and the next shower of rain washes the faeces, which may contain typhoid bacilli, into the stream. In such circumstances outbreaks of typhoid may occur in the community served by this water supply and, in fact, several such outbreaks have occurred in this way in different parts of the country during the last few years. Wells are often inadequately protected from surface pollution. Contamination takes place by filth from the surrounding area falling into the well or being washed into it during wet weather or by dirt adhering to the bucket which is let down into the well. A well may be rendered a far safer source of supply by covering it with a concrete slab and providing a pump so that the dirt carrying bucket is eliminated. In all cases, however, care must be taken that pollution does not take place through the ground from pit privies, the effluent from septic tanks or other similar sources of danger.

On farms the provision of safe water supplies rests with the individual farmer, but in local authority areas it is one of the fundamental duties of the responsible body to see that a satisfactory water supply is available to the community. Where there is any doubt regarding the safety of the supply steps should be taken to investigate the matter. With the object of encouraging better control of public water supplies the Department provides facilities at a reduced tariff to local authorities for regular bacteriological examinations. These facilities have not, however, been used to anything like the extent to which it was hoped they would be and all local authorities which are not in the habit of having their water regularly examined should take advantage of the facilities provided.

Inoculations of immunizing material for the protection of individuals are largely used in the presence of an outbreak of the disease or for people who are likely to be particularly exposed to infection for any reason. This measure is of great value in protecting troops on active service where circumstances are such that it is impossible to ensure that the food and water supplies are always adequately protected from contamination. In ordinary civilian life, however, the use of vaccine and other artificial measures of protection must be looked upon as evidence of failure to control the environment in such a way as to prevent the disease.

The notifications and incidence of enteric are given in Tables 20 and 21 below :—

TABLE 20.—ENTERIC OR TYPHOID FEVER: DISTRIBUTION OF CASES REPORTED DURING THE YEAR ENDED 30TH JUNE, 1941.

Area.	European.	Non-European.	Total.
Cape Province (excluding Transkei)	382	777	1,159
Transkei	16	182	198
Natal	69	544	613
Orange Free State	110	362	472
Transvaal	367	729	1,096
TOTAL	944	2,594	3,538

TABLE 21.—ENTERIC OR TYPHOID FEVER: NOTIFICATIONS AND INCIDENCE IN LOCAL AUTHORITY AREAS IN WHICH 10 OR MORE CASES WERE NOTIFIED DURING THE YEAR ENDED 30TH JUNE, 1941 (ARRANGED IN ORDER OF INCIDENCE)—EXCLUDING CASES RETURNED AS "IMPORTED".

Local Authority.	NOTIFICATIONS.			INCIDENCE PER 1,000 OF POPULATION.		
	Euro-pean.	Non-Euro-pean.	Total.	Euro-pean.	Non-Euro-pean.	All Races.
Odendaalsrust.....	M.	—	18	—	31.63	19.74
Mooirivier.....	M.	—	15	—	28.20	18.17
Umtata.....	M.	11	81	4.68	25.38	16.60
Viljoenskroon.....	M.	3	18	5.04	24.97	15.96
Springbok.....	M.	12	4	16.19	4.13	9.36
Heilbron.....	M.	1	33	0.65	13.44	8.50
Villiers.....	M.	1	11	1.56	11.73	7.71
Kroonstad.....	M.	22	49	4.13	6.17	5.31
Sterkstroom.....	M.	—	12	—	6.69	4.20
Wellington.....	M.	2	26	0.68	6.65	4.09
Pretoria North.....	V.C.	9	1	4.51	1.51	3.76
Craddock.....	M.	10	23	2.71	4.13	3.56
Vrede.....	M.	2	11	1.17	4.25	3.02
Burghersdorp.....	M.	5	7	2.43	2.60	2.47
Beaufort West.....	M.	—	19	—	4.30	2.39
Parys.....	M.	6	6	2.06	2.64	2.32
Alexandra.....	H.C.	—	38	—	2.27	2.27
Standerton.....	M.	3	9	1.28	2.77	2.14
Graaff-Reinett.....	M.	5	20	1.12	2.65	2.09
Queenstown.....	M.	9	20	1.34	1.73	1.59
Uitenhage.....	M.	6	26	0.64	2.33	1.55
Hercules.....	M.	5	17	0.92	1.60	1.37
Vereeniging.....	M.	7	13	1.48	0.92	1.06
Roodepoort-Maraisburg.....	M.	7	30	0.55	0.86	0.78
Bloemfontein.....	M.	25	18	1.00	0.58	0.77
Springs.....	M.	10	72	0.38	0.88	0.76
Brakpan.....	M.	31	14	1.42	0.33	0.70
Pretoria.....	M.	33	45	0.42	1.01	0.65
Germiston.....	M.	12	34	0.39	0.73	0.60
Port Elizabeth.....	M.	34	27	0.62	0.48	0.55
Benoni.....	M.	12	32	0.50	0.51	0.51
Boksburg.....	M.	4	22	0.23	0.60	0.48
Durban.....	M.	23	97	0.24	0.58	0.46
Johannesburg.....	M.	91	131	0.21	0.53	0.41
Pietermaritzburg.....	M.	4	15	0.19	0.57	0.40
Cape Town.....	M.	52	28	0.32	0.18	0.25
East London.....	M.	10	2	0.91	0.07	0.23
Krugersdorp.....	M.	8	7	0.37	0.16	0.23

M = Municipality.
H.C. = Health Committee.
V.C. = Village Council.

12. TYPHUS OR RICKETTSIOSIS.

The total of 714 cases of typhus for the Union during the past year is the lowest recorded in any one year since the establishment of the Department in 1919, the next lowest being 895 cases in 1927. The number of deaths, however, is not by any means the lowest recorded and the case mortality rate was unusually high. A review of case mortality rates over the past twenty years shows that, excluding the year 1939, they have ranged from 11.1 per cent. (in 1934) to 18.8 per cent. (in 1932). In 1939 the case mortality rate suddenly went up to 33.3 per cent., in 1940 it returned to a more usual level of 17.4 per cent., and in the past year it rose again to 24.6 per cent. There is scarcely sufficient ground, in these figures, for any assumption that typhus is becoming more virulent in South Africa, but the trend during the next two or three years will be closely watched. In considering these figures, however, it must be remembered that owing to the inadequacy of medical services, particularly in the Native territories, the notifications are far from complete. Incompleteness of notification naturally has an effect on the case mortality rate as it is the more serious cases, and particularly those which die, which are notified. These factors have, of course, been operative each year but it is possible that under war conditions the effect of the inadequacy of medical services is more marked than is normally the case.

Workers in the Department's laboratories at Cape Town have made experimental studies of the immunising power of Zinsser-Castaneda vaccine prepared from a Mexican murine typhus strain. Their full results have been published elsewhere. They have shown that this vaccine, reinforced with alum, will in a single dose produce in guinea pigs a high degree of immunity against subsequent infection with South African epidemic typhus. This result encourages the view that the use of vaccine may prove a valuable weapon, under certain circumstances, in the control of typhus.

In combating the disease delousing is and must remain the principal weapon. The evolution by officers of the Department of easily portable and highly efficient field disinfecting apparatus has rendered the process of delousing practicable and rapid even under kraal conditions. Propaganda carried out by trained Natives has assisted in securing the willing and intelligent co-operation of the populations among whom deverminisation is necessary and in this connection special mention may be made of the work of the Native Malaria Assistants in Natal, some of whom have been given a suitable training and in the winter months seconded to typhus control and prophylaxis. It may be emphasised that a factor which makes for lousiness among Natives is the total absence, in many urban locations, of reasonable facilities, either public or private, for personal ablution. From this view-point, the provision of public showers and of hot water installations thereat is a valuable measure in the campaign against typhus.

Murine typhus continues to occur sporadically, with a moderate concentration of cases in the Divisional Council areas of Paarl and Malmesbury. The vector of this type of typhus is the rat-flea, a fact which furnishes yet another reason for the vigorous pursuance of the antirodent measures advised in connection with the prevention of plague.

Tick typhus is widely prevalent, particularly in the Transvaal, and it is fortunate that the disease, while inflicting considerable pain and discomfort upon its victims, is of short duration and rarely if ever fatal.

Notifications for the past year are shown in Table 22 :—

TABLE 22.—TYPHUS FEVER: CASES AND DEATHS REPORTED DURING THE YEAR ENDED 30TH JUNE, 1941.

Province.	Number of Districts in which Outbreaks Occurred.	European.		Non-European.		Total.	
		Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Cape.....	38	19	—	597	160	616	160
Natal.....	4	3	—	6	2	9	2
Orange Free State.....	4	—	—	45	10	45	10
Transvaal.....	4	1	—	43	4	44	4
UNION.....	50	23	—	691	176	714	176

13. VENEREAL DISEASE.

The Department continues to give close attention to the several aspects of the control of venereal diseases. During the year the pamphlets on the subject have been revised. Owing to war conditions difficulty has been experienced in securing regular supplies of the drugs issued free for the treatment of these diseases.

With regard to the control of venereal disease in rural areas, a trial is being given to the policy of authorising weekly visits by the district surgeons for periods of three to four months at a time to centres where there is clear evidence of a considerable number of cases of syphilis in the earlier stages of the disease, rather than less frequent visits over longer periods. This policy is based on the view that short but intensive courses of treatment are more effective than treatment at infrequent intervals. Detailed records are kept, and already it appears clear that under this plan the average total number of attendances made by each patient is considerably higher than under the alternative plan. It is hoped by short intensive courses to reduce gross infectivity in the cases treated, but it is emphasised that, in the interest of the patients themselves and thus of the public health in the widest sense, wherever possible, treatment should be continued until a complete cure is effected. Patients themselves should be taught to appreciate the necessity for prolonged treatment, and encouraged to make every effort to attend the nearest point at which the regular services of a district surgeon can be obtained.

There are many factors requiring assessment before a final evaluation of the several alternative methods of control in rural areas can be made. The difficulties of effective control, by any method, are inherent in the situation presented by a large population more or less evenly but thinly diffused, on farms and in reserves, over wide tracts of country often poorly provided with roads and usually lacking in rapid transport facilities for natives.

The Department makes free issue to all district surgeons of drugs used in the treatment of venereal disease and it approves of the use of these drugs in the treatment of the disease in all its stages. These drugs are issued specifically for the treatment of all persons suffering from venereal diseases and who are unable to pay for such treatment. The accessories used and the time spent in the administration of treatment are covered by the district surgeon's salary. There is thus no reason why every person who becomes infected with venereal disease should not receive adequate treatment.

There are several indications that there is not yet a sufficiently wide-spread appreciation, even among medical men, of the necessity for routine examination of pregnant women for latent syphilis and for treatment thereof, if discovered, *even if the woman has been treated before*. The unhappy results of this ignorance, or neglect, are apparent in the frequent occurrence of congenital syphilis among European as well as Native children. In this connection, a history of syphilis, even in the absence of positive reaction to a serological test, should be taken as an indication for treatment.

Experience at almost every clinic in the country demonstrates the value of skilled and sympathetic treatment in securing regular and continued attendance of patients, as against the coercive methods for which demand continues to be made in more or less vigorous terms, usually by individuals or associations whose fear of venereal disease is greater than their knowledge of the actual problems involved in its control.

The majority of the public still have to learn that a positive Wassermann reaction is not necessarily indicative of an infective syphilitic condition. Whether or not he is infective can only be determined on the basis of a careful clinical examination and case history. Children congenitally afflicted with syphilis exhibit a positive Wassermann reaction but an infectious condition in such children is very rare after infancy. Several instances have come to the notice of the Department where it has been proposed, and in more than one case the proposal was actually carried out, to exclude European children from school on the strength of a positive reaction to the Wassermann test. Such action is quite unnecessary, and cruel in its social effects. Equally unnecessary are many of the resolutions forwarded to the Department demanding, for example, that Natives who deliver bread should all be submitted to the Wassermann test and positive reactors debarred from this type of employment.

It may again be pointed out, as in previous annual reports, that a person who is under adequate and regular weekly treatment for syphilis is very unlikely to be infective, whereas one who is not under such treatment *may* at any time become infective and may quite successfully conceal his condition for several weeks, so that it is foolish to dismiss a servant simply because he is discovered to be attending a venereal disease clinic. On the contrary, he should be encouraged and given every facility to continue to attend.

It is also desired to emphasise the fact that, while infection by non-sexual routes may undoubtedly occur, it does so very rarely indeed and that the vast majority of persons who acquire venereal disease do so during sexual intercourse.

During the year under review some very interesting work has been done in the Union on intensive methods in the treatment of syphilis. It is too soon yet to say whether these methods can conveniently and advantageously be applied to the special needs and problems of the Union. Meantime the developments in this new technique are being watched with considerable interest.

The incidence of gonorrhoea among Natives appears to be increasing, or at any rate more cases are coming to light. Until quite recently it was often stated that the disease was uncommon among the Bantu. Possibly this impression was due to the infrequency with which sufferers sought the help of scientific medicine in the days when treatment consisted mainly in irrigation, which could not often be carried out satisfactorily with Native out-patients. However that may be, the large numbers of Natives coming forward for treatment at such centres as the Venereal Diseases Clinic at the King Edward VIII Hospital in Durban show that gonorrhoea is in fact very prevalent in urban areas. That its incidence in rural areas is by no means negligible is demonstrated by the experience of the newly established Native Health Unit at Polela, a purely rural district 40 miles from the nearest town, where in 5 months there were, in addition to several who had gonorrhoea as well as syphilis, 45 persons who attended for the treatment of gonorrhoea alone. There were 102 patients suffering from syphilis during the same period.

In public discussions on the menace of venereal diseases there is often a tendency to assume that the entire responsibility for the effective control of these diseases rests upon the Public Health Department. It may be well to emphasise

that the Public Health Act lays important responsibilities directly upon those suffering from venereal disease and upon their medical attendants. Any person who knows or has reason to believe that he is suffering from venereal disease *must forthwith consult a registered medical practitioner* and obey his instructions with regard to treatment until he is cured or free from the disease in a communicable form. Parents and guardians of children suffering from venereal disease are responsible for securing treatment for them. As venereal diseases are not notifiable, the duty of seeing that patients fulfil their responsibilities under the law rests in the first instance upon medical practitioners. Any practitioner who knows or has reason to believe that any person, suffering from venereal disease in a communicable form, is not undergoing adequate treatment must report the matter in writing to the local medical officer of health. The medical officer of health must then give written notice to the patient of the requirements of the Act. This duty devolves on the district surgeon in places where there is no medical officer of health. If the patient still fails to obtain adequate treatment the matter must be reported to the magistrate whose duty it then becomes to make such further enquiry or to institute such proceedings as he may deem necessary to ensure that the requirements of the law are carried out. Medical officers of health in charge of venereal disease clinics often find that patients arrive at the clinic a considerable time after they last received treatment at the hands of a private practitioner whom they had consulted in the first instance, and that no report regarding the defaulting patient has been received from the practitioner concerned.

14. YELLOW FEVER.

During the latter half of 1940 and the early part of this year an extensive outbreak of yellow fever occurred in the Nuba Mountain area of the Sudan and at a conservative estimate it is thought that there were about 20,000 cases. This outbreak focussed attention on the disease throughout Africa and the matter was of unusual interest and importance in view of the fact that extensive military operations were at the time in progress in the territories adjoining the Sudan. Yellow fever has been known to exist in some of the western portions of Central Africa for many years and, as a result of the survey carried out by means of the mouse protection test and initiated by a conference of delegates from African and other countries held at Cape Town in 1932, it has been shown that large areas in western Central Africa have been the scene of endemic yellow fever during the life of the present generation. Although yellow fever was known to exist in the Sudan no extensive outbreak had been recorded as far east as the Nuba Mountains until the one to which reference has been made.

The vector of yellow fever is the mosquito *aedes aegypti* which exists in many parts of the Union and which is numerous in the coastal areas of Natal and in some parts of the northern and eastern Transvaal. It was in fact this species of mosquito which was responsible for the spread of dengue fever which appeared in the form of a severe epidemic on the Natal coast in 1926 and 1927. It is considered that the mosquito exists in Natal and parts of the Transvaal in sufficiently large numbers to cause an extensive outbreak of yellow fever if ever the disease should be introduced. *Aedes aegypti* is also fairly widespread in other parts of the Union but as far as is known it is nowhere else as prevalent as it is on the Natal coast. The possibility of outbreaks occurring in other parts of the country cannot, however, be disregarded.

The increased danger of the spread of yellow fever to the Union is due to the fact that methods of transport are so much more rapid than was the case in former years. The incubation period of the disease is from 3 to 5 days and in these times of fast aerial navigation it is possible for a patient who has been infected in West Africa to develop the disease after arrival in the Union. Years ago this would have been impossible as the disease would have manifested itself long before the patient's arrival in this country. Apart from the spread of yellow fever in this way, infected mosquitoes may be carried in aircraft and so disseminate the disease. The possibilities of spread are even greater to those territories, such as the East African colonies, which are closer to the yellow fever area and in fact the possibility of spread by any rapid means of transport into such territories is considerable.

Legislative measures for preventing the introduction of infectious diseases, including yellow fever, into the Union by aircraft were taken in 1935 when the Aviation Health Act was passed. This act and the regulations framed under it provide that aircraft entering the Union from a certain large defined area of western Central Africa, where yellow fever is known or suspected to exist, must proceed to a sanitary aerodrome for the disembarkation of the passengers and crew. At such aerodromes the people arriving are subject to medical examination and measures are taken to destroy any mosquitoes which may be in the aircraft. These precautions have been carried out over a number of years both at the sanitary aerodromes at the Rand Airport and at the flying boat base on Durban Bay. During the year under review another sanitary aerodrome was opened at Vaaldam as this is now a landing place for flying boats from the north, while more recently Windhoek was proclaimed a sanitary aerodrome. Walvis Bay is also a proclaimed sanitary aerodrome.

There have been no cases of yellow fever in the Union and as the outbreak in the Sudan is now over there is no imminent danger from that source. There exists, however, a potential danger to all African territories and it is felt that further measures are necessary completely to safeguard the position. The eradication of the mosquito vector is considered quite impracticable and we therefore have to resort to other measures for protection. Fortunately yellow fever vaccine provides a very efficient means of immunisation, one injection rendering a person immune for about two years or often for a much longer period.

During the early part of 1941, Dr. G. M. Findlay, a world authority on yellow fever, visited the Union and the opportunity was taken of holding a conference with him in Johannesburg. As a result it was decided that the most practicable means of anticipating the danger would be to have available in the Union a sufficient quantity of vaccine for use in controlling any threatened outbreak which might arise. At present the vaccine is produced at the Rockefeller Institute in America, at an institute in South America and in London. The Rockefeller Institute has kindly supplied the Department with 150,000 doses, but it is felt that in the event of an outbreak this quantity would be inadequate and it has, therefore, been decided that the vaccine should be produced in the Union. Arrangements are accordingly being made for the establishment of the necessary laboratory and for the production of the yellow fever vaccine in South Africa.

VI.—OTHER DISEASES AND CONDITIONS.

1. ENDEMIC FLUOROSIS.

In the annual report for the year ended 30th June, 1938, attention was drawn to the existence of excessive quantities of fluorine in certain domestic water supplies and the toxic effects thereof on cattle and human beings. It was also mentioned that up to that date no case of chronic fluorine poisoning in an adult person had been recorded as occurring in the Union.

During the year an important advance in the knowledge on the subject was made, since in the course of his investigations of the incidence of dental caries and endemic dental fluorosis, the Dental Health Officer of the Department, Dr. T. Ockerse, discovered seven persons suffering from what he regarded to be chronic fluorine poisoning in the Pretoria district. One of the sufferers was admitted to the Pretoria General Hospital, where, on investigation, the diagnosis was confirmed by the professional officers of the Department. From the clinical picture there can be no doubt that the remaining six are suffering from the same form of poisoning. It was stated that these persons derived their drinking water from a borehole, the water of which was found on analysis to contain 11.78 parts per million of fluorine. It was also ascertained that the worst sufferer had been drinking that water for nineteen years and that his symptoms commenced eight years ago, i.e., the toxic effects became apparent in about eleven years' time. It is believed that water containing amounts of fluorine not exceeding one part per million will not cause fluorine intoxication.

From analyses of water samples, chiefly from springs, wells and boreholes, it is established that the occurrence of excessive amounts of fluorine is widespread in the Union. The amounts determined up to the present from these sources vary from a trace to 53 parts per million. Water from wells and boreholes in large areas in the north-western Cape Province, especially in and around Kenhardt and Pofadder contains excessive amounts of fluorine varying from 5 to 6 parts per million. Similarly excessive amounts of fluorine were found in water from springs and boreholes in the Jansenville, Cradock and Middelburg districts as well as from a borehole near Paarl, where 11 parts per million was revealed.

In the Pilansberg area of the Transvaal, amounts of 36 and 53 parts per million have been recorded. In the Pretoria district, of some twenty sources of fluorosis, the amounts vary from 1.43 to 13 parts per million. Six parts per million of fluorine was found in several springs in the Potgietersrust district and 7 parts in the Nelspruit district. Excessive fluorine was found in drinking water in boreholes in many areas in the Orange Free State, especially around Bloemfontein, Dewetsdorp and Theunissen. Up to the present investigations have revealed no evidence of fluorine intoxication in Natal.

The Dental Health Officer is making a detailed survey of the endemic areas, and a map based on actual water analyses indicating these is in course of preparation.

There are thousands of persons, children and adults, European and non-European, in South Africa who obviously suffer from endemic dental fluorosis or "mottled enamel" and it is not improbable, taking the high concentrations of fluorine in some of the drinking water supplies into consideration, that there are hundreds who are suffering from the not so obvious symptoms of chronic fluorine poisoning contracted in adult life which simulate the rheumatoid conditions so common in this country and which may, in fact, be the cause of many such conditions.

The clinical symptoms of chronic fluorine poisoning may be briefly stated as follows:—

Mottling of the teeth; opaque, brown or black stains with or without pitting and hypoplasia. As fluorides only affect the calcification of the teeth, i.e., from birth to eight years, mottling will not show in persons who drink water containing fluorine after eight years of age.

As children, apart from the dental condition mentioned, do not appear to suffer in any way from the intake of a certain amount of fluorine, there would appear to be an interval extending from childhood to about twenty-five to thirty years of age, during which few or no ill-effects are exhibited. At about thirty, however, the first symptoms of intoxication appear; a recurrent tingling sensation in the limbs or over the body in general. Pain and stiffness next appear, especially in the lumbar region of the spine, but also involving the thoracic and cervical regions. The stiffness increases until the entire spine, including the cervical region, appears to be one continuous column of bone producing a condition of what is popularly known as "poker back".

There is also stiffness of various joints due to infiltration by bony material of the periarticular tissues, tendinous insertions of muscles and interosseous

fasciae. The bony skeleton of the thorax is markedly affected and the ribs become rigidly fixed at their junction with the spine. Breathing becomes entirely abdominal while the chest assumes a barrel-shaped outline, flattened anteriorly. There is a loss of appetite, cachexia and general emaciation. Symptoms of pressure on the spinal cord may appear, due to bony encroachment on the spinal canal. Loss of sphincter control in the latest stages and impotence is common. Kidney function in the majority of cases is impaired. The urine contains amounts of fluorine much above the normal upper limit. Finally, the patient becomes bedridden and death usually occurs owing to some intercurrent disease. The mind remains unimpaired.

The radiological findings show excessive calcification of tendons, ligaments, ligamentous attachments and fasciae, and the production of osteophytic formations from various joints, especially those of the vertebral column.

The fact that fluorine poisoning is easily detected by an examination of the teeth of school children, affords a ready means of indicating suspicious water supplies. In areas, therefore, where "mottling" of children's teeth is observed, the water supplies should be chemically analysed for fluorine without delay.

Analyses have shown that while the water from one borehole may be practically free from fluorine, that of another situated about half a mile away may contain excessive amounts of fluorine. This fact is of practical value in a search for fluorine-free water.

In the annual report referred to above various methods of solving or alleviating the problem of fluorine-containing waters are indicated. From Canada it has been ascertained that commercial units containing tricalcium phosphate (Defluorite B) were installed at three towns in Alberta where the water supplies contained fluorine and that their operation was satisfactory.

2. CANCER.

In successive annual reports attention has been drawn to the importance of cancer as an agent of death. Recorded figures show a very marked increase in the mortality from this disease during the last 20 or 30 years and, in fact, the death rate is now about 50 per cent. more than it was 20 years ago. At that time the mortality was approximately 70 per 100,000 of the population, whereas it is now over 100 per 100,000. These figures refer to Europeans only but they mean that of our comparatively small European population of about two millions over two thousand die annually of cancer in its various forms. Owing to lack of statistical data for Natives we are entirely ignorant of the position regarding cancer mortality among this section of the community. We know that the Natives do not suffer from cancer to the same degree as Europeans but nevertheless the disease is not uncommon among them. In previous reports attention has been drawn to the fact that in Natives the incidence of the various types of cancer is different from that in Europeans. As an example of this we have the well known fact that primary cancer of the liver is one of the commoner forms in Natives whereas in Europeans it is very rare. These facts and many other aspects of the cancer problem in this country need elucidation.

It is not proposed to discuss the question of the increased number of cancer cases recorded but it is considered probable that two of the important factors involved are the better medical facilities, leading to more accurate diagnosis of causes of death, and the increasing average age of the population, due partly to improved health and medical services and partly to other sociological factors, such as the lessened amount of immigration. However this may be, there is no doubt that cancer is one of the most serious problems confronting health authorities, not only in this country but all over the world, and every endeavour should be made to elucidate the aetiological factors and the possibilities of prevention. Apart from this it is necessary to bring to the notice of the public the great importance of early diagnosis and adequate treatment in the earliest possible stages as by these means many cases of malignant disease can be cured.

Interest in the subject in South Africa has been largely stimulated by the work of the National Cancer Association. In the report for the year ended June, 1938, the factors leading up to the formation of this Association and the objects and work of the Association were described in detail and it is not necessary to recapitulate what was written then. For the sake of convenience, however, it may be said that the main objects of the Association are to make investigations into the causation and treatment of cancer with a view to steps being taken for the prevention and cure of the disease and also to establish an institute for this purpose. The intention is that facilities should be provided for undertaking diagnosis and treatment of cancer along modern lines. Another function of the Association is to carry out propaganda work with the object of educating the public to the need for seeking medical advice in the early stages of the disease.

Discussions regarding the financial aspects of the proposed institute have taken place with the Union Government and other bodies. The Government has agreed in principle to contribute to the capital funds necessary for the foundation of the institute when times are more propitious.

It is estimated that the capital cost of establishing a cancer institute on the lines contemplated will be not less than £100,000. Although, under existing conditions, the establishment of a cancer institute is, for obvious reasons, not being pressed forward, it is essential for public interest in the problem of cancer to be maintained and the National Cancer Association is endeavouring to do this without attempting to make any special drive at present.

One aspect of the work of the Association which costs little and yet may contribute largely to our knowledge of the subject is the compilation of statistical data regarding cancer cases treated at the Johannesburg Hospital. Information regarding these cases is being obtained and correlated with the object of discovering whether any common aetiological factors are present in the various types of cancer. It is considered that the recording of case histories and other clinical data of this sort may prove of considerable value in helping to elucidate certain aspects of the problem.

VII.—GENERAL.

1. HOUSING AND SLUM ELIMINATION.

Full details of the working of the Housing Act, No. 35 of 1920, the Additional Housing Act, No. 41 of 1937 (assistance to building societies) and the Slums Act, No. 53 of 1934, from the date of their commencement, are contained in the report of the Central Housing Board for the calendar year ended 31st December, 1940 (U.G. No. 19 of 1941), which was laid on the Tables of Parliament. A Summary of the position of the Housing Act as at 30th June, 1941, is given in Table 24.

TABLE 24.—HOUSING ACT, No. 35 OF 1920—WORKING FROM PROMULGATION, 16TH AUGUST, 1920, TO 30TH JUNE, 1941.

Province.	Loan Applications Approved.			Loan Issues.	Number of Houses.					
	Non-European.		Total.		Completed.	Under Construction.	Approved, but not yet commenced.	Total.	Total for European Occupation.	Total for non-European Occupation.
	European.	£	£							
(A) <i>Economic Housing.</i>										
Cape.....	1,042,988	666,949	2,609,937	£ 2,483,440	7,457	142	576	8,175	3,102 (a)	5,073 (b)
Natal.....	646,797	277,503	924,300	715,293	1,124	87	328	1,539	671	868 (c)
Orange Free State.....	734,026	20,618	754,644	716,268	1,764	380	437	2,581	941 (d)	1,640 (e)
Transvaal.....	2,690,655	293,284	2,983,939	2,765,966	5,050	180	630	5,860	3,355	2,505 (f)
TOTAL.....	6,014,465	1,268,354	7,272,820	6,680,967 (g)	15,385	789	1,971	18,155	8,069	10,086
(B) <i>Sub-Economic Housing.</i>										
Cape.....	1,059,044	3,643,225	4,702,269	2,000,526	5,998	1,748	7,085	14,831	2,229	12,602
Natal.....	6,824 (h)	1,097,050	1,103,874	337,403	545	212	2,043	2,800	—	2,800
Orange Free State.....	24,900	21,975	46,875	19,900	9	1	73	83	46	37
Transvaal.....	1,115,147	2,380,220	3,495,367	2,551,926	5,995	1,467	1,905	9,307	1,304	8,003
TOTAL.....	2,205,915	7,142,470	9,348,385	5,800,755	12,547	3,428	11,106	27,081	3,579	23,502
(C) <i>Housing of the Aged Poor.</i>										
Cape.....	20,669	16,973	37,642	32,322	250	—	—	250	114	136
Natal.....	25,000	—	25,000	25,000	50	—	—	50	50	—
Orange Free State.....	4,200	—	4,200	4,200	20	—	—	20	20	—
Transvaal.....	27,500	—	27,500	8,081	8	3	12	23	23	—
TOTAL.....	77,369	16,973	94,342	70,103	328	3	12	343	207	136
TOTAL (A), (B) and (C)	8,297,750	8,417,797	16,715,547	12,560,825	28,270	4,220	13,089	45,579	11,865	33,724

(a) Includes a hostel to accommodate 86 persons.

(b) Includes 1,337 single rooms in blocks, 8 barracks and 160 flats.

(c) Includes 3 barracks and 36 single rooms in blocks.

(d) Includes a hostel for European girl employees at Bloemfontein.

(e) Includes 24 single rooms in blocks, the balance of 1,616 representing the approximate number of dwellings to be built out of a total loan of £30,118 made to three Local Authorities for use exclusively in purchasing materials to be advanced to Coloured persons and Natives building their own homes.

(f) Includes 303 single rooms in blocks, 3 compounds and 13 hostels.

(g) Includes £2,330,006 re-issued out of repaid capital.

(h) Sub-economic Loan to complete Aged Poor Scheme at Sydenham, Durban.

The activity of local authorities in dealing with bad and insufficient housing within their areas has been maintained during the present year. The number of schemes and dwellings approved in respect of economic housing involved loans totalling £566,811 as compared with £557,306 for the corresponding period in 1940. The subeconomic loans approved involved loans amounting to £2,168,510 compared with £1,460,279 in 1940.

Economic Housing.—The Government's commitment for economic housing now stands at £7,500,000. This figure includes the amount of £1,128,000 which was surrendered by the Provincial Administrations out of capital repayments made by local authorities and which the Treasury agreed to restore to the capital fund, but to be spread over a period of 5 years. The total sum allotted to local authorities out of economic funds from the commencement of the Act in August, 1920, to 30th June, 1941, amounts to £9,010,221 which is to be met out of funds provided by the Treasury and capital repayments made by local authorities to the different provincial administrations.

Out of the £7,500,000 commitment a total sum of £4,350,961 has been issued out of economic funds provided by the Treasury, whilst in addition £2,330,006 has been reissued from capital repayments by the Provincial Administrations, making the total issues for economic housing, as at 30th June, 1941, £6,680,967. An amount of £400,000 has been made available for issue during the present financial year and in addition it is estimated that the Provincial Administrations will have a total sum of £166,786 available for reissue out of capital repayments to be received during the year. The rate of interest at present charged on economic loans is 4 per cent. per annum.

Subeconomic Housing.—The Government's commitment for subeconomic housing is £15,500,000 out of which an amount of £15,164,121 has been allocated to various local authorities. As at 30th June, 1941, an amount of £5,809,755 has been issued to local authorities. A sum of £1,300,000 has been made available for issue during the present financial year in respect of schemes which have already been approved. Full details of loans granted to local authorities throughout the Union will be found in the Annual Report of the Central Housing Board.

Additional Housing Act, No. 41 of 1937.—Activities under this Act have been suspended for the time being and no fresh loans have been granted. Loans totalling £1,969,083 were approved from the commencement of the Act until the time of suspension. In respect of these the advances from Government funds amounted to £655,366.

Housing of the Aged Poor and Totally Unfit.—Out of the total commitment of £250,000 an amount of £148,141 has been allocated to different local authorities. So far schemes have been carried out at Cape Town, Durban, Johannesburg, Philipstown, Port Elizabeth and Zastron. The amount made available for issue during the present financial year is £50,000. No new loans were granted during the year.

Housing Act, No. 35 of 1920.—The total value of loans approved under this Act during the period under review amounted to £2,735,321 involving the erection or enlargement of 6,596 dwellings, details of which are as under:—

Economic housing (4 per cent. loan funds), loans totalling £566,811.
Number of dwellings involved 694.
Subeconomic housing ($\frac{3}{4}$ per cent. loan funds), loans totalling £2,168,510.
Number of dwellings involved 5,902.
Housing of the Aged Poor and Totally Unfit (1s. per cent. loan funds):
Nil.

The corresponding figures for the preceding year are:—

Economic loans, £557,306. Number of dwellings involved 694.
Subeconomic loans, £1,460,279. Number of dwellings involved 4,722.
Housing of the Aged Poor and Totally Unfit: Nil.

Slum Elimination.—The Slums Act, No. 53 of 1934, was extended during the year to two additional centres, namely Bethlehem (Proclamation No. 224, dated 8th November, 1940), and Somerset East (Proclamation No. 76, dated 9th April, 1941). The number of centres at which the Act is in force now totals 39.

During the year 45 appeals, involving 61 premises, were lodged under section 4 (10) of the Act against the declaration of single sets of premises as slums. Of

these, 24 appeals involving 33 premises were received from Johannesburg, 11 appeals involving 18 premises from Durban, 5 appeals involving 5 premises from Pretoria, 2 appeals involving 2 premises from Port Elizabeth, 2 appeals involving 2 premises from Pietermaritzburg and 1 appeal involving 1 property from Kingwilliamstown. In all these cases the slums declarations were confirmed. Four appeals from Durban and one from Port Elizabeth were not submitted within the prescribed period of 10 days and were therefore not considered. Two applications in terms of section 17 (1) (a) to acquire premises declared to be slums, were received from Durban and Grahamstown respectively. Both were approved.

General.—The Central Housing Board has continued its activities in revising and improving the type plans and specifications which have proved very valuable as a guide to local authorities and other interested bodies. The demand for these has increased throughout the year and improvements and suggestions following their applications in widely different environments and geographical areas have been noted by the technical officers of the Board for inclusion in or modification of the existing copies. These observations have proved particularly useful to departmental officers for providing helpful and practical advice in the course of routine meetings and inspections.

The Department has, for some time, been particularly anxious that the small local authorities, as well as the big ones, should do whatever they could to improve housing conditions in their areas and I am accordingly very pleased to be able to record that, when the Central Housing Board was recently placed in a position to make further housing loan allocations, due regard was paid to the needs of the smaller centres. Out of a total of £488,160 economic money which was allocated, some £227,660 went to 41 of the smaller local authorities, the sums allocated to each ranging from £800 to £25,000; whilst from subeconomic funds a total of £242,800 was allotted to some 33 of such local authorities, the sums earmarked to each varying from £900 to £30,000.

2. ABATTOIRS.

The question of abattoir control and the conditions under which animals are slaughtered and meat prepared for human consumption have exercised both the government departments concerned and the other public bodies interested in the matter for some years. Investigations which have been carried out by this Department in conjunction with the Department of Agriculture have served to confirm the view that there are numerous shortcomings in the present system. The whole problem is much complicated by vested interests and other financial implications but it must be considered objectively and dispassionately if we are to arrive at a satisfactory solution. The careful control and hygienic handling of meat from before the time that the animal is slaughtered until the meat is sold to the public is a matter of importance to the public health of the community as a whole and it is from this aspect that the Department is interested in the subject.

The abattoir conditions and the measure of control and supervision which is exercised by different local authorities are extremely variable. In general, conditions are better in the larger municipalities than in the smaller towns but the efficiency of control is not by any means always in direct proportion to the financial strength of the local authority. It may be said at once, however, that it is only in a few of the larger towns that abattoir conditions are in conformity with modern standards. Even in many of the large towns the abattoirs are small and primitive in construction and while they may have conformed reasonably to accepted standards at the time they were built they cannot be considered satisfactory at the present time nor are they adequate in many cases to deal with the needs of the rapidly developing towns which have outgrown them. Complete abattoir services, including cold storage accommodation, modern by-product plants, and laboratory and veterinary services are to be found at only very few abattoirs in the country. The capital cost of providing elaborate facilities and the expenditure which would be necessary to maintain such services are obviously beyond the means of the smaller municipalities.

It is considered that the policy of maintaining individual municipal abattoirs requires reconsideration in the light of modern requirements. On grounds of both economy and efficiency it would be better if large communities were served by modern, well equipped, and suitably controlled regional abattoirs, irrespective of municipal boundaries. This is particularly the case in the closely settled areas such as the Witwatersrand where there are at present a large number of municipal abattoirs, not to mention a still greater number of private slaughter poles immediately outside the municipal areas, all situated within a few miles of each other. In these days of good roads and rapid motor transport the principle of having a number of ill-equipped abattoirs within a few miles of each other cannot be defended on hygienic grounds. Another reason for favouring the establishment of regional

abattoirs on the reef is the question of mine contracts for meat for Native labourers. The contracts for the supply of meat for the mine compounds are placed each year and, as the holder of the contract is liable to change, a new contractor may take his trade to the abattoir of an adjacent town. There is, therefore, no regularity regarding the amount of slaughtering done at some of the small reef abattoirs with the result that the municipalities are not able to estimate their future abattoir needs with any degree of accuracy. This matter is referred to in some detail as the mine compound trade forms a very large proportion of the trade of many of the smaller reef abattoirs and the difficulties referred to could be overcome by the establishment of regional abattoirs. It is felt that an area like the reef could far better be served by three or four large, well-equipped and properly staffed abattoirs situated at strategic points on the Central, East and West Rand.

It is appreciated that there are considerable difficulties inherent in the suggested system of regional abattoirs. There may be difficulty in choosing the most suitable site for a regional abattoir but, more serious than this, is the difficulty of the municipalities concerned arriving at mutually acceptable financial arrangements. Before such arrangements could be made it would be necessary for the municipalities to sink their identity for the common good and in the interest of public health. A far-sighted and progressive policy for the benefit of the community as a whole is necessary. The principle of a public service being rendered to a number of local authorities on a communal basis is not without precedent. The method by which water is supplied to all the towns on the Witwatersrand is an outstanding example of the advantages of such a system and other examples, such as communal electricity supplies and joint municipal sewage disposal works, could be cited.

Another aspect of the same subject is the introduction of uninspected meat into local authority areas. This problem constantly gives rise to discussion on the part of the local authorities concerned both because of the potential danger to public health and because of the trade competition which operates unfairly against the butchers who are under municipal control. Under provincial legislation local authorities may control the importation of meat into their areas for sale but there is no legislative authority for the control of meat introduced for the consumption of private individuals. Butcheries are often established immediately outside local authority areas and meat is sold to the inhabitants of the town who either go to the butchery to receive it or have it delivered to them. In either case it is claimed that sales take place outside the municipal areas and that the meat brought in is for private consumption and therefore not subject to municipal control. Legislative authority exists under the Slaughtering and Meat Inspection Regulations for the hygienic control of slaughterhouses in all areas, including country districts. In the country districts of the three northern provinces such control is exercised by the magistrate who is the local authority, while in the Cape Province the Divisional Councils, as the local authorities, exercise this control. No machinery exists however, for the systematic inspection of meat in such areas and this is essential to prevent the sale of unsound meat. The systematic inspection of all meat slaughtered at private slaughter-houses is obviously impracticable. It is, therefore, considered that the only really satisfactory solution to this problem would be the total abolition of all private slaughter-houses and the insistence on all meat being slaughtered at public abattoirs. This in itself implies the acceptance of the principle of regional abattoirs, irrespective of municipal boundaries.

The less densely inhabited parts of the country do not lend themselves so readily to the application of the principle of regional abattoirs. It is considered, however, that in the country districts comparatively large areas could be served by abattoirs set up at some convenient point such as the largest town in the district. Transport difficulties are greater in country districts and the system would have to be applied with modifications to suit the individual circumstances in each area.

The question of the control of the suggested regional abattoirs is a matter which has given rise to misgiving and to a considerable amount of discussion in local authority quarters. The Department appreciates to the full the financial implications and other considerations with which the local authorities are confronted but considers that such problems are not incapable of solution in the interests of the community as a whole. It is felt that whatever policy is adopted should, as far as possible, have the whole-hearted support of the various parties concerned.

3. RURAL AND PERI-URBAN SANITARY CONDITIONS.

In the report for the year ended the 30th June, 1939, the insanitary conditions which almost invariably prevail in peri-urban settlements were described in some detail, and in that for the year ended the 30th June, 1940, reference was made to the report of the Urbanised Areas Administration Committee (U.G. No. 8, 1940) which was published in February of that year. The various recommendations of the Committee have received the consideration of the bodies concerned and it is

indeed pleasing to observe that in a large number of cases the recommendations have been adopted and carried into effect. This is particularly true in respect of the numerous interim reports (95) which were submitted during the year 1939 and which were published in summarised form as Annexure "B" to the Committee's final report. The position regarding the interim reports is as follows:—

(i) Recommendations adopted and carried into effect: (Nos. 1, 4, 5, 10, 11, 13, 14, 15, 16, 19, 20, 26, 32, 34, 41, 43, 44, 54, 56, 59, 65, 67, 68, 71, 72, 74, 78, 84, 87, 91 and 92).....	31
(ii) Recommendations accepted and partially carried out so far: (Nos. 2, 25, 45, 81 and 96).....	5
(iii) Cases in which recommendations have been accepted with modifications or in which other suitable action has been or is being taken, or in which conditions have otherwise improved: (Nos. 8, 9, 17, 29, 33, 51, 53, 69, 77, 85, 86 and 88).....	12
(iv) Recommendations regarding which negotiations are still proceeding: (Nos. 3, 12, 18, 21, 22, 23, 27, 28, 30, 31, 35, 36, 37, 38, 39, 40, 42, 46, 47, 48, 49, 50, 57, 58, 60, 61, 70, 75, 88, 89, 93, 94, 95 and 97).....	34
(v) Recommendations not accepted or implementation postponed for various reasons, such as "time not yet ripe", "financial stringency", etc.: (Nos. 6, 7, 24, 52, 55, 62, 63, 64, 66, 79, 80, 83 and 90)	13
	—
	95
	—

From the above it will be seen that in the case of 43 reports the matters brought to notice have been satisfactorily disposed of while in 5 cases the recommendations have been partially carried out. The position in regard to these 5 cases is as follows:—

<i>Interim Report.</i>	<i>Subject.</i>	<i>Action Taken.</i>
No. 2.....	Klerksdorp and peri-urban area of Elandsheuevel	Recommendations have been carried out except that the question of the application of the Slums Act No. 53 of 1934 is still under consideration.
No. 25.....	East London and adjoining areas	Amalgamation of East London and Cambridge local authorities has been secured by special ordinance with effect from 1st January, 1942. Negotiations are still proceeding regarding other adjoining areas.
No. 45.....	Lower Blinkwater.....	Administration of area has improved and the question is receiving attention but the Department of Native Affairs is unable to assist at present in the removal of Native squatters.
No. 81.....	Margate and peri-urban areas	The status of the local authority has been raised and the boundaries of jurisdiction have been extended to a limited extent.
No. 96.....	New Ermelo.....	The transfer to Natives of allotments in the "head" of the township has been approved. The remaining recommendations are still receiving consideration.

It is to be regretted that owing to the prevailing need to curtail expenditure it has not been possible for the Provincial Administration of Natal to secure the appointment of a Local Government Inspector as recommended by the Committee in Interim Report No. 55. As a result, it is not possible to give effect to the recommendation contained in Interim Report No. 76.

The reluctance of the Provincial Administration of Natal to employ compulsion in instituting local government has been the subject of comment in previous annual reports. Thus, there appears to be little likelihood at present of securing the implementation of the recommendations of the Committee contained in Interim Reports Nos. 62, 63, 64, 66, 80 and 90, regarding Umhloti Beach, the peri-urban areas of Verulam, Tinley Manor (including Chakaskraal and Umhloti), Waschbank, Chailey and the three areas of Zaailager, Paapkuils and Wagendrift Island, respectively. The last-named three areas which to all intents and purposes are integral parts of Estcourt, have been the subject of correspondence with the Provincial

Administration for many years with a view to their inclusion in the Borough of Estcourt. There is no sound reason why these areas, on account of their geographical situation, should not be so included but the Town Council of Estcourt is opposed to the proposal and the Provincial Administration is not prepared to take action with the result that the insanitary conditions prevailing constitute a menace to the public health of Estcourt as well as of the areas themselves.

It should be mentioned, however, that an important new measure has recently been enacted by the Provincial Council, namely, the "Local Health Commission (Public Health Areas Control) Ordinance, 1941". It is designed to facilitate the introduction of control in areas in respect of which, for various reasons, the existing local government ordinances cannot be applied. It is to be hoped that the energetic application of the machinery provided by the Ordinance will result in the elimination in course of time of the numerous "black belts" and other uncontrolled areas of Natal, which have been a source of anxiety to the Department for many years past.

In the Orange Free State the Administration has also shown reluctance in initiating steps to institute local government and for this reason progress in implementing the recommendations of the Committee in respect of the peri-urban areas of Bloemfontein has not been as rapid as might have been hoped (*vide* paragraph 198 of the final report).

Opposition on the part of local authorities to proposals to extend urban boundaries to include "slum" areas may arise from misconceptions as to the extent of the consequential obligations imposed upon such local authorities. In paragraph 60 of its Report the Committee states "in the majority of cases the expenditure entailed in the supervision of such areas was overestimated by local authorities because of misconceptions as to the degree of control necessary to safeguard the public health".

With regard to the recommendations made by the Urbanised Areas Administration Committee in its final report, it is pleasing to record that those contained in the following paragraphs have been accepted and carried out or otherwise satisfactorily disposed of:—

Paragraphs 24, 37, 44, 75, 76, 86, 168, 182, 187, 205 and 326.

The prevailing economic conditions unfortunately have resulted in the postponement of action intended to give effect to a number of recommendations which would otherwise have been carried out. For the rest negotiations are still continuing and it may be said that in most instances steady progress is being made.

Perhaps the most important recommendations of the Committee are those relating to the institution of control in respect of the numerous peri-urban areas of Witwatersrand and Pretoria, contained in Chapter VI of the Report. These recommendations are receiving the careful consideration of the Provincial Administration, but much preliminary work requires to be undertaken and, as the unsatisfactory conditions in these areas appear to be steadily deteriorating the Executive Committee has recently agreed to the employment in the meantime of two health inspectors in addition to the inspector now operating in the peri-urban areas of Springs, Benoni and Brakpan. It is intended that one of the two additional inspectors should be required to operate in the peri-urban areas of Pretoria, particularly Eerste Rust, Riverside, East Lynne, Mooiplaats and Zwartkops. It is proposed that the second additional inspector should operate primarily on the central Witwatersrand, but it is evident that another inspector will be required if the more westerly areas of the Reef are to receive much needed attention within any reasonable time.

One of the findings of the Committee was that, generally speaking, the townships boards of the Provinces have shown a tendency in the past "to recommend the establishment of townships in and in the vicinity of existing urban areas before the intervening areas have been developed, thus, in some instances, adding gravely to the future burdens of local authorities" (*vide* paragraph 53). In so far as the Transvaal is concerned the Department views the position with considerable misgiving.

In paragraph 187 of its Report the Urbanised Areas Administration Committee expressed the opinion that "it would be to the material benefit of Natal generally if a town planning scheme were prepared for Durban and the whole of the South Coast". Although the Borough Council of Durban has now been required to prepare a town planning scheme for Durban the Provincial Administration has not so far taken steps to ensure the inclusion of the South Coast areas in such a scheme. There is no doubt that the development of these areas independently of one another is proceeding at a comparatively rapid rate so that any postponement in the adoption of measures to secure their co-ordinated and harmonious development in accordance with town planning principles must eventually produce an unsatisfactory state of affairs.

Another aspect of the conditions prevailing on the South Coast which was dealt with by the Urbanised Areas Administration Committee in some detail, was the question of water supplies (*vide* paragraphs 146 to 159, inclusive, of the Report). The greatly increased volume of urgent work being undertaken by the Department of Irrigation on behalf of the Department of Defence has so far rendered it impossible to give effect to the recommendations of the Committee contained in paragraphs 158 and 159 of its Report.

As far as the Cape Province is concerned the development of communal life, which has in recent years become cause for concern, is the popularity of the more remote coastal resorts. These watering places which, in the past, served only the farmers of the adjoining districts, have during recent years, through motor transport become accessible to a much larger public. The holiday season which was originally confined to a week or two over Christmas and New Year, has also become extended over the midsummer months. The result is that water supplies and waste disposal have now become major problems and over-crowding gives its annual quota of infectious disease cases including diphtheria and infantile paralysis, which are rushed back to their homes where they become the foci for further spread.

A survey of all such coastal resorts extending from the north of the Olifants River mouth to the wild coast of Pondoland has been nearly completed. The local authorities concerned have been advised of the Department's requirements and it is trusted that this action will remove a very real threat to the health of the community in general. Unfortunately the main problem of so many of the smaller resorts is the question of water supplies. These townships, which were established on the original camping sites whose locations depended upon the proximity of good beaches and fishing grounds, were not influenced by the accessibility of water supplies. In the days of ox- and horse-drawn transport there was no difficulty in bringing along a cask of water and having this refilled at the nearest farm as occasion demanded during the week of vacation. Camp life in turn gave way to simple seaside houses, whose roofs provided some catchment for a water-butt which was still augmented from the nearest farm.

To-day, however, the bungalows and shacks have given place to more elaborate structures, the increased cost of which has frequently to be offset by letting. More often than not tenants are town dwellers who are accustomed to an abundant water supply and therefore give no thought to conservation until the limited holiday supply is exhausted. It was never intended that these townships should become permanent residential areas and they have developed far beyond what was originally anticipated. This fact associated with larger numbers and a longer season has made the problem of water supply a very real one which can no longer be met by the scanty rainfall of our coastal regions. Apart from improving conditions at existing seaside townships it has therefore become the concern of this Department to endeavour to ensure that no further townships are established with similar inadequate water supplies.

4. NATIVE HEALTH SERVICES.

(a) *Urban.*

The large urban authorities provide, in addition to the usual sanitary services, clinics of several kinds to meet the needs of the location populations. Increasing numbers of Native nurses, midwives, and even health visitors are being appointed to urban locations, and during the past two or three years trained Native male health assistants have also been appointed, usually with encouraging results. The cases seen at child welfare and other clinics of a general nature reveal how great is the need for the instruction of urban Natives in the science and art of the making of healthy homes and the provision of suitable dietaries for growing children. It is in this field that there lie great opportunities for Native health visitors and Native health assistants, who can do so much to enlighten and instruct those who are superstitious and ignorant.

Going a step further back still, it is being increasingly realised how much ill-health is due to the sheer lack of milk and other protective foods. A significant development which does great credit to the insight of the municipalities concerned has been the establishment of municipal milk shops in several locations, at which milk is sold at cost price—usually 1½d. or 2d. a pint—to the residents. Experience at the Germiston Location has been that all the milk offered is sold, and that there has been an increase of some 500 per cent. in the volume of sales over a period of ten months. In fact, poor as the people are, it appears that the limiting factor in the total daily consumption is not the purchasing power of the location residents, but the availability of milk at low contract prices. At the time of writing the total daily consumption in the Germiston Location, which is probably ahead of all others, was in the neighbourhood of 360 gallons—barely one third of a pint per head of population, but a very great advance on the average for another Reef location of only one-tenth of a pint per day.

Coming to the smaller urban local authorities, great differences are found in the scope of the medical and sanitary services provided in the locations under their control. Generally speaking there is an increasing appreciation of the importance and value of such services to the community as a whole as well as to the particular section who benefit immediately from them, but there are still many authorities who lag a long way behind the general standard. In some of these places the lack of interest of the constituted local authority is to some extent compensated for by the enthusiasm of voluntary child welfare and kindred organisations.

Of special interest is the polyclinic developed by the University of the Witwatersrand from a Health Centre already established by missionary effort in the Alexandra Native Township outside Johannesburg. A full-time medical officer is in charge, and he is assisted by senior students from the medical faculty. Students are thus afforded not only a practical training in outpatient work but also an introduction to those sociological and economic problems which complicate the practice of medicine among the very poor.

(b) *Rural.*

On paper it would appear that the provision for the medical needs of Native areas is very inadequate, limited as it is to district surgeons, often each serving many thousands of people, and mission hospitals, working usually under serious limitations of funds and equipment. It must not be forgotten, however, that many Natives still prefer to patronise their own primitive medicine men, and there is no guarantee that the mere multiplication of part-time district surgeoncies would of itself do much to diminish this preference. It is also true that even when Natives do come to the surgeries and hospitals of European doctors they usually do so as a last resort and then pin all their faith on the bottle of medicine which they receive. They pay little if any heed to the advice they may be given as to how to avoid a recurrence of their troubles and how to prevent ill-health generally, because to do so would involve radical changes in their whole way of thought and life. Perhaps it is because district surgeons know how futile is the giving of such advice that in course of time many of them almost cease giving it. The medical missionaries, too, usually find themselves so overwhelmed with curative work in their rapidly expanding hospitals that they lack the time to preach effectively the gospel of hygienic living.

The net result is that, while undoubtedly rural Natives are in ever increasing numbers coming to place more faith in hospitals and in the use of European medicines, the ignorance and insanitation which are responsible for so much of their ill-health are as great as ever, and at the same time the consequences of insanitary practices and habits are becoming more serious than ever owing to the increasing density of population in the reserves.

It is not a function of the Department, or indeed of any other department, to provide free medical services for the Native population as a whole. The Department is, however, properly concerned with measures for promoting the public health. Foremost among such measures is the education of Natives in personal and public hygiene. In such a matter the primary difficulty is to establish points of contact through which propaganda will be successful. The approach must be made not necessarily by the same methods as have proved successful in dealing with Europeans, but by methods specially adapted to the circumstances and outlook of the rural Native in his natural environment. Such methods are best evolved through experimentation and observation in the field. The Department has in hand two schemes which afford opportunities for the making of such studies. One is the Rural Clinic Scheme in the Umtata district of the Transkei, and the other is the Polela Health Unit in Natal. It may be added that another Health Unit is to be established during the coming year at Bushbuckbridge in the Eastern Transvaal, so that investigations will be carried out under the varying conditions of three different provinces.

The Umtata Rural Clinic Scheme.—This service has been established through the financial generosity of the Native Recruiting Corporation, aided by statutory departmental grants. It consists of seven clinics at each of which a Native nurse is resident. The rondavels in which the clinics are held and the nurses reside have been built by the Natives themselves, the establishment of a clinic being dependent upon this measure of local interest and co-operation. The nurses daily undertake the issuing of simple medicines and the dressing of wounds, ulcers, etc. Their principal activities, however, are directed towards the enlightenment and instruction of the women in matters relating to infant welfare. Not only are infant clinics conducted, but many visits are paid to the homes of the people. Constant emphasis is laid upon the value of obedience to the laws of healthy living as opposed to a policy of waiting until a disease has made its appearance and then placing reliance upon mere medicine for its cure.

Each clinic is visited once a week by a doctor, who is engaged in a full-time capacity in this service, and the whole scheme is under the general control and

guidance of the Department's Medical Inspector stationed at Umtata. The doctor's visits afford supervision and stimulus to the nurses, and provide for accurate diagnosis and more advanced treatment of the more serious disorders among those attending the clinics. One day a week is specially reserved for the giving of health talks and demonstration.

The scheme was inaugurated in January, 1941, and the results already achieved have been most encouraging. The detailed and continuous observations made at such clinics render possible a more accurate analysis of the factors responsible for the appallingly high infantile death-rates known to exist in Native areas and this in turn may assist in an evaluation of the effectiveness of the various methods used to combat this high mortality. Careful records are being kept of the work of the clinics and it is anticipated that these will prove of great value as a guide to the lines along which such work should be developed and extended. Mention may be made of one interesting finding. In certain observations the death-rate among children up to the age of two years was forty-five per cent. in "red" (heathen and illiterate) families, whereas it was only 26.7 per cent. in "dressed" (Christianised and semi-civilised) families. These figures refute the idea still prevalent in some quarters, that under "natural" rural conditions all is well with the health of the Native. They also demonstrate the value of enlightenment and education as a factor appreciably influencing health conditions.

Polela Health Unit.—The work of this unit, which was described in some detail in last year's report, continues to develop under the same team, to whom have now been added two Native nurses. Progress is being made in the difficult task of winning the interest and confidence of the people in entirely new methods of approach to their health needs.

The supreme aim of the unit is to advance health standards by an improvement of living conditions brought about by the conscious and intelligent efforts of the people themselves. The first step towards the achievement of such an aim is to secure an accurate knowledge of existing conditions and customs, from which will follow a selection of the most important adverse influences on health and corresponding measures for their reduction or elimination. The Native staff of this unit have accordingly been given an intensive training in survey work in which are incorporated training in hygiene, health propaganda, first-aid and elementary "spotting" of disease.

During the year 2,500 home visits have been paid by the Native health assistants, in the course of which much valuable information has been collected. The detailed mapping of the district has been continued, thus providing a basis, which has already proved of practical value, for the control of epidemics and the tabulating of vital statistics. At each kraal visited careful notes have been made with regard to housing conditions, water supplies, sanitation, food production and storage, etc.

Several outbreaks of enteric have been successfully handled and brought to a conclusion in their very early stages. A clinic has been established for the treatment of venereal diseases and, thanks to the follow-up propagandist activities rendered possible by the small team of Native health assistants actively moving about the district, has secured an average number of attendances per person treated at least three or four times greater than that achieved at the ordinary rural venereal disease clinics in Natal. Special emphasis has been laid upon the fundamentally important public health measure of the systematic treatment of syphilis in pregnant women.

With the whole-hearted co-operation of the education authorities an altogether new type of work has been established. Some 1,000 clinical observations and somatometric measurements of school children have been made and recorded. These observations have revealed many cases of avitaminoses, postural defects and various preventable skin disorders. Progress has been made in elucidating to both teachers and pupils the causes of such preventable conditions and, as will be seen later, in the establishment of practical measures for overcoming them.

A general therapeutic clinic established in January, 1941, has been attended by over 600 persons of all ages. Height and weight records, as well as clinical observations, have enabled the medical officer to present a most interesting and thought provoking analysis of pathological conditions prevalent among this entirely rural population. It is rare for a patient to have a single pathology. Capeworm infestation is extremely common. The vast majority of women are affected in varying degree with goitre. Avitaminoses and preventable chronic infections are very common, and it is not surprising that detailed measurements show that both adults and children are below standard weight and height. Postural defects are common.

The problem of securing adequate nutrition is one that depends for its complete solution upon the success of measures to combat soil erosion, which has already reached tragic proportions in this area, and upon the improvement of agricultural methods among the Natives. The contribution which can be made by the Health Unit is the education of the people in an appreciation of the dire consequences to themselves of a lack of protective foodstuffs, which will supply them with the incentive to produce and to utilise them. With this end in view a two acre garden has been established at the headquarters of the Health Unit, and in this is grown not only a wide range of ordinarily cultivated vegetables but also several of the wild spinaches (imifino) which occur in the area and are known to the people. Compost is made and used in the garden, and the whole scheme affords a most valuable demonstration, to patients, teachers, school children and all visitors to the clinic, of how to produce vegetable protective foods.

The products of the garden contribute towards a vegetable meal, prepared and served once a week at each of two schools during the first half of 1941. The meal is prepared under the immediate supervision of health assistants of the Unit, and is made an occasion for instruction in food values. This instruction is not merely theoretical, as is too often the case in schools, but includes visual recognition of vegetables and wild spinaches as they grow and a demonstration of the correct methods of preparation of such foods.

A Nutrition Clinic and Class, for the special benefit of persons suffering from obvious malnutrition referred from the general therapeutic clinic, has been established. Discussion of their complaints is correlated with the collection, preparation and administration of vegetable meals from the garden at the Unit. The achievement of obvious clinical improvement *by the utilisation of resources which they themselves can command and without bottles of medicine* will undoubtedly have far-reaching and most beneficial effects upon Native ideas as to the origin and prevention of disease.

Work along the lines being established by the Health Unit is pioneer and experimental. It represents an attempt to take account of the special circumstances and outlook of the rural Native in health and disease, and to shape his medical services accordingly instead of merely presenting him with a pattern evolved to suit the very different circumstances and outlook of the European. It will necessarily take a long time to elaborate the most suitable methods in this new technique of approach, nor can an immediate wholesale response be looked for from the Natives themselves.

5. INFANT WELFARE.

The figures on Table 25, show that there is no decrease in infantile mortality this year among Europeans. The Cape and Orange Free State show a considerable decrease but the Transvaal and Natal show an increase which is marked in the latter case. The infantile mortality rate compared with other countries, as reflected in Table 4, is not excessive. There is, however, much room for improvement and it must be emphasised that this figure refers only to the European section of our community. It is not only necessary to keep infants alive but crippling and disease must also be prevented and a great deal of the responsibility for this, during the child's earliest days, falls on the midwife. The importance of every woman having a fully qualified midwife trained in mothercraft to attend her before, during and after childbirth cannot be too strongly emphasised.

TABLE 25.—EUROPEAN INFANTS: BIRTHS AND DEATHS UNDER ONE YEAR REGISTERED AND INFANTILE MORTALITY RATE, I. E. DEATH RATE PER 1,000 BIRTHS, 1919-1940.

Year.	Cape.			Natal.			Transvaal.			Orange Free State.			Union.		
	Total European Births Registered.	Deaths of European Children under One Year.	Death-rate per 1,000 Births.	Total European Births Registered.	Deaths of European Children under One Year.	Death-rate per 1,000 Births.	Total European Births Registered.	Deaths of European Children under One Year.	Death-rate per 1,000 Births.	Total European Births Registered.	Deaths of European Children under One Year.	Death-rate per 1,000 Births.	Total European Births Registered.	Deaths of European Children under One Year.	Death-rate per 1,000 Births.
1919.....	16,749	1,351	80.66	2,910	191	65.64	15,338	1,326	86.45	4,727	382	80.81	39,724	3,250	81.81
1920.....	18,425	1,654	89.77	3,256	235	72.17	16,768	1,576	93.99	4,996	448	89.67	43,445	3,913	90.07
1921.....	18,062	1,382	76.51	3,370	203	60.24	16,582	1,374	82.86	5,288	379	71.67	43,302	3,338	77.09
1922.....	18,248	1,294	70.91	3,294	180	54.64	16,370	1,292	78.92	4,920	357	72.56	42,832	3,123	72.91
1923.....	18,296	1,353	73.95	3,229	197	61.01	15,619	1,261	80.74	5,037	328	65.12	42,181	3,122	74.42
1924.....	18,730	1,296	69.19	3,410	273	80.06	16,287	1,171	76.60	4,919	382	77.66	42,346	3,122	73.73
1925.....	18,366	1,343	73.12	3,509	206	58.71	16,348	1,059	64.78	5,188	361	69.58	43,411	2,969	68.39
1926.....	18,675	1,196	64.04	3,588	189	52.68	16,304	1,186	72.74	5,309	273	51.42	43,876	2,844	64.82
1927.....	18,637	1,293	69.75	3,435	166	48.32	17,050	1,339	79.71	5,325	314	58.97	44,347	3,132	70.63
1928.....	18,032	1,240	68.77	3,514	184	52.36	17,949	1,370	76.33	5,318	365	68.63	44,813	3,159	70.49
1929.....	19,008	1,169	61.50	3,650	177	48.49	18,227	1,342	73.63	5,334	280	52.49	46,219	2,968	64.22
1930.....	19,468	1,332	68.37	3,641	159	43.65	19,108	1,386	72.54	5,317	300	56.42	47,524	3,177	66.84
1931.....	19,180	1,182	61.63	3,538	162	45.79	18,733	1,297	67.65	4,375	317	63.72	46,423	2,928	63.07
1932.....	18,284	1,205	65.90	3,373	204	60.48	18,376	1,402	76.30	4,911	271	55.18	44,944	3,082	68.57
1933.....	17,931	995	54.49	3,441	166	48.24	18,452	1,266	68.61	4,995	290	63.68	44,519	2,716	61.01
1934.....	17,642	1,022	57.93	3,310	157	47.43	19,327	1,279	66.18	4,599	270	58.71	44,878	2,728	60.79
1935.....	18,242	1,016	55.70	3,441	167	48.53	21,109	1,537	72.81	4,925	277	56.24	47,717	2,997	62.81
1936.....	18,162	980	53.96	3,006	189	52.41	22,192	1,454	65.52	4,070	249	53.32	48,030	2,872	59.06
1937.....	18,404	1,012	54.99	3,766	175	46.47	23,814	1,439	60.43	4,894	252	51.49	50,878	2,878	56.57
1938.....	18,727	962	51.37	3,886	193	49.67	24,568	1,322	53.81	4,884	214	43.82	52,065	2,691	51.69
1939.....	19,022	984	51.73	4,056	151	37.23	25,795	1,394	50.55	4,944	209	45.00	53,517	2,648	49.48
1940.....	19,091	872	45.68	4,218	224	53.11	26,383	1,431	54.24	4,747	198	41.71	54,439	2,725	50.06

Statistics for mixed Coloureds and Asiatics show a very high infantile mortality rate. The position is reflected in Table 26.

TABLE 26.—INFANTILE MORTALITY : ASIATICS AND MIXED, 1940.

Province.	Asiatics.			Mixed and other Coloured.		
	Live Births.	Infantile Deaths.	Rate per 1,000 Births.	Live Births.	Infantile Deaths.	Rate per 1,000 Births.
Cape.....	377	75	198·94	35,382	5,580	157·71
Natal.....	7,644	663	86·73	785	101	128·66
Transvaal.....	1,510	165	109·27	1,890	303	160·32
Orange Free State.....	—	—	—	309	52	168·28
UNION.....	9,531	903	94·74	38,366	6,036	157·33

The figures which are available for Natives are very incomplete but medical officers working in locations and Native areas report an excessive mortality rate among Native infants due mainly to intestinal diseases which are caused by bad feeding and dirt.

6. MATERNAL WELFARE.

The maternal mortality rate for Europeans is decreasing steadily as shown in Table 27. The mortality due to puerperal sepsis is still, however, at the relatively high figure of 1·23 per 1,000 as compared to ·86 in England in 1938.

TABLE 27.—MATERNAL MORTALITY : EUROPEANS.

Year.	Live Births Registered.	Deaths due to Puerperal Causes.				
		Number.		Rates per 1,000 Live Births.		
		Puerperal Sepsis.	Other Puerperal Causes.	Puerperal Sepsis.	Other Puerperal Causes.	Total Puerperal Mortality.
1926.....	43,876	88	112	2·06	2·50	4·56
27.....	44,347	101	112	2·28	2·53	4·81
28.....	44,809	102	121	2·28	2·70	4·98
29.....	46,219	140	103	3·03	2·23	5·25
30.....	47,536	119	131	2·50	2·76	5·26
1931.....	46,423	116	102	2·50	2·20	4·70
1932.....	44,944	126	113	2·80	2·51	5·31
1933.....	44,519	113	101	2·54	2·27	4·81
1934.....	44,878	121	148	2·69	3·30	5·99
1935.....	47,717	119	107	2·49	2·24	4·73
1936.....	48,630	116	132	2·39	2·71	5·10
1937.....	50,878	99	124	1·94	2·44	4·38
1938.....	52,065	78	114	1·50	2·19	3·69
1939.....	53,517	69	124	1·29	2·32	3·61
1940.....	54,439	67	116	1·23	2·13	3·36

The maternal mortality rates for Asiatics and for mixed and other Coloureds are reflected in Table 28.

TABLE 28.—MATERNAL MORTALITY : ASIATICS AND MIXED—UNION, 1940.

Year.	Live Births Registered.	Deaths due to Puerperal Causes.				
		Number.		Rates per 1,000 Live Births.		
		Puerperal Sepsis.	Other Puerperal Causes.	Puerperal Sepsis.	Other Puerperal Causes.	Total Puerperal Mortality.
ASIATICS.						
1940.....	9,531	16	37	1·68	3·88	5·56
MIXED AND OTHER COLOURED.						
1940.....	38,366	81	129	2·11	3·36	5·47

Enquiries made into the history of cases of puerperal sepsis notified appeared to indicate that in very many instances there was no trained midwife attending the confinement or that the home conditions were bad. In addition to the actual deaths resulting from child birth there is a large amount of preventable chronic ill-health and crippling among women and children due to bad midwifery.

There are still far too many untrained women allowed to practise midwifery. There do not appear to be sufficient trained midwives for the needs of the population, but while the untrained are allowed to practise without restraint in many areas there is insufficient incentive for women to train and become qualified midwives. The midwifery regulations, which are in force in all urban areas in the Union and certain rural areas in the Cape, put the onus on the local authority of keeping a list of, and exercising supervision over, the midwives practising in its area, but very few local authorities, apart from those running fully staffed health departments, carry out their duties adequately in this regard. Where there is not a full-time medical officer of health there is rarely any supervision over the midwives and even lists are not adequately kept; there are still local authorities who keep no list at all while many others have lists which are not complete, especially as regards non-European midwives.

The Department is constantly trying to stimulate interest and a sense of responsibility regarding these matters in local authorities. The Department also assists local authorities by inspecting midwives and reporting on them in centres where there is not a full-time medical officer of health.

Up to the present only four towns have been proclaimed as "prescribed areas" under section 39 (b) of the Medical, Dental and Pharmacy Act (No. 13 of 1928) where only medical practitioners and registered midwives are allowed to practise midwifery. Pietermaritzburg was so proclaimed this year.

TABLE 29.—EUROPEAN DEATHS FROM PUERPERAL CAUSES BY AGE GROUPS.

Causes.	1939.							1940.								
	All Ages.	15-19.	20-24.	25-29.	30-34.	35-39.	40-44.	45 and Over.	All Ages.	15-19.	20-24.	25-29.	30-34.	35-39.	40-44.	45 and Over.
<i>Post Abortive Infection.</i>																
Spontaneous, Therapeutic or of Unspecified Origin.....	19	3	3	4	4	3	2	—	24	2	3	3	8	6	2	—
Abortion Induced for Reasons other than Therapeutic.....	—	—	—	—	—	—	—	—	3	—	2	1	—	—	—	—
<i>Abortion without mention of Septic Condition.</i>																
Spontaneous, Therapeutic or of Unspecified Origin.....	8	—	1	1	1	3	2	—	2	—	—	—	1	1	—	—
Abortion Induced for Reasons other than Therapeutic.....	—	—	—	—	—	—	—	—	4	—	1	—	2	1	—	—
Ectopic gestation.....	13	—	2	3	5	2	—	1	8	—	1	3	1	2	1	—
<i>Haemorrhage of Pregnancy.</i>																
Haemorrhage from Placenta Praevia.....	—	—	—	—	—	—	—	—	3	—	—	2	—	—	1	—
Haemorrhage from Premature Separation of Placenta and other Accidental Haemorrhage during Pregnancy (except Abortion).....	—	—	—	—	—	—	—	—	2	—	—	1	—	1	—	—
Other and Unspecified Haemorrhage of Pregnancy, Toxaemias of Pregnancy.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Eclampsia of Pregnancy.....	—	—	—	—	—	—	—	—	3	—	1	2	2	—	—	—
Albuminuria and Nephritis of Pregnancy.....	—	—	—	—	—	—	—	—	8	1	2	2	1	1	1	—
Acute Yellow Atrophy of Liver Associated with Pregnancy.	—	—	—	—	—	—	—	—	4	—	2	—	1	1	—	—
Other Toxaemias of Pregnancy.....	7	—	1	3	2	—	1	—	6	—	2	1	2	—	1	—
Other Diseases and Accidents of Pregnancy, Haemorrhage of Childbirth and the Puerperium.....	3	—	1	2	—	—	—	—	2	—	2	—	—	—	—	—
Haemorrhage from Placenta Praevia during Childbirth.....	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—
Haemorrhage from Premature Separation of Placenta during Childbirth.....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Haemorrhages during Childbirth.....	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—
Other Haemorrhages after Childbirth.....	26	—	6	9	5	5	1	—	21	2	4	5	3	5	2	—
General or Local Puerperal Infection (including Puerperal Tetanus) with or without mention of Pyelitis.....	50	—	15	12	7	13	3	—	29	2	7	11	6	2	1	—
Puerperal Thrombo Phlebitis.....	—	—	—	—	—	—	—	—	2	—	—	1	—	1	—	—
Puerperal Embolism and Sudden Death.....	11	—	2	2	3	2	2	—	9	2	—	2	3	1	1	—
Puerperal Eclampsia.....	—	—	—	—	—	—	—	—	14	—	1	3	4	3	3	—
Puerperal Albuminuria and Nephritis.....	32	4	5	6	6	6	5	—	1	—	1	—	—	—	—	—
Acute Yellow Atrophy of Liver (Post-Partum).....	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Other Puerperal Toxaemias.....	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
Other Accidents of Childbirth.....	22	—	3	6	5	4	4	—	31	1	2	11	9	4	4	—
Other or Unspecified Diseases of Childbirth and the Puerperium	2	—	1	—	1	—	—	—	1	—	—	—	1	—	—	—
TOTALS.....	193	7	40	48	39	38	20	1	183	10	32	47	47	30	17	—

7. NURSING AND MATERNITY HOMES.

Tables 31 to 33, show the number of nursing homes registered with this Department on 30th June, 1941, together with the number of beds they contain and their personnel. Out of 381 nursing and maternity homes 251 have been inspected during the year; details are shown in Table 30.

No definite standards have as yet been laid down for nursing or maternity homes, because, owing to the inadequacy of hospital and nursing home accommodation and nursing services generally in rural areas, it is considered that it would be unwise to do so and each case is therefore treated on its merits. The standards which are accepted vary according to the facilities available in each area. Since the compulsory registration of nursing and maternity homes in 1935, regular inspections have been made and have led to a steady improvement in the standards of these homes, particularly as regards those for Europeans. The improvement in nursing homes and private hospitals for non-Europeans, especially Natives, the majority of which are run by missions, has not been so marked. Propaganda has made Natives more hospital minded with the result that homes and hospitals for non-Europeans are frequently seriously overcrowded and under staffed.

During the past year progress in the improvement in the standard of nursing homes has received a set-back on account of the war which has led to lack of funds, scarcity of building material and workmen and scarcity of suitably trained nurses.

The following figures show an unsatisfactory state of affairs which is due to the scarcity of suitably trained nurses:—

- (i) Sixteen nursing homes run by unqualified women admit maternity cases and eight of these admit general cases also.
- (ii) Forty-seven homes run by midwives admit general medical and surgical cases in addition to maternity cases.
- (iii) Fourteen homes run by nurses with only medical and surgical training admit maternity cases.
- (iv) Seventeen homes admitting general and maternity cases are run by medical practitioners, some of whom have qualified nurses on the staff while others have not.

The fact that the Department finds it necessary to register any nursing homes which are controlled by unqualified nurses is in itself very unsatisfactory. The position is, however, rendered worse by the fact that some small homes, run by unqualified people, which are registered in country districts with the intention that they should provide two or three beds for maternity cases are found to have developed into general nursing homes where surgical work is undertaken. Surgical work should not be done in any home which is not properly equipped and, apart from this, the type of work which is undertaken may be a menace to the maternity cases in the home. There is urgent need for accommodation for the normal indigent maternity case and there is no doubt that many so called normal cases who would otherwise be strong and healthy are, as a result of confinements carried out under unsatisfactory conditions, condemned to a life of ill-health.

The unsatisfactory state of maternity services is a matter of grave concern to the Department and the problem will be discussed by the Committee which has been appointed to consider the financial relations between the Union Government, the Provincial Administrations and the Local Authorities.

TABLE 30.—NURSING AND MATERNITY HOMES INSPECTED DURING THE YEARS ENDED 30TH JUNE, 1936, 1937, 1938, 1939, 1940 AND 1941, RESPECTIVELY.

Place.	INSPECTIONS.											
	By Medical Officer of Local Authority.						By Departmental Medical Officer.					
	1936.	1937.	1938.	1939.	1940.	1941.	1936.	1937.	1938.	1939.	1940.	1941.
<i>Cape Province.</i>												
Cape Town.....	4	7	11	27	22	23	—	—	—	—	—	—
East London.....	4	4	6	7	4	8	—	—	—	—	2	3
Port Elizabeth.....	8	14	5	5	4	5	—	—	2	—	—	—
<i>Elsewhere</i>	—	3	—	—	1	2	34	81	35	73	57	65
<i>Natal Province.</i>												
Durban.....	—	11	18	17	11	16	—	—	1	—	—	—
Pietermaritzburg.....	—	3	3	—	—	2	—	—	—	—	—	—
<i>Elsewhere</i>	—	—	—	—	—	—	24	2	27	15	15	27
<i>Transvaal Province.</i>												
Johannesburg.....	2	54	43	36	28	27	—	2	4	—	—	—
Other Rand L.A.'s.....	—	—	9	6	14	10	—	—	4	—	—	—
Pretoria.....	5	13	7	5	7	7	—	—	—	—	1	2
<i>Elsewhere</i>	1	5	—	—	1	—	65	30	54	40	34	28
<i>Orange Free State.</i>												
Bloemfontein.....	—	—	—	—	—	—	—	—	5	4	4	—
<i>Elsewhere</i>	—	—	—	—	—	—	29	8	25	36	19	26
UNION.....	24	114	102	103	92	100	152	123	157	168	132	151

TABLE 31.—NURSING HOMES REGISTERED WITH THE DEPARTMENT.

Year.	Cape.	Transvaal.	Natal.	Orange Free State.	Total.
As at 30/6/1929.....	104	90	43	26	263
As at 30/6/1930.....	124	91	54	29	298
As at 30/6/1931.....	110	98	51	25	284
As at 30/6/1932.....	95	94	44	26	259
As at 30/6/1933.....	105	100	46	25	276
As at 30/6/1934.....	115	103	43	28	289
As at 30/6/1935.....	126	128	42	28	324
As at 30/6/1936.....	120	116	46	34	316
As at 30/6/1937.....	134	120	49	35	338
As at 30/6/1938.....	140	126	55	55	376
As at 30/6/1939.....	147	124	61	48	380
As at 30/6/1940.....	146	125	62	52	385
As at 30/6/1941.....	145	123	60	53	381

TABLE 32.—BED ACCOMMODATION AVAILABLE IN NURSING HOMES.

Province.	1938.		1939.		1940.		1941.	
	Euro-pean.	Non-Euro-pean.	Euro-pean.	Non-Euro-pean.	Euro-pean.	Non-Euro-pean.	Euro-pean.	Non-Euro-pean.
Cape.....	1,427	117	1,230	262	1,340	231	1,327	221
Transvaal.....	1,596	217	1,325	240	1,277	194	1,569	197
Natal.....	655	711	803	629	655	615	982	924
O.F.S.....	284	13	166	18	187	3	223	13
TOTALS.....	3,962	1,058	3,524	1,149	3,459	1,043	4,101	1,355

TABLE 33.—PERSONNEL OF NURSING HOMES.

Province.	European.		Non-European.	
	Qualified.	Unqualified.	Qualified.	Unqualified.
Cape.....	281	174	13	46
Transvaal.....	354	189	6	45
Natal.....	186	111	9	65
O.F.S.....	58	9	—	—
TOTALS.....	879	483	28	156

8. DISTRICT NURSING SERVICES.

An analysis of Table 34 shows that there has been an increase in the number of district nurses appointed under all sections of Act 57 of 1935 except section 14 (b). The total increase of from 438 in 1940 to 474 in 1941 is not as great as it was last year but considering war conditions it is very encouraging. The greatest increase was under section 13, i.e., appointments of district nurses by hospital boards. In this connection it may be mentioned that the Johannesburg District Nursing Service is now run in conjunction with the Johannesburg Hospital. An aspect of district nursing services which is tending to develop is the appointment of nurses, under the control of hospital boards, to work in areas outside the town where the hospitals are situated. A number of hospital boards in the Cape Province have agreed to the appointment of district nurses under their control to work in out-lying centres. In the Orange Free State there is as yet only one district nurse appointed by a hospital board to work in a centre away from the town where the hospital is situated. In the Transvaal and Natal no nurses appointed by hospital boards have as yet been placed in centres away from the hospitals but the Transvaal Provincial Administration is, in some instances, allowing such nurses to carry out work in the country districts in the neighbourhood of the hospital towns.

Apart from district nursing services under hospital boards or mission hospitals there are three district services being run in rural areas where a number of nurses under the same general control are placed at different points in a particular locality. These are important services in their respective areas and merit further description.

A district nursing service is being run by the King Edward Order of Nurses for Europeans on the Orange River irrigation settlements above Upington. There are four midwives and one doubly qualified nurse situated at various points on the settlement where there are clinics. The doubly qualified nurse has a car and acts as supervisor over the work of the other nurses; she also does all the general nursing and sees all patients before they are referred to a doctor. The King Edward Order of Nurses is financially responsible for this service and receives a refund of one-third of the nurses' salaries from this Department under section 14 (a) of Act 57 of 1935.

There is a district nursing service for Natives in released areas in the Pietersburg district. This service is under the control of and is run by the Native Local Council at Pietersburg. There are eleven nurses and nursing assistants working at eleven clinics situated in different locations within a radius of from eighteen to sixty miles from Pietersburg. The District Surgeon visits these clinics and the nurses refer cases to him and work under his instructions where necessary. These nurses also give health teaching and attend to midwifery cases. The Department refunds one-third of the salaries of these nurses under section 15 (a) of Act 57 of 1935.

In the Transkei a district nursing service was started in 1939 as an experiment and is doing useful work. The service consists of twenty-five clinics situated at different centres or locations and staffed by twenty-five Native nurses and Native nursing assistants. These are under the general control of the Departmental Medical Inspector in the Transkei working in conjunction with the Chief Magistrate. The main object of these clinics is health education and, while minor ailments are treated, any case needing medical attention is referred to a medical practitioner. A medical officer has recently been appointed to visit the clinics in the Umtata district. Her salary is paid out of funds generously donated by the Native Recruiting Corporation which has made available an annual grant of £1,500 per annum for two years towards the service in the Umtata area. The majority of the nurses are subsidised by this Department in terms of section 15 (b) of Act 57 of 1935. Three huts, one for the clinic and two for the accommodation of the nurse, are provided by the people of the location in each case. The nurse also collects fees where possible and this money is used for the purchase of medical stores.

During the past year 238 of the district nursing services were inspected by the Department. These services in small centres and rural areas still leave much to be desired and improvement is hindered by lack of funds and transport and by insufficiency of adequately trained nurses. Transport is essential in rural areas but the cost is out of all proportion to the services rendered. The difficulty regarding the insufficiency of suitably trained nurses is partly due to the multiplicity of duties which are expected of district nurses in rural areas. In large urban areas nursing services are specialised; district midwives do midwifery, district nurses do home nursing and the follow-up of discharged hospital cases, etc., health visitors do home visiting, health propaganda and teaching and also assist at clinics. In small centres and rural areas, however, the district nurse has perforce to undertake all health and nursing duties unaided and often with no medical practitioner to whom she can refer. Consequently district nurses in rural areas should be more highly trained and better qualified because of their greater responsibilities. Unfortunately, however,

it is hardly, if ever, the case that rural district nurses are so qualified. The training of midwives and nurses does not include district nursing with the result that many nurses and midwives start work in rural areas with only their hospital experience and no idea of what their work will be nor of how it should be done.

There are courses for health visitors and school nurses run at Cape Town, Johannesburg and Durban and such training is very valuable to district nurses but unfortunately, as far as the rural areas are concerned, most of the nurses who take the additional qualification are absorbed as health visitors in the larger towns or into the school nursing services. A knowledge of mothercraft is also essential for district nurses. There is a mothercraft training centre at the Lady Buxton Home at Cape Town and the course may be taken either separately or combined with the health visitors course. The Moedersbond Maternity Home and Training School for midwives at Pretoria also includes mothercraft in its training. It has been suggested that mothercraft training should be included in the instruction given to all midwives but this has not yet been put into effect.

The Department tries to assist district nursing services through the Nurse-Lecturers who give advice both to the committees and individual nurses when they are inspecting the services. In view, however, of the many duties which have to be performed by the staff it is not possible to give as much individual attention to the district nurses as is desirable.

The South African National Council for Child Welfare has two itinerant nurses who are available to child welfare societies. These nurses not only inspect services but stay in a centre and work with the district nurse, demonstrating her duties to her. The organisation occasionally makes the services of these nurses available to other societies and committees running district nursing services on the recommendation of this Department and these facilities are very useful to the bodies and district nurses concerned.

TABLE 34.—DISTRICT NURSING SERVICE: NURSES, MIDWIVES AND NON-EUROPEAN NURSING ASSISTANTS AS AT 30TH JUNE, 1941, IN RESPECT OF WHOM SUBSIDIES OR PART-REFUNDS OF SALARIES ARE PAID, COMPARED WITH THE TOTALS AS AT 31ST DECEMBER, 1935.

Race.	Part-refunds under section 14 (a).		Subsidies under section 14 (b).		Part-refunds under section 15 (a).		Subsidies under section 15 (b).		Part-refunds to Provincial Administrations under section 13.	
	1935.	1941.	1935.	1941.	1935.	1941.	1935.	1941.	1935.	1941.
European.....	23	97	7	70	—	13	—	—	—	118
Native.....	2	13	—	—	11	52	3	61	—	53
Coloured.....	—	8	1	6	—	1	—	2	—	—
All Races.....	25	118	8	76	11	66	3	63	—	151

9. GENERAL HOSPITALS.

As in the past, hospital inspections on behalf of the Provincial Administrations have been continued, except where such institutions fall directly under Provincial Management as in Natal, and the central hospitals at Bloemfontein and Kroonstad in the Orange Free State. Hospitals on the Reef and Pretoria are inspected by members of the Public Hospitals Advisory Council.

The aim has always been to inspect each institution at least once a year. For the last few years, however, this policy could not be entirely fulfilled and inspections have been restricted mainly to such hospitals as could conveniently be done while departmental investigations were being carried out or local authority areas were being inspected, or on special request from the Provincial Secretaries.

This Department in consultation with the Public Works Department, continues to give advice to the Provincial Administrations, on new hospital projects, additions and alterations to existing hospital buildings and on staffing arrangements.

Considering the emergency conditions existing at the present moment, normal hospital development as envisaged before the starting of hostilities, has apparently been very little interfered with up to now, as far as provincial hospitals are concerned. To what extent this position will be maintained in the future remains to be seen, as the increased cost and scarcity of labour and material is bound to have an adverse effect sooner or later.

10. DENTAL SERVICES.

The Dental Health Officer has continued his survey of dental conditions in the Union. The findings are summarised in the following tables both of which refer to Europeans only:—

Total Examinations.

Province.	No. Children Examined.	No. with Caries.	Percentage with Caries.	No. needing Dental attention.	Mottled Enamel.
Cape.....	7,041	4,176	59	3,285	1,472
Orange Free State.....	3,028	2,934	81	2,264	92
Transvaal.....	10,051	8,015	80	7,137	163
TOTALS.....	20,720	15,125	73	12,686	1,727

The next table gives a comparison between the percentage of children with dental caries in urban areas as compared with those in rural areas in the various provinces. These figures indicate a slightly higher incidence of caries in the urban areas in each of the provinces under review:—

Percentage of Children with Caries.

Province.	Urban Areas.	Rural Areas.
Cape.....	78	64
Orange Free State.....	84	80
Transvaal.....	89	79
TOTALS.....	82	75

From these surveys it was found that the incidence of dental caries among school children was lowest in Namaqualand and certain areas in the north-west Cape. In Namaqualand it varied from 11 per cent. to 79 per cent. and in the north-west Cape from 5 per cent. to 32 per cent.

This low incidence in both these areas is probably due to the diet and the water.

(a) The Diet.

The diet of the majority of the children during early childhood consists chiefly of meat, whole wheat bread with butter or fat and goat's milk. The wheat used for the bread is locally grown and ground in small wind-driven mills.

This diet amply supplies all the necessary proteins, carbohydrates, calcium, phosphorus and iron for the proper calcification of the teeth, while Vitamin A from milk, butter and liver, Vitamins B₁ and B₂ from bread and meat, and Vitamin D from the abundant sunshine, seem very adequate. Vitamin C appears low, but there is no evidence from oral manifestations that there is a deficiency of that vitamin.

The meat (mutton and often grilled), which the children partake of three times a day, provides abundant supplies of proteins, fats, calcium and phosphorus and in addition it cleans the teeth and stimulates the normal growth and development of the teeth and jaws. The majority of the children hardly ever use a toothbrush and yet their teeth appear clean.

(b) *The Water.*

Due to the very low rainfall, the soils in Namaqualand and the north-west Cape are not leached of their minerals to a great extent and consequently the underground waters are highly mineralised. Drinking water from these sources in practically the whole of the areas contains more than 1 part per million of fluorine and the majority of such waters contain fluorine of the order of 2 to 4 parts per million. In this area, of 1,397 children found with "mottled enamel" who used this drinking water 277 or 16 per cent. had caries, whilst of 672 children with no "mottling", 277 or 41 per cent. had caries. In a previous investigation in certain other areas in the Cape Province, of 243 children with "mottled enamel" 81 or 33 per cent. had caries while of 3,517 with no "mottling" 2,679 or 76 per cent. had caries. The relationship between "mottled enamel" and a low incidence of dental caries is very marked.

The diet of the majority of children in the Knysna area, where dental caries is rampant and the incidence 100 per cent., consists of bread, sweet potatoes and coffee and the drinking water contains practically no minerals and fluorine is conspicuously absent.

On the other hand in certain areas of the Transvaal and Orange Free State where the waters contain more fluorine than those in the north-west Cape and Namaqualand dental caries is very prevalent and is associated with hypoplasia of the teeth. The clinical picture is usually a chalky appearance of all the teeth with severe hypoplasia, which affects large areas of the teeth's surfaces, exposing brown dentine. There is usually very little pitting and a marked absence of the typical dark staining. These hypoplastic teeth are very susceptible to caries.

In the areas referred to, namely the localities of Warmbaths, Pilansberg and Pienaarsriver in the Transvaal, and Theunissen in the Orange Free State, the amount of fluorine in the drinking water is of the grade of 2 to 53 parts per million, amounts of 9 to 16 parts being common.

The difference in the effects on the teeth of the moderately increased amounts of fluorine in the drinking water in parts of the Cape Province as compared with the grossly excessive amounts in certain areas of the Transvaal and Orange Free State is interesting. The subject is, however, complicated by another factor which is probably of considerable importance. Whereas in the north-west Cape the calcium content of the water is high, this is not the case in the area referred to in the Transvaal and Free State. It seems probable that the high calcium content may have an inhibitory effect on fluorine assimilation and so prevent the grosser degrees of fluorosis which are found in the Transvaal and Free State. There is experimental evidence to support this in connection with laboratory animals in America. The lower calcium content in the latter areas may also be directly associated with the hypoplastic conditions of the teeth.

The relationship of dental caries to the amount of fluorine in the drinking water is a matter of great interest and is being further investigated.

There are no systematic and proper dental health services available in any of the areas which have been surveyed. The only dental treatment consists of the usual extractions for the relief of pain and the removal of sepsis by district surgeons, medical practitioners and a few visiting dentists. Fillings are at a premium. Only two fillings were noticed in 147 children at Klipplaat near Jansenville and 8 in 226 children in Pearston.

The lowest numbers of children needing dental attention were found in the Rooipoort, Smithfield, Springfontein and Philippolis schools in the Orange Free State. This was due to the excellent co-operation of the principals of these schools and the dentists who operate in these areas under the unit systems, by which dentists are paid on a per session basis.

The only solution of this serious problem of dental caries lies in the development of adequate dental services with the appointment of full-time travelling dentists and in intensive research into the aetiological factors of the condition. Namaqualand and certain areas in the north-west Cape offer excellent opportunities and scope in this field of dental research.

11. THE SOUTH AFRICAN MEDICAL COUNCIL.

Résumé of Business for the Year ended 30th June, 1941.

The half-yearly meetings of the Council were held in September, 1940, and March, 1941.

The Executive Committee has met eleven times during the year, the Nurses, Midwives and Masseurs Education, Examination and Registration Committee four times, the Medical and Dental Education, Examination and Registration Committee twice, besides which a number of subcommittee meetings were held as occasion required.

During the year the following registrations were effected:—

Medical Practitioners.....	198
Dentists.....	13
Medical Students.....	319
Dental Students.....	16
Nurses.....	680
Midwives.....	249
Masseurs.....	19

In addition the following were restored to the registers after having been erased owing to their addresses being unknown:—

Medical Practitioners.....	16
Dentists.....	8
Medical Students.....	3
Nurses.....	106
Midwives.....	39

Of the medical practitioners registered by the Council, 167 had qualified at the South African Medical Schools and of the remainder a number were South Africans who had proceeded overseas for the prosecution of their studies; of the dentists registered, 5 had qualified at the University of the Witwatersrand; of the nurses registered 566 were registered after passing the Council's examinations and obtaining its certificate of competency. Similarly 210 midwives were registered after passing the Council's examinations. Owing to war conditions the number of nurses coming into the Union from overseas has dropped to a large extent, but of the total number registered 109 held certificates from countries outside the Union and of these 83 came from the British Isles, three from Holland and the remainder principally from Australia, New Zealand and Southern Rhodesia.

The number of persons whose names appeared in the various registers on the 30th June, 1941, were as follows:—

Medical Practitioners.....	3,516
Dentists.....	761
Medical Students.....	1,410
Dental Students.....	56
Nurses.....	7,938
Midwives.....	5,338
Masseurs.....	111
Dental Mechanicians.....	121

Examinations for nurses were held quarterly and for midwives half-yearly. The following Table shows the number of candidates who presented themselves for the various examinations and the numbers who passed. Not all the nurses who have passed the Council's examinations have yet been registered as some of them still have to complete the balance of their training as provided for in the Council's rules:—

Candidates who Presented themselves for Examination.

	Presented.	Passed.
Medical and Surgical Nurses.....		
Final.....	693	650
Preliminary.....	970	702
Male Nurses.....		
Final.....	12	10
Preliminary.....	16	11
Mental Nurses.....		
Final.....	111	97
Preliminary.....	194	125
Nurses for Mental Defectives.....		
Final.....	24	21
Preliminary.....	38	30
Fever Nurses.....		
Final.....	10	10
Preliminary.....	15	9
Midwives.....	526	462

The number of medical practitioners who have applied for registration as specialists has fallen off due no doubt to the majority of specialists now being registered and also due to war conditions, but during the year 27 medical practitioners have been registered as specialists. The total number of specialists registered as at the 30th June, 1941, was 420.

The Council has considered various cases of alleged unprofessional conduct on the part of registered practitioners and in the case of one medical practitioner an inquiry was held before the full Council in March, 1941. The doctor was found guilty of unprofessional conduct and was suspended from the register for a period of six months. In five other cases inquiries were held before the Executive Committee and in each case the practitioners concerned were found guilty of improper or disgraceful conduct. Two medical practitioners and one dentist were sentenced to a reprimand and a caution; one medical practitioner was cautioned, and in the case of one medical practitioner no penalty was imposed.

The subject of medical education in South Africa has been receiving the serious consideration of the Council and after a Government Committee had considered the matter in all its aspects the report of that Committee was referred to the Council by the Minister of Public Health. The Council considered the report in great detail and in due course a joint meeting of representatives of the two Universities in South Africa which have medical faculties and representatives of the Council met to discuss the matter. The report of this joint Committee was presented to the Council at its meeting held in March, 1941, and the Council has done whatever is within its power to improve medical training in South Africa. Some of the matters referred to in the report of the Government Committee were referred to the Universities for their consideration and attention and those matters which under existing legislation cannot be dealt with either by the Council or the Universities have been referred to the Minister for his consideration. The Council has made several suggestions to the Minister which if adopted will improve medical education in this country.

12.—THE SOUTH AFRICAN PHARMACY BOARD.

Résumé of Business for the year ended 30th June, 1941.

The usual half-yearly meetings of the Board were held in July, 1940, and January, 1941, and a special meeting of the Board was held in December. Several meetings of the standing committees have been held as occasion required.

During the period under review the registration of 67 chemists and druggists, 22 managing directors of companies carrying on the business of chemists and druggists and 71 apprentices was effected. Of the chemists and druggists registered 61 held the qualifying certificate of the Board and 6 the certificate of the Pharmaceutical Society of Great Britain, their registration being effected by virtue of the reciprocal agreement entered into with that body.

On the 30th June, 1941, the names of 1,539 chemists and druggists, 139 managing directors and 203 apprentices appeared in the Board's registers.

Examinations were held in December, 1940, and June, 1941. The following Tables show the results:—

Preliminary Scientific Examination.

	Number of Candidates.			Referred.		
	Examined.	Passed.	Failed.	Botany.	Chemistry.	Physics.
Whole exam.....	85	37	24	3	14	7
Botany.....	6	5	—	1	—	—
Chemistry.....	15	10	—	—	5	—
Physics.....	6	5	—	—	—	1

Qualifying Examination.

	Number of Candidates.			Referred.		
	Examined.	Passed.	Failed.	Pharmacy.	Chemistry.	Dispensing.
Whole exam.....	56	24	14	1	8	9
Chemistry only.....	15	12	—	—	3	—
Dispensing.....	4	4	—	—	—	—
Pharmacy.....	5	5	—	—	—	—

The Board has dealt with several complaints of unprofessional conduct on the part of registered chemists and druggists. In four cases it was necessary to hold formal inquiries; in one case the chemist and druggist concerned was cautioned; in two cases the sentence of the Board was suspension from practising for a period of three months and in the fourth case the chemist concerned was suspended from practice for a period of six months. One of the chemists who was suspended from practice for three months was reinstated on the register by the Board before the period of his suspension had expired.

The chemist and druggist who was cautioned and reprimanded by the Board during the year preceding the year covered by this report filed a petition in the Supreme Court to have the decision of the Board set aside, but he subsequently abandoned his application to the Supreme Court.

Two applications for restoration to the register of persons whose names had been erased were considered by the Board. One of these applications was refused and the other was still under consideration on the 30th June, 1941.

On the appointment of Dr. P. Allan as Secretary for Public Health and Chief Health Officer for the Union of South Africa he relinquished his position as a member of the Board and Dr. A. J. van der Spuy, Deputy Chief Health Officer, was appointed in his stead. Dr. van der Spuy's appointment took effect from the 1st July, 1940.

13. ADMINISTRATION OF THE MEDICAL, DENTAL AND PHARMACY ACT, NO. 13 OF 1928.

Habit-forming Drugs.

The Department continued to administer the sections of the Act relating to dagga, opium and other habit-forming drugs. With the co-operation of the police the Commissioner of Customs and Excise and the Postmaster-General the provisions of the Act and Regulations are enforced.

The following Table indicates the number of prosecutions and convictions for offences relating to habit-forming drugs during the year:—

TABLE 35.—PROSECUTIONS AND CONVICTIONS UNDER LAWS RELATING TO HABIT-FORMING DRUGS DURING THE YEAR ENDED 30TH JUNE, 1941.

	European.		Native.		Asiatic.		Other Coloured.		Total.	
	Pro-secu-tions.	Con-vic-tions.	Pro-secu-tions.	Con-vic-tions.	Pro-secu-tions.	Con-vic-tions.	Pro-secu-tions.	Con-vic-tions.	Pro-secu-tions.	Con-vic-tions.
Cape.....	24	23	665	603	10	10	1,309	1,281	2,008	1,917
Natal.....	16	15	2,466	2,402	96	95	132	128	2,710	2,640
Transvaal.....	48	44	3,249	3,108	10	10	249	233	3,556	3,395
O.F.S.....	7	7	248	231	—	—	20	20	275	258
UNION...	95	89	6,628	6,344	116	115	1,710	1,662	8,549	8,210

The total number of prosecutions in the Union amounted to 8,549 of which 8,540 were in respect of dagga and 9 on account of other habit-forming drugs. Large quantities of dagga were seized and destroyed. The smaller amounts of saleable narcotic drugs were disposed of by informal tender to registered chemists and druggists.

The quantities of narcotic drugs imported into the Union during the year ended 30th June, 1941, were:—

Raw opium, 292 lb.; medicinal opium, 276 lb.; opium in the form of extracts and tinctures, 34½ lb.; coca leaves, 25 lb.; Indian hemp in the form of extract, 102 lb., 500 grs.; morphine 52⁷/₁₀ lb.; diacetylmorphine, 21 lb., 4,303 grs., and cocaine 33 lb. 5,844 grains.

The following narcotic drugs were exported from the Union during the period under review:—

Opium in the form of extracts and tinctures 50 lb.; Indian hemp in the form of extract, 1 lb.; morphine, 2 lb. and cocaine, 3 lb.

The trade in narcotic drugs, which is restricted almost entirely to firms of chemists and druggists, is controlled by a system of import and export certificates outlined in the International Drug Conventions. No narcotic drugs may be imported unless a certificate is obtained from the Department.

These certificates to import narcotic drugs are subject to a time limit of six months within which the drugs must be imported. After the lapse of this period the certificate becomes invalid. Due, however, to abnormal conditions at present prevailing, it is extremely difficult to import drugs within the specified time and accordingly the Department has extended the validity of numbers of certificates for further periods.

Under the Opium Conventions the Department is required to furnish regular statistics relating to the use and requirements of narcotic drugs during the year to the Permanent Central Opium Board, Geneva. At the request of the Board a branch office has been set up in Washington, U.S.A., to which statistics are forwarded to prevent undue delay in delivery of these records. The Department has, as far as possible, furnished these statistics to the Board.

During the year no difficulties have arisen in regard to the Government's obligations under the International Conventions with the exception of minor delays occasioned by slight disorganisation in communications.

Regular systematic inspections of records relating to habit-forming drugs have done much to ensure that such records are kept up to date. During the previous year there was a noticeable tendency for these records to be allowed to fall into arrears.

The inspections of chemists' registers of habit-forming drugs continue to reveal laxity by medical practitioners in controlling the number of prescriptions for, and the quantity of, narcotic drugs issued by them. The Department has no option but to take drastic measures to ensure that the intention of the law in regard to the use of narcotics is strictly carried out.

Poisons.

The inspectorate staff, in spite of numerous difficulties, has carried out its duty of ensuring that the public is protected against poisoning and poison dangers as a result of inadequate precautions being taken in regard to the stocking and sale of poisons and preparations containing poison in contravention of the provisions of Chapter V of Act 13 of 1928, and the Regulations framed thereunder. Numerous instances of illegal stocking and sale of poisons have been dealt with by the institution of legal proceedings against the offenders. In addition legal action in terms of the regulations has been taken against the wholesalers who supplied the poisons to persons or firms not authorised to be in possession of poisons.

The Department has under consideration the question of the amendment of the poison schedules by the addition of further substances of a dangerous nature in view of their use in remedies which entail risk to public health if not used under medical supervision.

During the year the provisions of section 82 of Act 13 of 1928 were applied to "Hydrofluoric Acid, fluorides and preparations or admixtures containing fluorides". This measure requires that all insecticides containing fluorides must be clearly labelled "Poisonous". By this means the poisonous nature of the substances will be brought to the notice of the public and this will do much to prevent accidental poisoning.

14. ADMINISTRATION OF THE FOOD, DRUGS AND DISINFECTANTS ACT (No. 13 OF 1929).

TABLE 36.—SAMPLES TAKEN FOR EXAMINATION OR ANALYSIS UNDER ACT NO. 13 OF 1929, DURING THE YEAR ENDED 30TH JUNE, 1941, AND THE RESULTS

Place.	Total Taken.	No. Analysed or Examined.	No. found adulterated or incorrectly or falsely described.	Prosecutions.	Convictions.
Porte of Union.....	197	191	7	—	—
Cape Province.....	1,672	1,653	151	131	116
Natal Province.....	662	649	71	29	29
Transvaal Province.....	2,268	2,258	349	163	141
Orange Free State Province..	289	288	19	18	13
TOTAL.....	5,088	5,039	597	341	299

A comparison of the foregoing figures with those for the twelve months ended 30th June, 1940, discloses that 1,113 fewer samples were taken during the year under review than during the first-mentioned period, 43 less samples were found on analysis to be adulterated or falsely described, 115 fewer prosecutions instituted in respect of adulteration or false description and 44 fewer convictions obtained.

Imported Articles Dealt with at Union Ports (including Inland Customs Ports of Entry).

The work in this connection is still being carried out with the co-operation and assistance of the Department of Customs and Excise and of the 197 samples submitted for analysis or examination, 118 came from Cape Town, 24 from Durban, 20 from Port Elizabeth, 2 from East London, 31 from Johannesburg and 2 from Pretoria. Of these, 7 were found to be not up to standard, 14 warnings were issued on account of defective labelling or deficiency in standard, 27 consignments were released after relabelling in Customs, 3 consignments were destroyed and 1 consignment ordered to be reshipped.

Sampling by Local Authorities.

Two fresh delegations in terms of section 2 (3) of the Act were made during the year, namely to the Port Elizabeth Divisional Council and the Harrismith Town Council. The number of municipalities and other local authorities authorised to undertake the sampling in their areas of perishable articles as also flour, meal, bread and other articles not packed or sold in sealed packages is now 34.

These local authorities are entitled to the examination or analysis in a Government Laboratory free of charge, of an annual number of samples calculated on a basis of 4 samples per 1,000 of their European population.

During the year a total of 3,312 samples were taken by them under their delegated powers (namely, 934 in the Cape Province, 1,831 in the Transvaal, 415 in Natal and 132 in the Orange Free State) of which 463 were found to be adulterated. Legal proceedings were instituted in 239 cases. Convictions were obtained in 224 of these cases and fines totalling £874. 6s. were imposed.

The numerous applications received from local authorities for the delegation of powers in terms of section 2 (3) of the Act, show that they are on the whole most anxious to co-operate with the Department in ensuring closer supervision and control of foodstuffs. While the Department appreciates their willingness to assist, the delegation of such powers is not always advisable. In some cases the local authority does not possess the necessary qualified health staff and in the majority of others the number of samples to which they would be entitled is so small that the Department can conveniently arrange for more samples to be taken by the Police or its own Inspectors. Local authorities can however be of great assistance to the Department by advising it of any irregularities under the Act coming to their notice which require investigation.

Sampling by the Department.

The Department's inspectors, two of whom are stationed in Cape Town, one in Pretoria and one in Durban, are entrusted with the duty of carrying out sampling in the areas allotted to them for inspection purposes under the Act. In small urban areas sampling, especially of milk, takes place with the co-operation and assistance of the South African Police. In Johannesburg, the City Council's inspectors carry out, on behalf of the Department, the sampling of milk on railway premises and of such articles as are not covered by the powers delegated to the Council in terms of section 2 (3) of the Act. A total of 1,579 samples were submitted for analysis, of which 178 were adulterated, 104 prosecutions were instituted and 77 convictions recorded in respect of which fines totalling £131 were imposed.

General.

The Department's inspectors continue to carry out inspection tours of the Union in connection with the enforcement of the provisions of the Act.

Regulation No. 31 published under Government Notice No. 1815, dated 13th December, 1935, as amended, has been cancelled and substituted by a new regulation whereby official recognition is accorded within the Union to the Second Addendum (1940) and Third Addendum (1941) to the British Pharmacopoeia, 1932. The importance of this at the present time is that provision is now made for substitutes for certain drugs in respect of which there is a shortage. Simultaneous recognition was accorded to the Addendum for the purposes of the Medical, Dental and Pharmacy Act, No. 13 of 1928.

In view of a temporary shortage of certain foods, drugs and surgical dressings of the standard prescribed under the Act there is a tendency to expect the Department to condone the supply to the public of inferior articles. It must be emphasised therefore that while the Department fully appreciates present trade difficulties and is prepared to assist as far as is compatible with the requirements of the legislation and the interests of the public, it cannot permit any lowering of the present standards for food, drugs or disinfectants.

15. ACTION TAKEN UNDER PORT HEALTH REGULATION 28 AND UNSOUND FOODSTUFFS REGULATIONS (PUBLIC HEALTH ACT, No. 36 OF 1919).

The inspection and examination of consignments of foodstuffs entering the country continued as far as was practicable with the collaboration of the Department of Customs and Excise. Those condemned as unfit for human consumption included 11 cases canned fish and salmon; 11 cases mushrooms; 120 cases dates; 6 cases cocoa; 6 bags walnuts; 2 cases hams; 6 tins sausages; 14 cases anchovies; 820 bags oil cake and ground nuts; 25 cartons tinned salmon; 1,074 bags onions; 3,394 sacks maize; 2 crates herrings; 10 barrels cod; 300 bags flour; 2 bales dried fish; 6 barrels cured herrings; 34 tins ham; 40 cases yeast; 18 boxes mixed meats; 1,335 bags haricot beans; 9 cases condensed milk; 2 bags hazelnuts and 25 cases cherries.

The total approximate value of the foods destroyed in terms of the Port Health Regulations as unfit for human consumption amounted to £1,860.

Inspectors of the Department in the course of their inspection tours under Acts No. 13 of 1928 and No. 13 of 1929, also dealt with tinned foodstuffs stocked by general dealers and such as were found to be blown or otherwise not sound were suitably disposed of.

In places where there is a constituted local authority, action under the Unsound Foodstuffs Regulations devolves on such authority.

16. NUTRITION AND DIETETICS.

The Department's programme for nutrition and dietetics has developed along the lines indicated in the annual reports for 1939 and 1940. Progress has been made in various directions. The diet scales previously drawn up have been observed in practice in the course of inspections, and have been recommended by the Government and Provincial authorities in control to an increasing number of institutions. A scale has been drawn up for Native educational institutions, having due regard to local problems of supply. Scales for pauper rations for each racial group have been compiled for the Department of Social Welfare.

The inspection of State and State-aided institutions continues. Some of these are hospitals but the great majority are school hostels and charitable institutions for children. More than 150 visits have been made since the inception of this section of the Department in 1938 and a representative picture has been gained of the problems facing the improvement of child nutrition in this field. The Minister of Social Welfare has appointed the dietitians as inspectors under the Children's Act in order to facilitate their investigations. Co-operation between this Department and the Government and Provincial authorities in control of these institutions is increasing, and it appears that these inspections constitute a valuable form of assistance.

The Department has dealt with an increasing volume of correspondence from public and private bodies and individuals on matters relating to nutrition.

Health education by means of departmental publications, lectures and correspondence has continued. There is a growing interest in nutritional matters on the part of the public, and an increasing demand for propaganda material. The Department is represented on the Red Cross National Health Education Committee which has drawn up posters for the teaching of nutrition in schools. The departmental pamphlet "Food and Health" is to be used as the text accompanying these posters. Further study, the findings of which have not yet been received, on the diets of urban Bantu families in Durban, is in hand. The Assistant Dietitian's study of Indian family diets in Durban was published in the South African Journal of Economics for March, 1941.

17. BLOOD TRANSFUSION.

In last year's report attention was drawn to the increasingly important part played in both civilian practice and more particularly under war conditions by blood transfusion. This phase of medical work is likely to become still more important in the future. The war and the possibilities arising out of it have caused increasing interest in this subject and during the year under review certain important developments have taken place. The work of the Rand Blood Transfusion Service has increased very markedly and similar services have been started in a number of the other larger towns of the Union.

It is now established that in the great majority of circumstances requiring blood transfusion, and particularly under those conditions resulting from the war, the use of serum is as valuable as the use of whole blood. This factor is of particular importance in connection with the war because under campaigning condi-

tions the use of whole blood is impracticable due to the fact that it only keeps for about three days under the best conditions of storage. Serum, on the other hand, when properly prepared and placed in suitable containers, can be kept for a considerable period, in fact, it is said to keep indefinitely at low temperatures. It can thus be made available for use in the field. The use of serum has an additional advantage over the use of whole blood. When using the latter the blood of the donor has to be "grouped" in order to ascertain whether it is compatible with that of the recipient. If the blood were not compatible clotting of the donor's corpuscles would take place and this would have serious and perhaps fatal results. When using serum, however, as the corpuscles are not injected into the recipient grouping is unnecessary and the serum from any donor may be used for any recipient. This consideration is of the greatest importance as under the conditions in which blood transfusion is necessary the saving in time so effected may make all the difference between life and death. It also means that, whereas some people are unsuitable as donors of whole blood except to patients in their own group, such people can supply serum for any patient.

The method of preparing serum has been perfected and it is now produced at the South African Institute for Medical Research from blood provided by the Rand Blood Transfusion Service from voluntary donors. The fact that a substance is available which is easily transportable and can be used in the field has entirely altered the position from the military point of view and it is hoped that large quantities of the serum will be available in the near future for use both in military and in civilian life. Apart from war conditions the use of serum which can be kept for long periods will be of great advantage in civilian life, especially in the rural areas. It is obviously impracticable to establish services for the use of whole blood in all towns and villages but, by the use of serum, depôts or "banks" can be established and the material can be sent wherever it is required.

The latest development in technique is the use of dried serum or dried plasma. These substances are stable and can be kept for long periods. Owing to their small bulk they are easily stored and readily transported and "reconstituted serum" or "reconstituted plasma" can be prepared by the simple addition of distilled water when required for transfusion. Further investigations, especially with regard to the technique of drying the serum and plasma, are being carried out in this connection.

The subject of blood transfusion was discussed at the meeting of the Council of Public Health in Cape Town in February, 1941. The Council felt that the services should be expanded into a national organisation on voluntary lines and that the existing organisation should be used to initiate the national body on which the Government should be represented. Arising out of this the Department is convening a conference of interested bodies with the object of discussing the matter and giving effect to the resolution passed by the Council of Public Health. It is hoped that the Department of Defence, the South African Institute for Medical Research, the Rand Blood Transfusion Service, the Civilian Protective Services and the four Provincial Administrations as well as the Union Department of Public Health will be represented at the forthcoming conference.

18. SOLAR RADIATION SURVEY.

In the Department's Annual Report for the year ended June, 1938, a full account of the investigations and objects of the Solar Radiation Survey was given. The matter was again referred to in last year's report when it was indicated that the work had had to be somewhat curtailed on account of the war; it is still, however, being actively pursued. Observations are being made at Onderstepoort, Armoedsvlakte and at Messina, while with the collaboration of the Western Province Fruit Research Station an additional observation station was opened at Groot Drakenstein during the year under review. The fact that it has been possible to take observations at Groot Drakenstein, in the winter rainfall area, is of considerable importance as the other three stations are all, of course, within the summer rainfall area.

19. HEALTH SERVICES IN THE TRANSKEI.

General.

The major development during the past year has been the establishment of a full-time experimental Native nursing service in the Umtata district supervised by a full-time medical officer. The establishment of the unit was made possible through the generosity of the Native Recruiting Corporation.

The scheme has been initiated in consultation with the Chief Magistrate and it was decided that it was to be operated on a strictly co-operative basis; no clinics were to be established unless the Native people were sympathetic to the service and no nurse was to be placed unless three clinic huts were provided by

the location residents. Specifications were given to the sympathetic headmen and they were required to erect the huts as their contribution and as tangible evidence of their wanting the service. In January, 1941, the service was commenced and clinics are now flourishing in seven locations. The success of the experimental health unit in the short period of six months once again shows the need for organised medical services, for Europeans as well as Natives.

With regard to the general attitude of the Natives to health measures it is encouraging to note:—

- (a) the number of pregnant women presenting themselves for examination and advice at the antenatal clinics run in conjunction with the nursing service in Umtata;
- (b) the number of Natives who presented themselves for preventive inoculation against typhoid in the Mqanduli district;
- (c) the Natives coming up to be treated voluntarily for venereal disease at Nkanga in the Libode district;
- (d) the number who subjected themselves to injections for bilharzia in the Umtata district.

A very distressing feature of Native health services is the apathy and even frank opposition to many preventive measures. Allied to this is the destructive instinct of the rural Native who sometimes breaks down the fence of the protected spring or watercourse or destroys the tap and breaks the cement cistern. These actions account for the chariness of the Administration to provide boreholes and windmills in waterless areas. In order to redeem communal responsibility the Administration has under consideration the protection of all Government, General Council and Trust Property by introducing communal responsibility by proclamation.

HOSPITALISATION.

Natives.

There are 5 Provincial Hospitals which provide accommodation for 301 Native patients. Of these 34 beds are for tuberculosics and 10 for other infectious diseases at the Sir Henry Elliot Hospital, Umtata. The 8 mission hospitals accommodate about 300 patients.

Maternity facilities are provided at five hospitals. The majority of the other hospitals take in abnormal confinements. Five hospitals provide facilities for outpatient attendances.

Training facilities for Native nurses are provided at five hospitals. In addition to this the majority of mission hospitals issue a hospital certificate to nurses who pass a local examination after three consecutive years' training. It is proposed in time to put Native sisters in charge of Native wards.

Europeans.

There are 84 beds in Provincial Hospitals, of which 32 are for general cases and 10 for infectious diseases. The mission hospitals cater for 26 European patients in all. There are no maternity hospital facilities for Europeans in the Transkei. The need for such facilities for indigents, of which there are many in the Transkei, cannot be overemphasised.

Native Clinics.

Rural Native Clinics are divided into four groups, viz. :—

- (1) Those established under section 15 (b) of Act No. 57 of 1935;
- (2) Those established under section 15 (a) of Act No. 57 of 1935;
- (3) Those established by the help of the Native Recruiting Corporation;
- (4) Those established under section 13 of Act No. 57 of 1935.

Group (1).

In group (1) there are 21 clinics, 18 of which are staffed by hospital certificated nurses and 3 by fully trained nurses, two of whom also have midwifery certificates. It is proposed in time to replace all hospital certificated nurses with fully trained nurses who also hold the midwifery certificate.

In every instance the Natives were responsible for the erection of the clinic huts as their contribution to the service. The nurses are subsidised by the Department at the rate of £60 per annum and the Deferred Pay Board made a grant of £10 per clinic for equipment and the initial stock of medicines. Contributions from the Natives pay for the maintenance of the clinics.

In the majority of instances there is little or no medical supervision. The clinics where medical control is active and where weekly visits by District Surgeons are authorised are prospering. Moreover the Natives are gradually taking to the service.

It must be explained that 3 of the 21 subsidised clinics have been embodied in the Native Recruiting Corporation Unit in the Umtata district.

Group (2).

In this group there are 3 clinics and these are staffed by fully trained Native nurses under the control of a missionary body in each instance.

Group (3).

This group consists of 7 clinics, 5 of which are staffed by fully general and midwifery trained Native nurses and 2 by hospital certificated nurses. The reasons for employing 2 hospital certificated nurses are that the nurses were established at the two existing clinics, and also in order to ascertain the respective merits of the hospital certificated nurse and the fully trained nurse under medical supervision. In this group too the Natives provided the huts as their contribution to the service.

A full-time medical officer was placed in charge of the group and weekly visits are paid to each clinic. Saturdays are devoted to health propaganda meetings. Brief extracts from a detailed report of the medical officer on the workings of the clinics are appended:—

“ Native Rural Health Clinics : Umtata District.

Report for half year ended June 30th, 1941. Opening of Clinics.—At the beginning of this year three health clinics were already in existence in the Umtata district, but had no full-time medical supervision. With the help of the Native Recruiting Corporation it became possible to open three more clinics during January, 1941, and another during March, 1941, bringing the total up to seven. It was also possible to provide a full-time medical supervisor who could visit each clinic at least once a week.

Aims:—

- (a) To make medical service more easily available to the average kraal Native, both with regard to the distance he has to travel and with regard to the fee he has to pay ;
- (b) To raise the general standard of health in the district ;
- (c) To provide an experimental unit from which it might be determined what the best scheme of health services in the Native territories would be.

Nurses' Qualifications and Duties.—A Native district nurse is resident at each clinic.

The nurses see patients at the clinic, do simple treatments such as wound dressings, eye irrigations, etc. ; they hand out simple medicines ; they give advice to patients and relatives.

In addition to work at the clinics, they visit the kraals and advise on general hygiene.

Fees.—Patients are expected to pay for medicines which are supplied practically at cost price. For examination by the doctor they pay another ls. This was considered necessary for two reasons:—

- (a) The experience of medical missionaries and other health workers seems to show that the Native will co-operate more enthusiastically in a venture for the upkeep of which he feels himself partly responsible ;
- (b) No fund is available for the purchase of medicines, dressings, etc., apart from money supplied by the people themselves. Pauper cases are treated free of charge.

Midwifery Service.—As far as one can tell there is an increasing demand for prenatal care and instruction. Three nurses have been successful in establishing regular prenatal clinics.

Disappointingly few women are availing themselves of the nurses' services for confinement. The old custom still prevails of sending for help only when it is obvious that labour is not progressing satisfactorily ; very often there is little for the nurse to do but arrange for immediate transference of the patient to hospital.

Infant Welfare.—It is in this department that the chief work is being done. Digestive troubles and malnutrition form the large proportion of the complaints ; and the nurses are doing invaluable work in advising women on infant feeding and general care. No matter with what complaint the infant is brought, these two things are discussed with every mother who presents herself at the clinic.

Child Mortality Survey.—At each of the seven rural health clinics the nurses have been collecting figures with a view to estimating the proportion of deaths during infancy and childhood in their respective areas.

To avoid any selective bias women were questioned from kraal to kraal in any one area during ordinary routine kraal visiting. They were asked how many children they had had (live births only being recorded) and how many had died in childhood. For purposes of this collection of figures children were considered "grown up" when 16 years old

The main feature demonstrated is the high death-rate within the first two years of life; so an attempt was made to find out the principle cause of death. No exact diagnoses could be made because information had to be obtained from the mothers themselves. But at least the figures showed that some form of diarrhoea was the principal cause

This work is still going on; results given here represent work during the first six months of this year

General Standard of Health.—This is poor It is becoming increasingly obvious that no improvement can be hoped for until agricultural conditions change considerably. A very common difficulty is too little meat, milk, fruit and vegetables; too much beer and tobacco Nutritional diseases are very common.

Plans are already being discussed for greater co-operation between the medical service and the Bunga Agricultural Department. It is hoped that these will reach fruition in the near future.

Health Education.—Mention has already been made of kraal visiting and instruction given *re* pregnancy, child rearing, etc. In addition meetings have been held at which the usual health questions such as flies, diet, ventilation, etc., are discussed. Attendance and interest at these meetings has been satisfactory.

Some work has been done in the schools, and it seems likely that co-operation with the teachers is going to lead to very constructive work among the scholars.

General Considerations.—In spite of having to work sometimes under great difficulties, the nurses are showing great enthusiasm. It seems certain that they will make very positive contributions to the welfare of the community

Group (4).

A midwifery trained Native nurse is attached to the Municipal Location. This clinic is visited by one of the resident medical officers from the Umtata hospital.

A Native nursing service such as has been made possible by the Native Recruiting Corporation in the Umtata district with full-time medical supervision is to be the aim of every district in the Transkeian and Ciskeian Territories and will no doubt go far towards solving the problem of Native health services.

Tuberculosis.

Much confusion of ideas as regards the prevalence of tuberculosis in the Native territories exists in the public mind. There are not sufficient data available to make sweeping statements but one fact has been ascertained and that is that well-nigh every spare Native with a dry skin is labelled tuberculous, not only by the lay public but in many instances by medical men. The result is that very many patients are notified as "tuberculosis" without a distinction being made between pulmonary, bone or glandular varieties, and statistical information is rendered practically valueless. A brief survey was made of notified tuberculous in five locations in the Umtata district in 1939 and it was discovered that only two per cent. of cases suffered with "open" tuberculosis.

An attempt was made to procure information on the subject by circularising all traders in the Transkei, many of whom volunteered that kraals had been wiped out. The results did not corroborate the statements. It may be said, however, that much information was withheld on account of the trader's fear that his station might be boycotted by the Natives.

A factor which cannot be disregarded is the presence of a cough in the majority of Natives in winter due, to a large extent, to irritant smoke in the huts and to the prevalence of asthmatic and chronic bronchitic conditions common in cold climates. In addition to this many children are notified as suffering with glandular tuberculosis whose heads are infested with lice. In the absence of registration of births and deaths and poor co-operation from colleagues in the matter of notifying *all* cases no statement can be made regarding the prevalence of tuberculosis.

During the year 129 Natives suffering with tuberculosis were repatriated from the mines.

The movements of all repatriated tuberculotics are being checked as far as possible and an attempt is being made to have them examined from time to time by district surgeons, who have also been instructed to urge domiciliary isolation.

For the same period 2,877 pulmonary tuberculotics were notified as compared with 3,126 last year.

Veneral Disease.

Veneral disease treatment has now been made available at the seven rural clinics in the Umtata district. The fear oft expressed that the Native will not subject himself to treatment voluntarily is largely unfounded. In the majority of cases he will come up for treatment regularly and this is shown particularly in the case of the rural clinic at Nkanga in the Libode district where up to 80 Natives attend on one day. Long distances from the District Surgeon or the clinic result in the Natives' stopping attending when the symptoms die down. Propaganda work will cure them of this.

Typhus.

Typhus remains endemic in the Native territories, Transkei as well as Ciskei. It is proposed in the near future to train Native deverminisers and to have apparatus ready at all magistracies where typhus is endemic. Fifty outbreaks were successfully dealt with in the corresponding number of locations and 8,450 contacts deverminised. It is encouraging to note that more and more outbreaks are being reported, the Natives becoming aware of the value of deverminisation.

Plague.

There were no cases of plague reported in the Transkei although one suspected case was notified in the Glen Grey district.

Other Infectious Diseases.

Typhoid remains the major infectious disease and a particularly severe epidemic was dealt with in the Mqanduli and Umtata districts. Many hundreds of Natives presented themselves for immunisation. All the water supplies concerned were investigated and dealt with.

Bilharziasis.—A small epidemic of bilharzia broke out in the Mpuzana Location in the Umtata district.

Infantile Diarrhoea.—The majority of Native children are fed on filthy sour milk, old gruel or stamp mealies which results in diarrhoea. When they are given fresh gruel and milk they recover.

VIII.—ACKNOWLEDGMENTS.

I wish to acknowledge the help of all the other government departments with which we have been in contact. The relationships between this Department and the other departments have been most cordial. The help obtained from the provincial administrations and the co-operation of the municipal health departments is much appreciated. The South African Institute for Medical Research has again been very helpful.

The Office of Census and Statistics has supplied the statistical information in this report. Thanks are also due to the Medical Council, Pharmacy Board and the Medical Association of South Africa.

Finally I wish to place on record my appreciation of the loyal services rendered by the officers of the Department, professional, administrative and clerical. I am especially grateful to the sectional officers for their co-operation and help in compiling this report. As indicated in the section on the staff the Department has again suffered severe loss during the year owing to superannuation of four of its most experienced and senior members, all of whom have rendered valuable service for many years. This, together with the fact that certain members of the Department have been released for military service, has thrown an additional strain on the whole staff which has responded in a commendable manner.

I have the honour to be,

Sir,

Your obedient servant,

PETER ALLAN,

Secretary for Public Health.

Pretoria, December, 1941.

	Price (Post Free within the Union). s. d.
Post Office Administration and Shipping Combination Discouragement Act No. 10, 1911, as Amended to 1933	1 0
Public Health Act No. 36, 1910, as Amended to 1933	2 0
Prevention of Cruelty to Animals Act No. 8, 1914, as Amended to 1933	1 0
Radio Act No. 28, 1930, with Regulations thereunder	0 3
Removal of Goods between the Union and Rhodesia—Regulations regarding the	0 3
Revenue Act No. 13, 1920, as Amended to 1933	1 0
Statutes Assemblies Act No. 27, 1914, as Amended to 1933	0 6
South Africa Act, 1910, with Amending Acts to 1933	3 0
Unemployment Benefit Act, 1937, and Regulations	2 6
Wage Act, 1937, and Regulations	1 6
Workmen's Compensation Regulations, 1935	1 6
Weights and Measures Act No. 32, 1922, as Amended by Act No. 13, 1933, with Proclamations in force as at 8th December, 1933, together with the Weights and Measures Regulations, 1933	2 0

MISCELLANEOUS PUBLICATIONS.

Annual Statement of Trade and Shipping of the Union of South Africa and the Territory of South West Africa, 1939	42 0
Botanical Memoir No. 15—A Vegetation Map of South Africa. By L. B. Pole-Evans, C.M.G., M.A., D.Sc., LL.D., F.L.S.	2 6
Biological Memoirs:	
Contributions towards Venda History, Religion and Tribal Ritual. By N. J. v. Warmelo. (Volume III)	7 6
History of Matiwana and the Amangwane Tribes. (Volume II)	7 6
Kinship Terminology of the South African Bantu. By N. J. v. Warmelo. (Volume II)	5 0
Marriage Customs in Southern Natal. By Dr. M. Kohler, M.D. (Volume IV)	5 0
Preliminary Survey of the Bantu Tribes of South Africa. By N. J. v. Warmelo. (Volume V)	20 0
Transvaal Ndebele Texts. By N. J. v. Warmelo. (Volume I)	5 0
Transvaal-English Dictionary (Volume VI)	5 0
Elementary Anatomy and Physiology First Aid, Elementary Hygiene. A Preliminary Handbook for Nurses	5 0
Waste Dumping Duties	0 6
Wages, Handbook for	5 0
Industrial Development in South Africa	1 0
Annual Year Book No. 20, 1939	5 0
Combating Drought. By Reenen J. van Reenen	2 0

PUBLICATIONS OF GEOLOGICAL SURVEYS.

THE GEOLOGICAL COMMISSION OF THE CAPE OF GOOD HOPE.	
Annual Reports:	
Fifteenth Annual Report, 1910	2 6
Geological Maps of the Colony of the Cape of Good Hope:	
Seventeen sheets were published in colour on the scale of 1:238,000 or 3.8 miles to the inch. Price 6d. each.	
Cape Town-Robertson, 1903. (Out of print.)	33. Britstown, 1909.
Swellendam - Riversdale, 1907.	40. Marydale, 1910.
Malmesbury - Ceres, 1907. (Out of print.)	41. Griquatown, 1909.
Clareville, 1911.	42. Kimberley, 1908. (Out of print.)
Beaufort West-Fraserburg, 1911.	45. Postmasburg (Griqualand West), 1907.
Worcester, 1912.	46. Barkly West, 1908.
Barkly East, 1912.	49. Kuruman, 1908.
Van Wyks Vlei, 1910.	50. Vryburg, 1908.
	52. Mafeking, 1908.

	Price (Post Free within the Union) s. d.
THE GEOLOGICAL SURVEY OF NATAL AND ZULULAND.	
Second Report, 1904	7 6
Third and Final Report, 1907	7 6
THE GEOLOGICAL SURVEY OF THE TRANSVAAL.	
(a) Annual Reports:	
Annual Reports for 1909—109 pages and 14 plates (including 6 maps). Deals with portions of Waterberg, Rustenburg, Middelburg, Lydenburg, and Marico Districts, also the Klip River Valley	7 6
(b) Memoirs:	
No. 5.—The Geology of the Pilgrims Rest Gold Mining District. By A. L. Hall. 158 pages, 33 plates and 1 map. 1910	7 6
Maps.	
(c) Geological Map of the Transvaal:	
No. 6.—Mafeking. (Explanations by A. L. Hall and W. A. Humphrey.) 1910	2 6
(d) Special Publications:	
Report on a Reconnaissance of the North-West Zoutpansberg District. By T. G. Trevor and E. T. Mellor. 40 pages, 16 plates, and 1 map. 1908	2 6
THE GEOLOGICAL SURVEY OF THE UNION OF SOUTH AFRICA.	
(a) Annual Reports (discontinued after 1913):	
Annual Report for 1911. 114 pages and 14 plates (including 3 maps). Deals with Central Witwatersrand, portions of Rustenburg District (including the Pilansberg), Vryheid District, and Zululand. Also a Report on the Coal Resources of South Africa	7 6
Annual Report for 1913. 116 pages and 9 plates (including 4 maps). Deals with portions of Barberton, Carolina, Piet Retief, and Wakkerstroom Districts, Transvaal; Ngotsho Division and Alfred County, Natal; Namaqualand and East Griqualand, Cape Province	7 6
(b) Memoirs:	
No. 8.—Report on the Prospect of finding Oil in the Southern Karroo. By A. W. Rogers. 8 pages and 1 map. 1917	0 6
No. 9.—The Geology of the Barberton Gold Mining District. By A. L. Hall. 347 pages, 53 plates, and 1 map. 1918	7 6
No. 10.—Report on the Phosphates of Saldanha Bay. By A. L. du Toit. 33 plates and 2 maps. 1917	2 6
No. 11.—The Limestone Resources of the Union:	
Vol. I.—The Limestones of the Transvaal and Portions of Bechuanaland and Zululand. By W. Wybergh. With a Chapter on the Deposits of Port Shepstone and Hermansberg. By A. L. du Toit. 122 pages and 2 maps. 1918	5 0
Vol. II.—The Limestones of Natal, Cape, and Orange Free State Provinces. By W. Wybergh. 149 pages. 1920	5 0
No. 12.—Asbestos in the Union of South Africa: Second Edition. By A. L. Hall. 291 pages, 36 plates, and 1 map. 1930	7 6
No. 13.—Mica in the Eastern Transvaal. By A. L. Hall. 95 pages, 17 plates, and 1 map. 1920	7 6
No. 14.—The Nitrate Occurrences in the Districts of Prieska and Hay, Cape Province. By G. E. B. Frood, Inspector of Mines (Acting) and A. L. Hall. 52 pages. 1919	2 6
No. 15.—Corundum in the Northern and Eastern Transvaal. By A. L. Hall. 210 pages, 23 plates, and 1 map. 1920	7 6
No. 16.—The Mutue Fides-Stavoren Tinfields. By P. A. Wagner. 192 pages, 30 plates, and 1 map. 1921	7 6
No. 17.—Report on the Crocodile River Iron Deposits. By P. A. Wagner, 65 pages, 11 plates, and 1 map. 1921	5 0
No. 18.—A Bibliography of S.A. Geology to the end of 1920. Authors' Index. By A. L. Hall. 376 pages. 1922	10 6

	Price (Post Free within the Union). s. d.
No. 12.—The Coal Resources of the Union of South Africa:	
Vol. I.—The Coalfields of Witbank, Springs, and Heidelberg, and of the Orange Free State. By W. Wybergh. 134 pages, 12 plates, and 3 maps. 1922 ...	10 0
Vol. II.—The Inland Coalfields of Natal. By W. Wybergh. 189 pages, and 2 maps. 1925 ...	10 0
Vol. III.—The Coalfields of the Eastern and South-Eastern Transvaal, Springbok Flats, Waterberg, Zoutpansberg, and of the Cape Province. By W. Wybergh. 182 pages and 6 maps. 1928 ...	10 0
No. 20.—The Pretoria Salt-Pan: A Soda Caldera. By P. A. Wagner. 136 pages, 18 plates, and 1 map. 1922 ...	7 6
No. 21.—On the Magnetic Nickel Deposits of the Bushveld Complex in the Rustenburg District, Transvaal. By P. A. Wagner. 181 pages, 21 plates and 1 map. 1924 ...	7 6
No. 22.—A Subject Index to the Literature on the Geology and Mineral Resources of South Africa. (Supplement and companion volume to Memoir No. 18.) By A. L. Hall. 384 pages. 1924 ...	10 0
No. 23.—The Economic Geology of Sabie and Pilgrims Rest. By W. J. Wybergh. 124 pages and 2 maps. 1926 ...	5 6
No. 24.—Preliminary Report on the Platinum Deposits in the South-Eastern Part of the Rustenburg District, Transvaal. By P. A. Wagner. 42 pages and 1 map. 1926 ...	2 6
No. 25.—A Bibliography of South African Geology for the Years 1921 to 1925 (inclusive). Author's Index. By A. L. Hall. 117 pages. 1927 ...	5 0
No. 26.—The Iron Deposits of the Union of South Africa. By P. A. Wagner. 268 pages, 45 plates, and 30 text figures. 1928 ...	10 0
No. 27.—A Bibliograph of South African Geology for the Years 1926 to 1930 (inclusive). Authors' Index. By A. L. Hall. 160 pages. 1931 ...	5 0
No. 28.—The Bushveld Igneous Complex of the Central Transvaal. By A. L. Hall. 510 pages, 40 plates, 40 text figures, and 1 map in colour. 1932 ...	10 0
No. 29.—The Building Stones of the Union of South Africa. By W. Wybergh. 238 pages, 1 plate, and 1 map. 1933 ...	7 6
No. 30.—A Bibliography of South African Geology, for the years 1931 to 1935 (inclusive). Authors' Index. By A. L. Hall. 1937 ...	5 0
No. 31.—The Pegmatite Area south of the Orange River in Namaqualand. By T. W. Gevers. 164 pages, 16 plates, 5 text figures and one map. 1937 ...	7 6
No. 32.—Analyses of Rocks, Minerals, Ores, Coal Soils and Waters from Southern Africa. By A. L. Hall ...	15 0
No. 33.—The Geology of the Country around Bethlehem and Kestell with special reference to Oil Indications. By O. R. van Eeden. 54 pages, 4 plates, 3 text figures, and one map in colours. 1937 ...	7 6
No. 34.—The Water-bearing Properties of the More Important Geological Formations in the Union of South Africa. By H. F. Frommurtze. 170 pages, 9 plates, 27 text figures ...	5 0
No. 35.—The Geology and Archaeology of the Vaal River Basin. By P. G. Schöngé, D. J. L. Visser and O. van Riet Lowe. 134 pages, 35 plates, and 20 text figures ...	5 0
(e) Sheet Maps, published in colour, each accompanied by an Explanation. (Price 6s. each, complete):	
Transvaal Province. Scale 1:148,760, or 2-35 miles to the inch.	
No. 1.—Pretoria, Revised Edition (Explanation by L. J. Krige and B. V. Lombard). 1929.	
No. 2.—Pienars River, Revised Edition (Explanation by H. Kynaston). 1913.	
No. 8.—Sekukuniland (Explanation by A. L. Hall). 1911.	
No. 9.—Marico (Explanation by W. A. Humphrey). 1911.	
No. 10.—Nylstroom (Explanation by H. Kynaston, E. T. Mellor and W. A. Humphrey). 1912.	
No. 11.—Lydenburg (Explanation by A. L. Hall). 1913.	
No. 13.—Pilansberg (Explanation by W. A. Humphrey). 1914.	

No. 13.—Oifants River (Explanation by Hall). 1914.	
No. 14.—Witfontein } Explanation by H. Kynaston and W. A. Humphrey. 1930.	
No. 15.—Crocodile Pools }	
No. 17.—Springbok Flats (Explanation by Wagner). 1927.	
No. 18.—Moos River (Explanation by Lombard). 1931.	
No. 51.—Bethal (Explanation by F. A. V. 1934.	
No. 63.—Ventersdorp (Explanation by L. J. Krige etc.). 1935.	
No. 68.—Piet Retief (Explanation by Humphrey and L. J. Krige). 1931.	
Cape Province. Scale 1:238,000, or 2-35 miles to the inch.	
No. 5.—Laingsburg (Explanation by Rogers). 1925.	
No. 9.—Port Elizabeth (Explanation by Haughton). 1928.	
No. 27.—Maclear-Umtata (Explanation by du Toit). 1917.	
No. 28.—Pondoland (Explanation by du Toit). 1920.	
No. 35.—Matatiele (Explanation by du Toit). 1929.	
Cape Province. Scale 1:148,760, or 2-35 miles to the inch.	
No. 247.—Capetown (Explanation by Haughton). 1933.	
No. 150.—Sundays River (Explanation by Haughton). 1936.	
Natal Province. Scale 1:148,760, or 2-35 miles to the inch.	
No. 102.—Vryheid (Explanation by Humphrey and L. J. Krige). 1932.	
No. 109.—Nkandhla (Explanation by du Toit). 1931.	
(d) Special Publications:	
Geological Map of Natal. Prepared by the Department of Natal prior to 1910. Scale 1:200,000. 20 miles to the inch. 1910 ...	
Report on the Oil Shales in Impressaria, Natal. By A. L. du Toit. 1919 ...	
Geological Map of the Witwatersrand and District with Explanation. By E. T. Mellor. 21 sheets. Scale 1:60,000. (Price: 21/6) ...	
Geological Map of the Country round the Vaal River. Scale 1:60,000. With an Explanation by Rogers. 1922 ...	
Geological Map of the Country around the Orange River. Scale 1:63,360. With an Explanation by T. Nel. 1927 ...	
The Geology of the Postmasburg and District. Scale 1:49,501. With an Explanation by Louis T. Nel. 1923 ...	
Physical Map of the Union of South Africa and adjoining Territories, coloured to show the nature of the land. Compiled by Eric H. Hughes. Scale 1:1,000,000; in four sheets.	
Geological Map of Klerksdorp-Ventersdorp Area. Scale 1:60,000. With Explanation by L. T. Nel ...	
(e) Bulletins of the Mines Department, Series:	
No. 1.—The Witwatersrand System in the Klerksdorp-Ventersdorp Area. A Preliminary Report. By Louis T. Nel. 1934 ...	
No. 2.—The Andalusite Sands of the Transvaal. By F. C. Partridge. 1937 ...	
No. 3.—Gypsum in the Union of South Africa. 1937 ...	
No. 4.—The Travertine Deposits of the Union of South Africa. By Louis T. Nel. 1937 ...	
No. 5.—The Nickel-Copper Occurrences in the Bushveld Igneous Complex, West of the Vaal River. 1937 ...	
No. 6.—Corundum in the Union of South Africa. 1937 ...	
No. 7.—Some Magnetometric and Gravity Surveys in the Transvaal. By D. W. Simpson, M.Sc., and G. L. Passmore. 1937 ...	
No. 8.—"Wonderstone." By Louis T. Nel, G. R. Jacobs and G. R. Boszoll. 1937 ...	
No. 9.—The Gabbro Deposits of the Klerksdorp District, Cape Province. By D. W. Simpson. 1937 ...	
No. 10.—The Chromite Deposits of the Bushveld Igneous Complex, Transvaal. By Louis T. Nel, B. V. Lombard, B. W. van der Merwe, C. M. Schwelnuus ...	
No. 11.—Vermiculite Deposits in the Transvaal Area, N.E. Transvaal. By C. M. Schwelnuus. 1937 ...	
No. 12.—Gold Occurrences South of the Orange River. By J. Willems. 1937 ...	