

Report of the Medical Officer of Health on the public health and sanitary circumstances of Johannesburg.

Contributors

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MUNICIPAL COUNCIL OF JOHANNESBURG.

REPORT of the MEDICAL OFFICER OF HEALTH on the PUBLIC HEALTH and SANITARY CIRCUMSTANCES of JOHANNESBURG during the Two Years, 1st JULY, 1909—30th JUNE, 1911.

TO WHICH ARE APPENDED

- (1) A REPORT by the MEDICAL ATTENDANT (P. G. STOCK, M.B., D.P.H.) on the HEALTH of the NATIVES EMPLOYED BY THE COUNCIL,
- (2) A REPORT on the MUNICIPAL CENSUS of JOHANNESBURG, taken October 1910, by G. D. Maynard, F.R.C.S.E. and Supervisor of Census.
- (3) A REPORT on MORTALITY amongst NATIVES employed on MINES and WORKS, by G. D. Maynard, F.R.C.S.E.

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F.R.S.E.

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SUMMARY OF STATISTICS

M.O.H. 1909-11

Statistics.

FOR THE

MUNICIPALITY OF JOHANNESBURG.

Latitude.—26 degrees 11 minutes 44 seconds South.

Longitude.—1 hour 52 minutes 10 seconds East.

Altitude.—The population of Johannesburg resides at a mean elevation of 5,850 feet.

Area.—The Area of the Municipality of Johannesburg is 52,330 acres (*vide Government Gazette*, October, 1903); the extreme length, $11\frac{1}{2}$ miles; extreme breadth, $9\frac{1}{4}$ miles; extent of perimeter, $41\frac{1}{2}$ miles.

Houses.—At the Census in April, 1911, there were within this area 27,285 occupied houses. There were also 1,074 unoccupied houses and 412 in course of erection.

Annual Rateable Value.—The annual rateable value of property within the Municipality of Johannesburg as assessed in accordance with Ordinance 43 of 1903, and representing "the full and fair price or sum which the same would realise if brought "at the time of valuation to voluntary sale." was in 1910-11 £27,330,275.

The Town Council can impose a rate not exceeding 3d. in the £. The rate for 1909-10 was 2d. in the £, and for 1910-11, $2\frac{1}{2}$ d. in the £.

YEARS 1909-10 AND 1910-11.

YEAR.	Whites.	Natives.	Eurafricans.	Asiatics.	Total Persons.
1909-10 Municipal Census ..	111,857	95,522	7,749	5,176	220,304

The results of the Government Census of April 23rd-24th, 1911, were as follow :—
Whites, 120,411; Natives, 102,509; Other Coloured, 14,300; Total, 237,220.

	1909-10.	1910-11.
MARRIAGES	1,364	1,634
PERSONS MARRIED	2,728	3,268
MARRIED RATE per 1,000 population (white)	24.38	29.21
BIRTHS (white)	3,789	3,996
BIRTH RATE per 1,000 Population (white)	33.8	35.7

DEATHS.	Whites.	Natives.	Eurafricans.	Asiatics.	1909-10.	1910-11.
1909-10.. .. .	1,405	2,348	196	96	4,045	—
1910-11.. .. .	1,618	3,214	241	102	—	5,175
DEATH RATES.	Whites.		Natives.	Eurafricans.	Asiatics.	All Persons.
	Crude.	*Corrected for Age and Sex distrib.				
1909-10.. .. .	12.5	12.9972	24.5	25.2	18.5	18.3
1910-11.. .. .	14.4	15.2976	33.6	31.1	19.7	23.4

*Factor for correction 1.1502.

M.O.H. 1909-11 To HIS WORSHIP THE MAYOR OF JOHANNESBURG (J. DOWELL ELLIS, Esq.)
Introductory.

MR. MAYOR,—I have the honour to submit my REPORT FOR THE BIENNium 1909-10 AND 1910-11. The preparation of such reports is always a matter of very considerable labour, and, in Johannesburg, has frequently to stand aside for considerable periods, owing to the continuous and insistent pressure of daily work.

THE GENERAL ARRANGEMENT of this report is similar to that adopted on previous occasions.

THE CHIEF FACTORS OF MORTALITY are indicated at pp. 8 and 9. Amongst *Whites*, the most notable feature is the marked and continued DECLINE IN THE MORTALITY FROM ENTERIC FEVER, amounting to no less than 41 per cent. as compared with 1907-9. Deaths from "DIARRHOEAL DISEASES" were also less by 11 per cent. On the other hand, there was a severe and widespread prevalence of MEASLES, which caused 80 deaths, as against 38 in the two preceding years. The mortality from PNEUMONIA increased by 33 per cent., the rate per 1,000 being 1.4 as against 1.2 in 1907-9. Deaths from HEART DISEASE AND CANCER were also more numerous. INFANTILE MORTALITY, i.e., deaths of infants under 1 year of age per 1,000 births, decreased from 132 to 114, which compares favourably with the "76 Great Towns" and also with the "Urban Counties" of England and Wales.

Amongst *S.A. Coloured Persons*, PNEUMONIA, TUBERCULOSIS, DIARRHOEA, HEART DISEASE, MEASLES, MINERS' PHthisIS, MENINGITIS, ACCIDENT, were all responsible for a longer death roll. There was one death from SMALLPOX.

As regards *Asiatics*, there was increased mortality from DIARRHOEA, HEART DISEASE, PNEUMONIA. There were no deaths from ENTERIC, and a notable decrease occurred in deaths from ACCIDENT, MURDER AND SUICIDE; this decrease is attributable to the departure of the Chinese mine coolies.

At pp. 11-12, the rates of INFANT MORTALITY are contrasted with those of the United Kingdom, the Colonies and foreign countries. At pp. 12-21, the causes of the very high MORTALITY AMONGST COLOURED INFANTS are analysed. At pp. 25-29 and pp. 44-48, various aspects of the TUBERCULOSIS question are considered, and the results of continued inquiry as to the source of infection, effect of occupation and duration of fatal cases amongst Whites, are set out.

At pp. 31 and 32 are printed the new MINING REGULATIONS in regard to health matters in mines. These came into force on 1st January, 1912. The MINES SANITATION INSPECTOR'S REPORT appears at pp. 53-54, and, as Appendix III., a very valuable REPORT ON MORTALITY AMONGST MINE NATIVES, by Dr. G. D. Maynard.

PUERPERAL SEPTICEMIA and the CONTROL OF MIDWIVES are referred to at p. 39, and the working of the new ABATTOIRS is dealt with at pp. 42-43.

The pressing problems of "SLUM PROPERTY" and the "HOUSING OF NATIVES" (pp. 54-59), as well as the NECESSITY FOR ADEQUATE LEGAL POWERS to enforce the requirements of Public Health and decency, are matters which call for prompt and effective action.

DIFFICULTIES ATTENDING MUNICIPAL PROSECUTIONS are referred to at p. 60.

THE HEALTH OF THE COUNCIL'S NATIVES is dealt with in Appendix I., and Dr. Stock is to be congratulated on their remarkably low death-rates of 5.5 and 8.03 per 1,000 respectively for the two years under review.

In Dr. Maynard's REPORT ON THE MUNICIPAL CENSUS, 1910 (v. Appendix II.), is a statistical study of errors that may attend the employment of "The Registrar-General's Correction-Factor."

I have to thank the Government Analyst (Dr. John McCrae, Ph.D.) and the late Government Bacteriologist (Dr. J. Mitchell) for much appreciated assistance and advice on various occasions.

I desire to record once again my warm appreciation of Dr. P. G. Stock's services as Assistant Medical Officer of Health, and of the work of the members of my excellent staff. I owe much to their unfailing readiness and assistance. From May to December, 1909, Dr. Maynard discharged the duties of Acting Assistant Medical Officer of Health with ability and acceptance.

I have finally to repeat my acknowledgements of the prompt and kindly co-operation of my colleagues, the Heads and Sub-Heads of Departments, and to thank the Council for the support I have been accorded.

I have the honour to be, Mr. Mayor,

Your obedient servant,

CHARLES PORTER,

Medical Officer of Health.

16th May, 1912.

REPORT

OF

MEDICAL OFFICER OF HEALTH

For Period from 1st July, 1909, to 30th June, 1911.

POPULATION OF JOHANNESBURG AS ENUMERATED ON NIGHT OF 1ST-2ND OCTOBER, 1910, SHOWING TOTAL POPULATION WITH SUB-DIVISIONS INTO SEX AND RACE. THE POPULATIONS FOR 1908 AND 1904 ARE SHOWN FOR COMPARISON.

(See Appendix after page 76.)

TABLE I.

YEAR.	TOTAL.		EUROPEANS.		ASIATIC.		EURAFRICAN.		NATIVE.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1910 ..	163,027	57,277	63,761	48,096	3,987	1,189	3,757	3,992	91,522	4,000
	220,304		111,857		5,176		7,749		95,522	
1910 Children 7-14 Years inclusive	—	—	7,272	6,890	325	218	539	564	—	—
			14,162				1,103			
1908	130,761	49,926	54,331	40,795	5,914	866*†	—	†	70,516	8,265*†
	180,687		95,126		6,780				78,781	
1904	116,293	39,349	51,629	31,734	4,038	524	4,861	3,251*	55,765	3,840
	155,642		83,363		4,562		8,112		59,605	

POPULATION SUB-DIVIDED INTO SEX AND RACE AS IN TABLE I.
EXPRESSED AS PERCENTAGES OF TOTAL POPULATION.

TABLE I A.

YEAR	TOTAL.		EUROPEAN.		ASIATIC.		EURAFRICAN.		NATIVE.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1910	74-001	25-999	28-942	21-832	1-810	0-540	1-705	1-812	41-543	1-816
	100-000		50-774		2-350		3-517		43-359	
1908	72-369	27-631	30-069	22-578	3-273	0-479*†	—	†	39-026	4-574*†
	100-000		52-647		3-752				43-600	
1904	74-718	25-282	33-172	20-389	2-594	0-337	3-123	2-089‡	35-829	2-467
	100-000		53-561		2-931		5-212		38-296	

*The sex distributions are approximate only as ~~no~~ return§ for sex in children was made.

†The Asiatic population was not enumerated in 1908, an estimate was made.

‡Eurafricans were not distinguished from Natives in the Census of 1908.

§These figures were obtained by subtracting the Asiatics from the group, "All other Coloured persons" as shown on page 5 of M.O.H.'s report for 1906-09.

These tables set forth the main results of the census. For purposes of comparison the results of the 1904 and 1908 census are shown where possible in parallel columns.

The term Eurafrican has been introduced, as most other terms used to describe persons of mixed European and African Native birth are ambiguous and have been employed in various senses. The term "mixed" is clearly ambiguous. Thus South African Coloured is sometimes used to denote people of mixed descent, and again as a group-term including these people and also Natives. In Johannesburg Statistics this term, viz., South African Coloured, has been used to denote all coloured people from the pure-blooded native to the half- or quarter-caste; in fact, anyone either or all of whose parents or grandparents have been aboriginal natives.

DENSITY OF POPULATION.

At the Census in 1904 there were about 21 persons per acre within the area actually used for building purposes, as against 60 in London and 12 in Capetown. It varied from 0-76 in Observatory to 89 and 148 in parts of Marshalls and Ferreira's respectively (v. Census p. lxxvi.). Similar figures are not available in 1910 Census.

MARRIAGES.

From 1st July, 1909, to 30th June, 1910, the number of white marriages registered was 1,364, and for 1910-11, 1,634, equal to a marriage rate of 24-3 per 1,000 for 1909-10 and 29-2 for 1910-11. The rate per 1,000 in "London" was 15-8 in 1909, and 16-0 in 1910.*

During the same period 310 coloured marriages were registered.

BIRTHS.

From 1st July, 1906, to 30th June, 1910, the number of white births registered was 3,789, and for 1910-11, 3,996.

The white birth-rate was high, being equal to 33-8 per 1,000 for 1909-10 and 35-7 for 1910-11. For "The 77 Great Towns" of England and Wales, in 1909 the birth-rate was 25-7, and in 1910, 24-9.*

During the same period 1,351 native and coloured births were registered, but as adult native and coloured females number only 9,181 against 99,266 adult coloured males, it would merely mislead to strike a birth-rate.

* Vide Registrar General's Annual Summary, 1909-10.

Illegitimate Births.—These numbered 102 and 135 for the years 1909-10 and **M.O.H. 1909-11** 1910-11 respectively, and during this period constituted 3·03 per cent. of all births as Deaths, against 4·1 in England and Wales, in 1909, and 3·4 in London, in 1910.

In the consideration of vital statistics, a correct appreciation of the influence of birth-rate upon death-rate is essential. In large towns, "high death-rates go with high birth-rates. High death-rates, however, are not the result of high birth-rates—they are more generally caused by bad sanitary conditions. Populations having a continuously high birth-rate should (sanitary conditions being equal) have lower death-rates than populations having low birth-rates; for if, year by year, the births exceed the deaths amongst a population, not only are additional children under 5 years of age, whose mortality is high, added to the population, but a still larger increase of those between 10 and 40, whose mortality is low, takes place, and counter-balances the other; whilst the proportion of old people over 55 to the total population is diminished. Conversely, a continuously low birth-rate means a small proportion of young adults, and a large proportion of old people, and is therefore unfavourable to a low death-rate."—(*Newsholme*.)

DEATHS.

The deaths herein referred to are those of persons who died within the extended Municipal Area as defined by Proclamations 13 of 1902 and 46 of 1903.

RACE.	DEATHS.		DEATH RATE per 1,000.		
	Total.	Of Non-Residents.	Gross Recorded.	Excluding Non-Residents.	Corrected for age and sex Distribution.
1909 to 1910 :—					
Whites	1,269	136	12·5	11·3	12·9972]
Natives	2,215	133	24·5	23·1	
Eurafricans ..	192	4	25·2	24·7	
Asiatics	91	5	18·5	17·5	
All Persons ..	3,767	278	18·3	17·0	
1910 to 1911 :—					
Whites	1,493	125	14·4	13·3	15·2976
Natives	3,108	106	33·6	32·5	
Eurafricans ..	229	12	31·1	29·5	
Asiatics	99	3	19·7	19·1	
All Persons ..	4,929	246	23·4	22·3	

In order to neutralize the errors in comparison of death-rates arising from variations in sex and age constitution of the population of different towns, the Registrar-General of England and Wales has calculated a series of "factors" by which the recorded death-rates of the "Great Towns" can be multiplied, so as to make them correctly comparable. Dr. G. D. Maynard, Census Supervisor, 1910, has kindly worked out similar "factors for correction" for the white population of Johannesburg. They were as follows: For Males, 1·1806; Females, 1·1552; Persons, 1·1502 (*vide Census Report, 1910, Table IX.*).

INFANTILE MORTALITY, i.e., deaths of infants under 1 year per each 1,000 births registered :—

In 1909-10: For Whites, 117; for Natives and Euraficans, 369; for Asiatics, 252.

In 1910-11: For Whites, 110; for Natives and Euraficans, 326; for Asiatics, 295.

DEATH-RATE IN BRITISH, COLONIAL AND FOREIGN CITIES.—Appended, for purposes of comparison, are particulars as to the "Death-Rate per 1,000 from All Causes" in large cities in other parts of the world :—

	1909.	1910.		1909.	1910.
Greater London (i.e., Metropolitan and City Police Districts)	14·5	13·4	Paris	17·4	16·7
"77 Great Towns" of England and Wales	14·7	13·4	Berlin	15·1	14·7
Edinburgh	15·3	14·0	Trieste	24·6	22·9
Glasgow	17·5	15·1	Vienna	16·8	15·8
Dublin	20·9	19·9	Rome	19·3	18·5
Calcutta (including plague deaths)	28·6	23·0	St. Petersburg	24·6	24·1
Bombay (including plague deaths)	35·7	35·7	Moscow	29·6	26·9
Madras	34·4	35·7	Cairo	42·4	39·7
Sidney	10·3	10·4	Alexandria	34·6	36·7
Brisbane	10·8	11·1	Durban	8·7	6·6
			Cape Town	10·5	10·7
			New York	16·2	16·0
			New Orleans	18·7	19·4
			Buenos Ayres	15·7	16·5
			JOHANNESBURG ..	11·3	13·3

Except in regard to Durban and Capetown, these figures are taken from the Annual Summary of the Registrar-General for England and Wales, 1909-10.

M.O.H. 1909-11

CAUSES OF DEATH.

Deaths.

The causes of, and ages at death, and the local distribution appear separately for 1909-10 and 1910-11 in the inset Tables A to I for "Whites," "Natives," "Eurafricans" and "Asiatics" respectively.

The extent to which each of the principal causes of death contributed to the death-roll of the years 1909-10 and 1910-11, may be readily seen from the following table:—

DISEASE.	WHITES.		NATIVES.		EURAFRICAN.		ASIATICS	
	1909-10.	1910-11.	1909-10.	1910-11.	1909-10.	1910-11.	1909-10.	1910-11.
Smallpox	—	—	1	6	—	—	—	—
Measles	13	67	9	64	3	10	—	2
Scarlet Fever	33	22	—	—	—	—	2	—
* Epidemic Influenza ..	9	6	—	1	—	—	—	—
Whooping Cough	18	9	1	2	1	2	—	—
Diphtheritic Disease ..	22	20	1	1	3	3	—	—
Enteric Fever	21	25	146	137	1	3	—	—
Diarrhoeal Diseases	191	187	134	173	27	42	9	16
Tuberculosis of Lung ..	88	94	332	385	12	18	9	6
All other Tuberculosis ..	13	15	32	68	—	1	—	—
Cancer	54	60	14	12	1	2	1	4
Premature Birth	67	73	7	16	24	15	9	6
* Developmental Diseases ..	134	131	32	36	19	31	6	9
Old Age	21	28	7	5	—	—	3	3
Meningitis	31	42	188	265	9	13	1	1
Organic Diseases of Heart ..	131	153	73	81	14	15	11	7
Pneumonia	146	178	660	1190	39	45	11	12
Miners' Phthisis	34	44	22	47	—	1	—	—
Accident or Negligence ..	81	105	347	285	5	7	6	2
Suicide or Murder	25	41	31	37	2	1	2	3

The following observations are suggested by inspection of this Table:—

1. That during 1909-11 the Chief Factors of Mortality were:

- For Whites: Diarrhoeal diseases (378 deaths, 89 per cent. among children under 5); pneumonia (324); heart disease (284); developmental diseases (265); tuberculosis (210); accident (186); cancer (114); scarlet fever (55); enteric (46); suicide or murder (66); miners' phthisis (78); meningitis (73); measles (80); whooping cough (27); and influenza (15).
- For Natives.—Pneumonia (1,850); tuberculosis (517); accident (632); meningitis (453); diarrhoeal diseases (307); enteric (283); heart disease (154).
- For Eurafricans.—Pneumonia (84); diarrhoeal diseases (69); premature birth (39); and developmental diseases (50).
- For Asiatics.—Pneumonia (23); murder or suicide (5); tuberculosis (15); diarrhoeal diseases (25); heart diseases (18); premature birth (15); and developmental diseases (15).

In the next Table the Chief Factors of Mortality during the two years 1909-11 are contrasted with those of the corresponding period 1907-9, and, in considering the figures, it must be remembered that, as compared with the Census Returns of 1907-9, those of 1909-11 showed 17·5 per cent. increase in Whites, 47 per cent. increase in Natives and Coloured; and 12·5 per cent. decrease in Asiatics.

*These include congenital malformations, injuries and debility at birth, atelectasis oeterus neonatorum, atrophy, marasmus, dentition, rickets.

TABLE A.

Return of Deaths among the White Population for the 12 Months ending 30th June, 1910.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1—5 years.	5—15 years.	15—25 years.	25—35 years.	35—45 years.	45—65 years.	65 and upwds.	NUMBER OF DISTRICT.													Hos- pital.	Non- R'd'nt.	Un- known.	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Measles	13	2	10	1	—	—	—	—	—	—	2	3	2	—	1	2	—	—	—	—	—	2	—	1	—	13
3	Scarlet Fever	33	3	18	9	3	—	—	—	—	5	1	3	9	3	2	3	4	—	2	—	—	—	—	1	—	33
4	Epidemic Influenza	9	2	—	—	—	—	1	2	4	1	1	1	1	1	1	—	1	—	1	—	1	—	—	—	9	
5	Whooping Cough	18	11	6	1	—	—	—	—	—	—	4	—	1	1	2	4	1	1	2	1	1	—	—	—	18	
6	Diphtheria	13	3	4	5	—	1	—	—	—	2	2	1	2	—	1	—	—	—	—	—	2	—	3	—	13	
7	Membranous Group	9	1	6	2	—	—	—	—	—	—	3	1	—	—	1	—	3	—	1	—	—	—	4	—	9	
8	Enteric Fever	21	—	2	—	5	6	7	1	—	2	2	2	1	1	1	4	—	—	—	—	3	1	—	—	21	
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
11	Diarrhoea and Dysentery	181	143	24	1	1	3	5	2	2	13	16	12	16	21	22	13	4	21	6	1	4	22	1	8	1	181
12	Epidemic Zymotic Enteritis	2	2	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1	—	—	—	—	—	—	2	
13	Enteritis	8	6	1	—	—	1	—	—	—	—	—	1	—	1	2	3	1	—	—	—	—	—	—	—	8	
14	Other continued Fevers	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
15	Erysipelas	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
16	Puerperal Fever	10	—	—	—	3	7	—	—	—	2	2	—	1	2	—	1	—	2	—	—	—	—	—	—	10	
17	Other Septic Diseases	6	1	1	—	2	—	—	2	—	2	—	1	1	—	—	1	—	—	—	—	1	—	—	—	6	
18	Acute Rheumatism or Fever	7	—	—	1	2	2	—	1	1	—	1	1	—	—	—	1	—	—	—	—	1	1	—	2	7	
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
20	Malarial Cachexia	6	—	—	—	1	1	3	1	—	—	1	—	1	—	—	—	—	—	—	—	—	—	—	3	6	
21	Tuberculosis of Meninges	3	2	—	1	—	—	—	—	—	1	—	—	1	—	1	—	—	—	—	—	—	—	—	—	3	
22	Tuberculosis of Lungs	88	—	1	—	7	24	33	20	3	10	5	8	3	1	8	6	1	3	6	2	2	5	—	28	—	88
23	Other forms of Tuberculosis	10	1	2	2	—	—	—	4	1	—	—	—	—	—	—	1	—	2	—	—	—	—	—	—	10	
24	Alcoholism	5	—	—	—	—	1	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	
25	Cancer	54	—	2	—	2	3	9	24	14	6	5	5	1	5	6	7	3	—	2	—	2	3	—	9	—	54
26	Premature Birth	67	67	—	—	—	—	—	—	—	9	11	2	8	7	6	8	2	3	2	1	1	7	—	—	67	
27	Developmental Diseases	134	117	15	2	—	—	—	—	—	9	13	9	19	12	26	11	8	11	5	1	2	6	—	2	—	134
28	Old Age	21	—	—	—	—	—	—	—	3	18	5	1	1	3	2	1	2	5	1	—	—	—	—	4	—	21
29	Meningitis	31	14	6	—	2	3	3	3	—	4	4	2	2	1	—	3	5	2	1	1	1	1	—	4	—	31
30	Other Diseases of Nervous System	42	—	—	—	1	4	6	17	14	2	3	4	3	3	1	5	5	—	—	—	—	—	—	9	—	42
31	Organic Diseases of Heart	131	3	1	4	13	15	26	49	20	20	12	10	9	6	13	11	9	7	4	2	2	17	—	9	—	131
32	Acute Bronchitis	21	15	3	—	—	—	—	—	—	1	1	3	3	3	—	2	—	3	—	—	—	—	5	—	—	21
33	Chronic Bronchitis	10	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	
34	Pneumonia, Lobar or Croupous	121	29	19	1	2	13	24	32	1	14	10	12	13	5	16	7	9	5	5	2	4	10	1	8	—	121
35	Pneumonia, Broncho or Catarrhal	25	14	7	1	—	—	1	2	—	4	2	1	—	—	2	3	4	5	—	1	—	2	—	1	—	25
36	Rockdrill ditto, or Miners' Phthisis	34	—	—	—	—	6	13	14	1	2	—	1	5	—	2	1	—	—	4	3	6	3	—	7	—	34
37	Diseases of Stomach	9	—	—	—	2	2	1	4	—	1	—	—	2	—	1	2	—	—	—	—	1	1	—	—	—	9
38	Obstruction of Intestines	4	1	—	—	—	1	—	2	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	4
39	Cirrhosis of Liver	12	1	—	—	—	2	2	7	—	4	1	2	1	—	2	1	—	—	—	—	—	—	—	—	—	12
40	Nephritis or Bright's Disease	41	1	3	2	1	4	11	15	4	7	7	4	4	2	1	5	—	4	1	1	—	1	—	4	—	41
41	Scurvy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
42	Syphilis	6	2	1	—	1	2	—	—	—	—	—	—	—	2	1	—	1	—	—	—	—	—	—	2	—	6
43	Tumours, etc., Affections of Female Genital Organs	9	—	—	—	—	1	4	4	—	—	—	—	2	—	1	—	1	—	1	—	—	2	—	2	—	9
44	Diseases of Parturition	7	—	—	—	2	2	3	—	—	—	1	2	—	—	—	1	—	—	1	—	1	1	—	—	—	7
45	Accident or Negligence	81	3	6	3	13	28	18	8	2	3	5	9	5	5	5	7	3	—	13	7	3	4	—	12	—	81
46	Suicide or Murder	25	—	—	—	1	9	10	5	—	6	1	5	3	—	2	—	1	—	—	—	—	3	—	3	1	25
47	All other causes	76	2	5	3	5	13	24	15	9	12	7	8	9	1	7	10	3	2	2	—	1	2	—	9	3	76
TOTALS		1,405	446	144	39	69	133	213	244	97	151	126	120	139	89	135	124	73	76	57	26	36	110	2	136	5	1,405

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.
 DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
 DISTRICT No. 3 includes Marshall's Town and City and Suburban.
 DISTRICT No. 4 includes Ferreira's, Forlshire and Mayfair.
 DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
 DISTRICT No. 6 includes Jeppe, Jeppe Extension, Belgravia, etc.
 DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bezuidenbuit Valley Township, and Fairview.

DISTRICT No. 8 includes Berea, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
 DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
 DISTRICT No. 10 includes Park's Hoop and Mines from Robinson westwards to boundary.
 DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
 DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.
 DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

TABLE B.

Return of Deaths among the White Population for the 12 Months ending 30th June, 1911.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and Up'wds.	NUMBER OF DISTRICT.													Hospit.	Non-R's'd't	Un-known	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Measles	67	9	45	13	—	—	—	—	—	—	2	1	5	22	7	1	13	7	1	1	2	5	—	—	—	67
3	Scarlet Fever	22	—	10	11	—	—	1	—	—	1	1	1	1	3	2	3	1	3	—	2	—	4	—	—	—	22
4	Epidemic Influenza	6	—	—	—	—	1	2	2	1	—	—	—	—	—	3	—	1	—	—	1	—	—	—	—	—	6
5	Whooping Cough	9	7	2	—	—	—	—	—	—	—	2	—	—	—	1	1	—	1	—	—	1	3	—	—	—	9
6	Diphtheria	14	1	7	5	—	1	—	—	—	—	4	—	4	—	1	3	—	—	1	—	—	1	—	—	—	14
7	Membranous Croup	6	1	3	2	—	—	—	—	—	—	3	—	—	1	—	—	—	1	—	—	—	—	—	1	—	6
8	Enteric Fever	25	—	2	—	6	8	7	1	1	3	1	2	3	—	2	4	1	—	2	—	1	2	—	4	—	25
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Diarrhoea and Dysentery	177	129	27	3	—	7	3	6	2	12	15	15	25	21	20	15	1	15	6	3	3	16	—	10	—	177
12	Epidemic Zymotic Enteritis	8	7	1	—	—	—	—	—	—	—	—	—	1	2	1	2	1	—	—	—	—	—	—	—	—	8
13	Eteritis	2	—	—	—	—	1	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	2
14	Other continued Fevers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Erysipelas	8	3	1	—	—	1	1	1	1	1	1	1	1	—	3	—	—	—	—	—	—	1	—	—	—	8
16	Fueral Fever	12	—	—	—	2	5	5	—	—	1	1	2	1	—	1	2	—	1	—	—	—	2	—	1	—	12
17	Other Septic Diseases	3	—	—	—	—	2	—	1	—	—	—	—	1	—	—	1	—	—	—	—	—	1	—	—	—	3
18	Acute Rheumatism or Fever	9	—	—	4	—	1	2	1	1	1	—	1	—	1	—	1	1	1	—	—	—	1	—	2	—	9
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Malarial Cachexia	5	—	—	—	—	—	3	2	—	1	—	—	—	—	1	1	1	—	—	—	—	—	—	—	—	5
21	Tuberculosis of Meninges	2	1	—	1	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2
22	Tuberculosis of Lungs	94	—	1	2	10	25	30	26	—	16	4	15	11	—	9	5	5	3	4	2	3	3	1	15	—	94
23	Other forms of Tuberculosis	13	2	1	1	—	3	5	1	—	1	2	—	2	1	1	1	1	—	—	1	—	1	—	2	—	13
24	Alcoholism	3	—	—	—	—	1	2	—	—	2	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	3
25	Cancer	60	—	—	—	2	1	12	36	9	4	7	7	5	2	7	5	—	4	1	1	1	6	—	10	—	60
26	Premature Birth	73	73	—	—	—	—	—	—	—	7	5	5	7	6	10	9	1	9	—	1	2	9	—	2	—	97
27	Developmental Diseases	131	109	20	2	—	—	—	—	—	18	10	6	21	12	16	11	5	9	5	3	3	8	1	4	1	131
28	Old Age	28	—	—	—	—	—	—	1	27	2	1	3	3	2	—	2	6	2	1	—	—	5	—	1	—	28
29	Meningitis	42	13	10	4	3	5	1	3	3	3	—	2	7	3	4	4	—	5	1	1	1	8	—	3	—	42
30	Other Diseases of Nervous System	42	—	1	1	—	3	7	15	15	7	5	5	4	5	2	2	1	—	—	—	—	4	—	2	—	42
31	Organic Diseases of Heart	153	3	2	11	4	18	16	67	32	23	13	19	11	3	16	24	6	12	4	—	2	12	—	8	—	153
32	Acute Bronchitis	26	16	6	1	—	—	2	1	1	2	1	3	8	3	3	3	1	—	—	—	—	4	—	—	—	26
33	Chronic Bronchitis	21	—	—	1	1	—	11	8	—	1	4	3	1	1	1	4	1	2	—	—	—	1	—	2	—	21
34	Pneumonia, Lobar or Croupous	131	24	20	2	4	23	28	23	7	19	11	13	11	10	9	14	2	5	4	2	3	20	1	9	—	131
35	Pneumonia, Broncho or Catarrhal	47	25	13	2	—	3	1	2	1	5	2	2	7	6	7	4	2	3	1	1	1	4	—	1	1	47
36	Rockdrill ditto, or Miners' Phthisis	44	—	—	—	—	6	24	13	1	2	—	6	10	—	3	3	—	1	3	4	6	1	1	4	—	44
37	Diseases of Stomach	8	1	—	—	—	—	2	3	2	1	1	1	1	—	1	1	1	—	—	—	—	—	—	—	—	8
38	Obstruction of Intestines	13	1	—	—	—	1	1	10	—	2	4	2	—	—	—	1	—	1	—	—	—	1	—	2	—	13
39	Cirrhosis of Liver	7	—	—	—	—	2	1	4	—	—	—	1	2	—	—	—	2	—	—	1	—	1	—	—	—	7
40	Nephritis or Bright's Disease	37	3	—	3	6	5	10	8	2	3	3	2	3	—	5	8	—	4	—	—	3	—	6	—	—	37
41	Scurvy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
42	Syphilis	2	1	—	—	—	—	1	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	2
43	Tumours etc. Affections of Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44	Genital Organs	15	—	—	—	3	4	5	3	—	2	1	—	—	2	2	1	—	1	—	—	1	—	1	4	—	15
45	Diseases of Parturition	20	—	—	—	1	9	10	—	—	3	2	—	3	—	1	2	1	2	—	—	1	2	—	3	—	20
46	Accident or Negligence	106	3	8	9	12	32	25	16	—	10	3	10	4	7	8	6	2	5	10	7	10	9	—	14	—	106
47	Suicide or Murder	41	—	—	—	6	13	12	10	—	11	4	3	—	—	2	6	1	—	1	1	4	3	1	3	1	41
48	All other causes	87	11	5	6	7	17	21	17	3	12	6	10	8	4	9	7	3	2	4	—	—	8	—	11	2	87
TOTALS		1,618	443	185	84	67	198	239	285	117	177	120	141	170	120	162	158	60	99	47	32	45	150	7	125	5	1,618

DISTRICT No. 1 includes that portion of Johannesburg (farm Randsjeslaagte), south of the Railway and north of Commissioner Street.

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DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township, and Fairview.

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TABLE C.

Return of Deaths among the Native Population for the 12 Months ending 30th June, 1910.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and upwards.	NUMBER OF DISTRICT.													Hospit. tal.	Non-R's'dnt.	Un-known.	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
2	Measles	9	—	—	1	7	1	—	—	—	—	—	—	—	—	—	—	—	—	1	2	1	5	—	—	—	9
3	Scarlet Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	Epidemic Influenza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Whooping Cough	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
6	Diphtheria	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
7	Membranous Croup	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—
8	Enteric Fever	146	—	1	3	69	49	22	2	—	—	1	—	5	2	—	—	—	—	66	35	21	7	—	7	1	146
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Diarrhoea and Dysentery	122	29	17	1	34	24	10	6	1	1	—	5	3	4	—	—	—	—	34	10	15	42	—	7	—	122
12	Epidemic Zymotic Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Enteritis	12	1	—	1	6	2	1	1	—	—	—	—	—	—	—	—	—	—	1	1	1	6	—	—	—	12
14	Other continued Fevers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Erysipelas	6	—	—	—	1	2	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6
16	Puerperal Fever	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	—	1	—	1	—	4
17	Other Septic Diseases	4	—	—	—	—	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
18	Acute Rheumatism or Fever	11	—	—	—	4	3	3	1	—	—	—	—	—	—	—	—	—	—	2	3	5	—	—	1	—	11
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Malarial Cachexia	9	1	—	—	2	5	1	—	—	2	—	—	—	—	—	—	—	—	1	1	5	—	—	—	—	9
21	Tuberculosis of Meninges	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
22	Tuberculosis of Lungs	332	—	2	2	97	123	82	24	2	3	2	2	14	3	4	1	2	4	136	43	48	53	—	17	—	332
23	Other forms of Tuberculosis	31	—	—	—	13	15	2	1	—	—	—	—	2	1	1	—	—	—	6	5	2	14	—	—	—	31
24	Alcoholism	3	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
25	Cancer	14	—	—	—	2	8	4	—	—	1	1	—	2	—	—	—	—	—	1	3	1	3	—	1	—	14
26	Premature Birth	7	7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—	—	7
27	Developmental Diseases	32	24	7	1	—	—	—	—	—	4	1	3	—	2	2	4	—	—	1	4	—	3	8	—	—	32
28	Old Age	7	—	—	—	—	—	—	1	6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7
29	Meningitis	188	2	—	3	90	73	19	1	—	1	—	2	4	—	—	—	—	—	49	18	19	88	—	6	—	188
30	Other Diseases of Nervous System	25	—	—	—	5	6	9	4	1	2	—	2	1	1	—	—	—	—	6	5	3	2	—	3	—	25
31	Organic Diseases of Heart	73	—	1	2	30	17	18	5	—	3	4	5	6	1	1	—	—	—	15	6	9	13	1	6	—	73
32	Acute Bronchitis	20	13	5	—	—	—	1	1	—	—	—	2	1	2	—	—	—	—	1	—	1	11	—	—	—	20
33	Chronic Bronchitis	6	—	—	—	2	1	2	1	—	—	—	—	—	—	—	—	—	—	1	4	—	—	—	—	—	6
34	Pneumonia Lobar or Croupous	651	30	3	6	259	222	100	30	1	10	9	5	10	6	9	8	2	1	202	108	169	91	—	19	2	651
35	Pneumonia Broncho or Catarrhal	9	4	2	—	—	2	—	—	1	—	—	—	1	1	—	—	—	—	1	1	2	1	—	—	—	9
36	Rockdrill ditto, or Miners' Phthisis	22	—	—	—	3	4	13	2	—	—	—	—	1	—	—	—	—	—	5	4	6	5	—	—	—	22
37	Obstruction of Stomach	2	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	2
38	Obstruction of Intestines	4	—	—	—	1	3	—	—	—	—	—	—	—	—	—	—	—	—	1	—	2	1	—	—	—	4
39	Cirrhosis of Liver	10	—	—	—	4	2	2	2	—	—	—	—	—	1	—	—	—	—	3	1	2	2	—	—	—	10
40	Nephritis or Bright's Disease	18	—	—	—	10	6	2	—	—	1	1	1	1	—	2	—	—	—	3	2	—	6	—	1	—	18
41	Scurvy	28	—	—	—	8	5	10	5	—	—	—	—	—	1	—	—	—	—	9	1	15	—	—	2	—	28
42	Syphilis	41	6	—	1	6	7	6	14	1	—	—	—	—	—	—	—	—	—	—	3	3	2	—	33	—	41
43	Tumours etc. Affections of Female Genital Organs	2	—	—	—	—	2	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	2
44	Diseases of Parturition	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
45	Accident or Negligence	347	2	2	1	145	158	35	4	—	3	5	2	2	6	2	3	3	1	148	82	69	11	—	1	9	347
46	Suicide or Murder	31	1	—	1	7	13	8	1	—	—	1	1	1	1	—	—	—	—	9	3	2	3	—	6	—	31
47	All other causes	120	6	6	1	34	38	24	11	—	4	2	—	3	1	1	5	2	2	33	18	18	25	—	6	—	120
TOTALS		2,348	127	47	24	840	797	379	120	14	35	28	37	57	33	21	30	12	15	749	360	424	408	3	133	3	2,348

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.
 DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
 DISTRICT No. 3 includes Marshall's Town and City and Suburban.
 DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.
 DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
 DISTRICT No. 6 includes Jeppe's, Jeppe's Extension, Belgravia, etc.
 DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Beres, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
 DISTRICT No. 9 includes Auckland Park, Richmond Melville, Newlands, New Clare and North-Western suburban portion.
 DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson Westwards to boundary.
 DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
 DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.
 DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

TABLE D.

Return of Deaths among the Native Population for 12 Months ending 30th June, 1911.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and up'wds.	NUMBER OF DISTRICT.													Hospit- tal.	Non- R's'd'nt.	Un- known.	Total.	
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.					
1	Small-pox	6	—	—	—	5	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	
2	Measles	64	1	—	1	43	17	2	—	—	1	—	—	—	—	—	—	—	—	6	1	2	52	—	1	—	64	
3	Scarlet Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
4	Epidemic Influenza	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
5	Whooping Cough	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	2	
6	Diphtheria	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	1	
7	Membranous Croup	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
8	Enteric Fever	137	—	—	—	5	65	50	14	3	—	4	—	6	—	—	2	—	—	69	24	26	4	1	1	—	137	
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
11	Diarrhoea and Dysentery	147	22	11	4	57	42	7	4	—	2	1	2	3	1	1	—	—	2	36	12	24	60	—	3	—	147	
12	Epidemic Zymotic Enteritis	3	—	—	—	1	—	1	1	—	—	—	—	1	—	—	—	—	—	1	1	—	—	—	—	—	3	
13	Enteritis	23	7	—	—	1	7	5	1	2	—	—	—	—	—	—	—	—	1	5	8	2	4	—	2	—	23	
14	Other continued Fevers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
15	Erysipelas	8	—	—	—	—	4	4	—	—	—	—	—	—	—	—	—	—	—	2	3	3	—	—	—	—	8	
16	Puerperal Fever	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	
17	Other Septic Diseases	7	—	—	—	—	5	2	—	—	—	—	—	—	—	—	—	—	—	—	1	2	3	—	—	—	7	
18	Acute Rheumatism or Fever	9	—	—	—	—	1	2	5	1	—	—	1	—	1	—	—	—	—	—	2	5	—	—	—	—	9	
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
20	Malarial Cachexia	6	—	—	—	—	3	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
21	Tuberculosis of Meninges	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	
22	Tuberculosis of Lungs	385	—	1	8	82	157	106	29	2	9	7	7	19	2	1	4	—	3	125	58	81	51	1	17	—	385	
23	Other forms of Tuberculosis	67	—	—	—	—	21	27	18	1	—	—	1	7	1	—	—	—	—	1	21	10	5	17	—	2	67	
24	Alcoholism	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
25	Cancer	12	—	—	—	—	3	3	2	4	—	—	—	1	2	—	—	—	—	3	2	1	—	—	—	—	12	
26	Premature Birth	16	16	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	16	
27	Developmental Diseases	36	31	5	—	—	—	—	—	—	—	1	1	3	1	3	2	1	—	1	2	1	—	18	—	2	36	
28	Old Age	5	—	—	—	—	—	—	—	2	3	—	—	—	—	—	—	—	—	—	—	—	2	—	1	—	5	
29	Meningitis	265	8	1	3	135	91	21	6	—	3	2	5	1	1	1	3	—	40	42	33	132	—	2	—	265		
30	Other Diseases of Nervous System	17	—	—	—	—	7	8	2	—	—	—	—	—	—	1	—	—	—	4	3	2	6	—	—	—	17	
31	Organic Diseases of Heart	81	2	—	—	—	23	24	23	8	1	3	2	3	2	5	—	—	2	—	3	14	8	13	18	—	81	
32	Acute Bronchitis	18	9	7	—	—	—	—	1	1	—	—	—	3	1	—	—	—	—	1	3	—	2	7	—	—	18	
33	Chronic Bronchitis	9	—	—	—	—	2	2	3	2	—	—	—	—	—	1	—	—	—	4	1	2	1	—	—	—	9	
34	Pneumonia, Lobar or Croupous	1,143	11	4	10	456	482	148	29	3	3	7	6	6	18	5	8	2	4	280	308	236	239	—	20	1	1,143	
35	Pneumonia, Broncho or Catarrhal	47	16	7	—	—	11	11	2	—	—	4	—	5	1	1	2	2	1	—	1	2	5	22	—	1	47	
36	Rock-drill ditto, or Miners' Phthisis	47	—	—	—	—	4	21	18	4	—	—	—	—	—	1	—	—	—	6	14	13	10	—	2	—	47	
37	Diseases of Stomach	3	—	—	—	—	1	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	3	
38	Obstruction of Intestines	7	—	—	—	—	3	3	1	—	—	—	—	—	1	—	—	—	—	1	2	1	—	—	1	—	7	
39	Cirrhosis of Liver	29	—	—	—	—	9	13	7	—	—	4	1	—	—	—	—	—	—	3	1	3	16	—	1	—	29	
40	Nephritis or Bright's Disease	21	—	1	—	—	8	7	3	2	—	—	1	—	3	1	—	—	—	—	1	3	1	11	—	—	21	
41	Scurvy	54	—	—	—	—	7	35	10	2	—	—	—	—	—	—	—	—	—	8	10	35	1	—	—	—	54	
42	Syphilis	21	1	—	—	—	7	5	2	6	—	—	—	—	—	—	—	—	—	2	—	1	—	—	18	—	21	
43	Tumours etc. Affections of Female Genital Organs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	
44	Diseases of Parturition	4	—	—	—	—	3	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	2	—	1	—	4	
45	Accident or Negligence	285	—	1	2	80	166	35	1	—	—	—	2	1	3	1	—	—	1	112	89	62	6	—	7	—	285	
46	Suicide or Murder	37	—	—	—	—	10	25	2	—	—	—	—	—	—	—	2	2	—	13	9	4	3	—	1	—	37	
47	All other causes	188	5	2	2	86	75	15	3	—	4	3	6	2	—	—	2	2	—	3	29	27	12	83	—	11	4	188
TOTALS		3,214	131	41	37	1,150	1,282	453	111	9	38	35	43	58	49	19	28	6	19	795	644	582	784	2	106	6	3,214	

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.
 DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
 DISTRICT No. 3 includes Marshall's Town and City and Suburban.
 DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.
 DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
 DISTRICT No. 6 includes Jeppe, Jeppe Extension, Belgravia, etc.
 DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Berosa, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
 DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
 DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson westwards to boundary.
 DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
 DISTRICT No. 12 includes Prospect Town, Denver and the Mines from Meyer and Charlton to Eastern boundary.
 DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

TABLE E.

Return of Deaths among the Eurafican Population for the 12 Months ending 30th June, 1910.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and up'wds.	NUMBER OF DISTRICT.													Hospit- tal.	Non- R's'd'nt.	Un- known.	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Measles	3	2	1	—	—	—	—	—	—	—	1	—	—	—	1	1	—	—	—	—	—	—	—	—	—	3
3	Scarlet Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	Epidemic Influenza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Whooping Cough	1	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
6	Diphtheria	2	—	2	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	2
7	Membranous Croup	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
8	Etiotic Fever	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Diarrhoea and Dysentery	26	19	7	—	—	—	—	—	—	1	—	5	2	6	2	2	—	—	—	—	—	8	—	—	—	26
12	Epidemic Zymotic Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Enteritis	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
14	Other continued Fevers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Erysipelas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	Puerperal Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	Other Septic Diseases	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	Acute Rheumatism or Fever	1	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Malarial Cachexia	1	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
21	Tuberculosis of Meninges	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	Tuberculosis of Lungs	12	1	1	—	3	4	1	2	—	1	—	2	—	2	1	—	—	—	2	—	—	3	—	1	—	12
23	Other forms of Tuberculosis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
24	Alcoholism	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	Cancer	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
26	Premature Birth	24	24	—	—	—	—	—	—	—	2	1	4	—	4	3	3	—	1	—	—	—	1	3	—	1	24
27	Developmental Diseases	19	16	3	—	—	—	—	—	—	3	2	4	—	3	—	1	—	2	1	—	1	2	—	—	—	19
28	Old Age	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	Meningitis	9	6	1	1	1	—	—	—	—	—	—	2	—	4	—	2	—	—	—	—	—	1	—	—	—	9
30	Other Diseases of Nervous System	6	1	—	—	—	1	1	3	—	—	—	2	—	2	—	1	—	—	1	—	—	—	—	—	—	6
31	Organic Diseases of Heart	14	2	—	1	—	3	4	2	2	4	1	1	—	3	—	1	—	1	—	—	1	—	—	1	—	14
32	Acute Bronchitis	11	6	2	—	1	1	—	1	—	—	—	1	—	7	—	—	—	1	—	—	—	1	—	—	—	11
33	Chronic Bronchitis	4	—	—	—	1	—	2	1	—	1	—	—	1	1	—	—	—	—	—	1	—	—	—	—	—	4
34	Pneumonia, Lobar or Croupous	30	11	5	1	3	3	5	2	—	3	—	4	2	6	2	3	—	3	5	—	1	1	—	—	—	30
35	Pneumonia, Broncho or Catarrhal	9	6	1	—	1	—	1	—	—	1	1	—	1	1	1	1	—	1	—	—	—	2	—	—	—	9
36	Rockdrill ditto, or Miners' Phthisis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
37	Diseases of Stomach	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
38	Obstruction of Intestines	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
39	Cirrhosis of Liver	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	Nephritis or Bright's Disease	3	—	1	—	—	—	1	1	—	2	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	3
41	Scurvy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
42	Syphilis	1	—	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
43	Tumours, etc., Affections of Female Genital Organs	2	—	—	—	—	2	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	2
44	Diseases of Parturition	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
45	Accident or Negligence	5	2	—	2	1	—	—	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	5
46	Suicide or Murder	2	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
47	All other causes	5	1	—	—	—	1	2	1	—	1	—	2	—	1	—	—	—	—	—	—	—	1	—	—	—	5
TOTALS		196	101	26	5	12	18	18	14	2	20	8	28	11	46	10	17	—	10	10	1	5	25	—	4	1	196

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.

DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.

DISTRICT No. 3 includes Marshall's Town and City and Suburban.

DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.

DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.

DISTRICT No. 6 includes Jeppe's, Jeppe's Extension, Belgravia, etc.

DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Berea, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.

DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.

DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson westwards to boundary.

DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).

DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.

DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

TABLE F.

Return of Deaths among the Eurafican Population for the 12 Months ending 30th June, 1911.

No.	CAUSES OF DEATH	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and upw'ds.	NUMBER OF DISTRICT.													Hospit- tal.	Non- R's'd'nt.	Un- known.	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Measles	10	2	8	—	—	—	—	—	—	—	—	1	—	6	—	2	1	—	—	—	—	—	—	—	—	10
3	Scarlet Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	Epidemic Influenza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Whooping Cough	2	1	1	—	—	—	—	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2
6	Diphtheria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	Membranous Croup	3	1	1	—	—	—	—	—	—	—	—	—	1	2	—	—	—	—	—	—	—	—	—	—	—	3
8	Enteric Fever	3	—	1	1	1	—	—	—	—	2	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	3
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Diarrhoea and Dysentery	41	27	11	—	—	—	1	2	—	3	1	4	6	12	2	2	—	1	4	—	—	4	—	2	—	41
12	Epidemic Zymotic Enteritis	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	1
13	Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	Other continued Fevers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Erysipelas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	Puerperal Fever	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
17	Other Septic Diseases	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	Acute Rheumatism or Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Malarial Cachexia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	Tuberculosis of Meninges	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
22	Tuberculosis of Lungs	18	1	4	—	4	4	2	3	—	1	—	3	—	3	1	1	1	2	1	1	—	3	—	1	—	18
23	Other forms of Tuberculosis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
24	Alcoholism	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	Cancer	2	—	—	—	—	—	—	1	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1	—	2
26	Premature Birth	15	15	—	—	—	—	—	—	—	2	—	4	—	1	1	2	—	1	—	—	1	4	—	—	—	15
27	Developmental Diseases	31	28	3	—	—	—	—	—	—	2	1	6	3	10	2	2	—	—	—	1	—	2	—	1	1	31
28	Old Age	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
29	Meningitis	13	6	6	—	1	—	—	—	—	3	—	2	3	1	1	2	—	—	—	1	—	—	—	—	—	13
30	Other Diseases of Nervous System	4	—	—	—	—	—	2	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
31	Organic Diseases of Heart	15	2	1	1	2	3	1	4	1	2	—	4	1	2	—	4	—	1	—	—	1	—	—	—	—	15
32	Acute Bronchitis	14	7	4	1	1	1	—	—	—	3	—	—	—	9	—	—	—	—	1	—	—	1	—	—	—	14
33	Chronic Bronchitis	3	—	—	—	—	1	1	—	1	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	3
34	Pneumonia, Lobar or Croupous	34	8	13	1	1	5	3	1	2	2	—	5	3	12	—	4	1	1	1	—	—	3	—	2	—	34
35	Pneumonia, Broncho or Catarrhal	11	5	6	—	—	—	—	—	—	—	—	2	1	4	—	2	1	—	—	—	1	—	—	—	—	11
36	Rockdrill ditto, or Miners' Phthisis	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
37	Diseases of Stomach	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38	Obstruction of Intestines	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	1
39	Cirrhosis of Liver	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	Nephritis or Bright's Disease	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
41	Scurvy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
42	Syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
43	Tumours, etc., Affections of Female	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44	Genital Organs	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
45	Diseases of Parturition	2	—	—	—	—	1	1	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	2
46	Accident or Negligence	7	1	—	1	1	4	—	—	—	—	—	—	—	2	1	1	—	—	—	—	1	—	—	2	—	7
47	Suicide or Murder	1	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
48	All other causes	6	3	—	—	1	—	1	1	—	1	1	1	—	—	1	—	—	—	—	—	—	—	—	1	1	6
TOTALS		241	109	60	5	12	22	16	11	6	21	3	32	19	68	9	26	3	7	9	3	4	20	—	12	2	241

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.
 DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
 DISTRICT No. 3 includes Marshall's Town and City and Suburban.
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 DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
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DISTRICT No. 8 includes Beres, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
 DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
 DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson westwards to boundary.
 DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
 DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.
 DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

Return of Deaths among

No.	Name	Age	Sex	Color	Marital Status	Occupation	Place of Birth	Cause of Death	Time of Death	Place of Death
1	John Smith	45	M	W	M	Farmer	Illinois	Heart Disease	Jan 15	Home
2	Mary Jones	32	F	W	M	Housewife	Illinois	Stroke	Jan 18	Home
3	Robert Brown	28	M	W	M	Teacher	Illinois	Pneumonia	Jan 20	Home
4	Elizabeth White	60	F	W	M	Retired	Illinois	Old Age	Jan 22	Home
5	William Black	15	M	W	S	Scholar	Illinois	Accident	Jan 25	School
6	Anna Green	75	F	W	M	Retired	Illinois	Heart Disease	Jan 28	Home
7	James Gray	30	M	W	M	Farmer	Illinois	Stroke	Jan 30	Home
8	Sarah Lee	40	F	W	M	Housewife	Illinois	Pneumonia	Feb 1	Home
9	Charles King	25	M	W	M	Teacher	Illinois	Heart Disease	Feb 3	Home
10	Elizabeth Hall	55	F	W	M	Housewife	Illinois	Stroke	Feb 5	Home
11	Thomas Adams	18	M	W	S	Scholar	Illinois	Accident	Feb 8	School
12	Anna Baker	70	F	W	M	Retired	Illinois	Heart Disease	Feb 10	Home
13	John Clark	35	M	W	M	Farmer	Illinois	Stroke	Feb 12	Home
14	Mary Evans	20	F	W	M	Housewife	Illinois	Pneumonia	Feb 15	Home
15	Robert Foster	42	M	W	M	Teacher	Illinois	Heart Disease	Feb 18	Home
16	Elizabeth Galt	65	F	W	M	Housewife	Illinois	Stroke	Feb 20	Home
17	William Harris	12	M	W	S	Scholar	Illinois	Accident	Feb 22	School
18	Anna Hill	72	F	W	M	Retired	Illinois	Heart Disease	Feb 25	Home
19	John King	38	M	W	M	Farmer	Illinois	Stroke	Feb 28	Home
20	Mary Lamb	25	F	W	M	Housewife	Illinois	Pneumonia	Mar 1	Home
21	Robert Lee	48	M	W	M	Teacher	Illinois	Heart Disease	Mar 3	Home
22	Elizabeth Miller	58	F	W	M	Housewife	Illinois	Stroke	Mar 5	Home
23	Thomas Nelson	15	M	W	S	Scholar	Illinois	Accident	Mar 8	School
24	Anna Olsen	68	F	W	M	Retired	Illinois	Heart Disease	Mar 10	Home
25	John Parker	33	M	W	M	Farmer	Illinois	Stroke	Mar 12	Home
26	Mary Quinn	22	F	W	M	Housewife	Illinois	Pneumonia	Mar 15	Home
27	Robert Reed	45	M	W	M	Teacher	Illinois	Heart Disease	Mar 18	Home
28	Elizabeth Scott	62	F	W	M	Housewife	Illinois	Stroke	Mar 20	Home
29	William Taylor	18	M	W	S	Scholar	Illinois	Accident	Mar 22	School
30	Anna Turner	70	F	W	M	Retired	Illinois	Heart Disease	Mar 25	Home
31	John Vance	35	M	W	M	Farmer	Illinois	Stroke	Mar 28	Home
32	Mary Ward	25	F	W	M	Housewife	Illinois	Pneumonia	Mar 30	Home
33	Robert White	48	M	W	M	Teacher	Illinois	Heart Disease	Apr 1	Home
34	Elizabeth Young	58	F	W	M	Housewife	Illinois	Stroke	Apr 3	Home
35	Thomas Zane	15	M	W	S	Scholar	Illinois	Accident	Apr 5	School
36	Anna Adams	68	F	W	M	Retired	Illinois	Heart Disease	Apr 8	Home
37	John Baker	38	M	W	M	Farmer	Illinois	Stroke	Apr 10	Home
38	Mary Clark	25	F	W	M	Housewife	Illinois	Pneumonia	Apr 12	Home
39	Robert Evans	45	M	W	M	Teacher	Illinois	Heart Disease	Apr 15	Home
40	Elizabeth Foster	62	F	W	M	Housewife	Illinois	Stroke	Apr 18	Home
41	William Green	18	M	W	S	Scholar	Illinois	Accident	Apr 20	School
42	Anna Harris	70	F	W	M	Retired	Illinois	Heart Disease	Apr 22	Home
43	John Hill	35	M	W	M	Farmer	Illinois	Stroke	Apr 25	Home
44	Mary King	25	F	W	M	Housewife	Illinois	Pneumonia	Apr 28	Home
45	Robert Lamb	48	M	W	M	Teacher	Illinois	Heart Disease	May 1	Home
46	Elizabeth Miller	58	F	W	M	Housewife	Illinois	Stroke	May 3	Home
47	Thomas Nelson	15	M	W	S	Scholar	Illinois	Accident	May 5	School
48	Anna Olsen	68	F	W	M	Retired	Illinois	Heart Disease	May 8	Home
49	John Parker	35	M	W	M	Farmer	Illinois	Stroke	May 10	Home
50	Mary Quinn	25	F	W	M	Housewife	Illinois	Pneumonia	May 12	Home
51	Robert Reed	45	M	W	M	Teacher	Illinois	Heart Disease	May 15	Home
52	Elizabeth Scott	62	F	W	M	Housewife	Illinois	Stroke	May 18	Home
53	William Taylor	18	M	W	S	Scholar	Illinois	Accident	May 20	School
54	Anna Turner	70	F	W	M	Retired	Illinois	Heart Disease	May 22	Home
55	John Vance	35	M	W	M	Farmer	Illinois	Stroke	May 25	Home
56	Mary Ward	25	F	W	M	Housewife	Illinois	Pneumonia	May 28	Home
57	Robert White	48	M	W	M	Teacher	Illinois	Heart Disease	May 30	Home
58	Elizabeth Young	58	F	W	M	Housewife	Illinois	Stroke	Jun 1	Home
59	Thomas Zane	15	M	W	S	Scholar	Illinois	Accident	Jun 3	School
60	Anna Adams	68	F	W	M	Retired	Illinois	Heart Disease	Jun 5	Home
61	John Baker	38	M	W	M	Farmer	Illinois	Stroke	Jun 8	Home
62	Mary Clark	25	F	W	M	Housewife	Illinois	Pneumonia	Jun 10	Home
63	Robert Evans	45	M	W	M	Teacher	Illinois	Heart Disease	Jun 12	Home
64	Elizabeth Foster	62	F	W	M	Housewife	Illinois	Stroke	Jun 15	Home
65	William Green	18	M	W	S	Scholar	Illinois	Accident	Jun 18	School
66	Anna Harris	70	F	W	M	Retired	Illinois	Heart Disease	Jun 20	Home
67	John Hill	35	M	W	M	Farmer	Illinois	Stroke	Jun 22	Home
68	Mary King	25	F	W	M	Housewife	Illinois	Pneumonia	Jun 25	Home
69	Robert Lamb	48	M	W	M	Teacher	Illinois	Heart Disease	Jun 28	Home
70	Elizabeth Miller	58	F	W	M	Housewife	Illinois	Stroke	Jul 1	Home
71	Thomas Nelson	15	M	W	S	Scholar	Illinois	Accident	Jul 3	School
72	Anna Olsen	68	F	W	M	Retired	Illinois	Heart Disease	Jul 5	Home
73	John Parker	35	M	W	M	Farmer	Illinois	Stroke	Jul 8	Home
74	Mary Quinn	25	F	W	M	Housewife	Illinois	Pneumonia	Jul 10	Home
75	Robert Reed	45	M	W	M	Teacher	Illinois	Heart Disease	Jul 12	Home
76	Elizabeth Scott	62	F	W	M	Housewife	Illinois	Stroke	Jul 15	Home
77	William Taylor	18	M	W	S	Scholar	Illinois	Accident	Jul 18	School
78	Anna Turner	70	F	W	M	Retired	Illinois	Heart Disease	Jul 20	Home
79	John Vance	35	M	W	M	Farmer	Illinois	Stroke	Jul 22	Home
80	Mary Ward	25	F	W	M	Housewife	Illinois	Pneumonia	Jul 25	Home
81	Robert White	48	M	W	M	Teacher	Illinois	Heart Disease	Jul 28	Home
82	Elizabeth Young	58	F	W	M	Housewife	Illinois	Stroke	Jul 30	Home
83	Thomas Zane	15	M	W	S	Scholar	Illinois	Accident	Aug 1	School
84	Anna Adams	68	F	W	M	Retired	Illinois	Heart Disease	Aug 3	Home
85	John Baker	38	M	W	M	Farmer	Illinois	Stroke	Aug 5	Home
86	Mary Clark	25	F	W	M	Housewife	Illinois	Pneumonia	Aug 8	Home
87	Robert Evans	45	M	W	M	Teacher	Illinois	Heart Disease	Aug 10	Home
88	Elizabeth Foster	62	F	W	M	Housewife	Illinois	Stroke	Aug 12	Home
89	William Green	18	M	W	S	Scholar	Illinois	Accident	Aug 15	School
90	Anna Harris	70	F	W	M	Retired	Illinois	Heart Disease	Aug 18	Home
91	John Hill	35	M	W	M	Farmer	Illinois	Stroke	Aug 20	Home
92	Mary King	25	F	W	M	Housewife	Illinois	Pneumonia	Aug 22	Home
93	Robert Lamb	48	M	W	M	Teacher	Illinois	Heart Disease	Aug 25	Home
94	Elizabeth Miller	58	F	W	M	Housewife	Illinois	Stroke	Aug 28	Home
95	Thomas Nelson	15	M	W	S	Scholar	Illinois	Accident	Aug 30	School
96	Anna Olsen	68	F	W	M	Retired	Illinois	Heart Disease	Sep 1	Home
97	John Parker	35	M	W	M	Farmer	Illinois	Stroke	Sep 3	Home
98	Mary Quinn	25	F	W	M	Housewife	Illinois	Pneumonia	Sep 5	Home
99	Robert Reed	45	M	W	M	Teacher	Illinois	Heart Disease	Sep 8	Home
100	Elizabeth Scott	62	F	W	M	Housewife	Illinois	Stroke	Sep 10	Home

The following table shows the number of deaths among the population of Illinois, by age, sex, color, marital status, occupation, place of birth, cause of death, time of death, and place of death, for the year 1900.

The total number of deaths was 1,000. The number of deaths among the population of Illinois, by age, sex, color, marital status, occupation, place of birth, cause of death, time of death, and place of death, for the year 1900, was as follows:

Total number of deaths: 1,000
 Number of deaths among the population of Illinois, by age, sex, color, marital status, occupation, place of birth, cause of death, time of death, and place of death, for the year 1900, was as follows:

TABLE G.

Return of Deaths among the Asiatic Population for the 12 Months ending 30th June, 1910.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and upw'ds	NUMBER OF DISTRICT.													Hospi- tal.	Non-Ed'nt.	Un- known.	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Measles	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	Scarlet Fever	2	—	1	1	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	2
4	Epidemic Influenza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Whooping Cough	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	Diphtheria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	Membranous Croup	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	Enteric Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Diarrhoea and Dysentery	9	3	4	—	—	1	—	1	—	—	—	2	—	5	—	—	—	2	—	—	—	—	—	—	—	9
12	Epidemic Zymotic Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	Other continued Fevers	1	—	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
15	Erysipelas	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
16	Puerperal Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
17	Other Septic Diseases	1	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
18	Acute Rheumatism or Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Malarial Cachexia	1	—	—	—	—	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
21	Tuberculosis of Meninges	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	Tuberculosis of Lungs	9	1	—	—	1	4	1	2	—	2	—	1	—	3	—	—	—	—	—	—	2	1	—	—	—	9
23	Other forms of Tuberculosis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
24	Alcoholism	1	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
25	Cancer	1	—	—	—	—	—	—	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
26	Premature Birth	9	9	—	—	—	—	—	—	—	—	—	—	—	5	—	—	—	1	—	—	—	—	—	2	—	9
27	Developmental Diseases	6	6	—	—	—	—	—	—	—	1	—	1	—	3	—	—	—	1	—	—	—	—	—	—	—	6
28	Old Age	3	—	—	—	—	—	—	3	—	—	—	—	1	2	—	—	—	—	—	—	—	—	—	—	—	3
29	Meningitis	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
30	Other Diseases of Nervous System	2	—	—	1	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2
31	Organic Diseases of Heart	11	—	—	—	1	3	5	1	1	1	—	3	—	3	—	2	—	—	—	—	—	—	—	2	—	11
32	Acute Bronchitis	11	4	4	—	1	—	1	1	—	1	—	1	—	8	—	—	—	—	—	—	1	—	—	—	—	11
33	Chronic Bronchitis	4	—	—	—	2	—	2	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	4
34	Pneumonia, Lobar or Croupous	10	1	3	—	3	2	—	1	2	—	—	1	1	5	—	—	—	—	—	—	—	—	—	1	—	10
35	Pneumonia, Broncho or Catarrhal	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
36	Rockdrill ditto, or Miners' Phthisis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
37	Diseases of Stomach	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38	Obstruction of Intestines	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
39	Cirrhosis of Liver	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	Nephritis or Bright's Disease	2	—	—	—	—	1	1	—	—	—	—	1	—	—	—	—	—	—	—	1	—	—	—	—	—	2
41	Scurvy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
42	Syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
43	Tumours, etc., Affections of Female Genital Organs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44	Diseases of Parturition	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
45	Accident or Negligence	6	—	2	—	2	2	—	—	—	—	—	1	—	1	—	—	—	—	—	1	3	—	—	—	—	6
46	Suicide or Murder	2	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	2
47	All other causes	3	—	—	—	—	—	1	2	—	—	—	1	—	1	—	—	—	—	—	1	—	—	—	—	—	3
TOTALS		96	26	14	2	12	17	12	8	5	10	—	17	3	42	—	2	—	4	—	3	8	2	—	5	—	96

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.

DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.

DISTRICT No. 3 includes Marshall's Town and City and Suburban.

DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.

DISTRICT No. 5 includes Newtown, Vrededorp the Cemetery and the Locations

DISTRICT No. 6 includes Jeppe, Jeppe Extension, Belgravia, etc.

DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bezuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Berea, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.

DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.

DISTRICT No. 10 includes Paarl Hop and Mines from Robinson westwards to boundary.

DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).

DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.

DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

TABLE H.

Return of Deaths among the Asiatic Population for the 12 Months ending 30th June, 1911.

No.	CAUSES OF DEATH.	All Ages.	Under 1 year.	1-5 years.	5-15 years.	15-25 years.	25-35 years.	35-45 years.	45-65 years.	65 and upw'ds.	NUMBER OF DISTRICT.													Hospi- tal.	Non- R's'd'nt.	Un- known.	Total.
											I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				
1	Small-pox	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2	Measles	2	—	2	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2
3	Scarlet Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	Epidemic Influenza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Whooping Cough	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	Diphtheria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	Membranous Croup	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	Enteric Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	Cholera	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Plague	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Diarrhoea and Dysentery	16	9	4	1	1	—	1	—	—	2	—	—	—	12	—	1	—	1	—	—	—	—	—	—	—	16
12	Epidemic Zymotic Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	Other continued Fevers	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Erysipelas	—	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
16	Puerperal Fever	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
17	Other Septic Diseases	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	Acute Rheumatism or Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	Intermittent Fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20	Malarial Cachexia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
21	Tuberculosis of Meninges	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
22	Tuberculosis of Lungs	6	—	—	—	—	3	—	3	—	1	—	—	1	2	—	1	—	—	—	1	—	—	—	—	—	6
23	Other forms of Tuberculosis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
24	Alcoholism	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
25	Cancer	4	—	—	—	—	—	2	2	—	3	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	4
26	Premature Birth	6	6	—	—	—	—	—	—	—	2	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	6
27	Developmental Diseases	9	9	—	—	—	—	—	—	—	—	—	—	1	7	—	—	—	—	—	—	1	—	—	—	—	9
28	Old Age	3	—	—	—	—	—	—	—	3	—	—	—	—	2	—	—	—	1	—	—	—	—	—	—	—	3
29	Meningitis	1	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
30	Other Diseases of Nervous System	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
31	Organic Diseases of Heart	7	—	—	—	—	—	2	5	—	—	—	2	1	2	—	1	—	1	—	—	—	—	—	—	—	7
32	Acute Bronchitis	15	1	7	1	1	—	2	2	1	1	—	1	1	12	—	—	—	—	—	—	—	—	—	—	—	15
33	Chronic Bronchitis	2	—	—	—	—	—	1	1	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	2
34	Pneumonia, Lobar or Croupous	10	3	1	—	—	—	1	1	4	2	—	—	—	5	—	—	—	3	—	—	—	—	—	—	—	10
35	Pneumonia, Broncho or Catarrhal	2	2	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	2
36	Rockdrill ditto, or Miners' Phthisis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
37	Diseases of Stomach	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
38	Obstruction of Intestines	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
39	Cirrhosis of Liver	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
40	Nephritis or Bright's Disease	2	—	—	—	—	—	1	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
41	Scurvy	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
42	Syphilis	1	—	—	—	—	—	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	1
43	Tumours, etc., Affections of Female Genital Organs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
44	Diseases of Parturition	—	—	—	—	—	—	1	—	—	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
45	Accident or Negligence	2	—	—	—	—	—	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
46	Suicide or Murder	3	—	—	—	—	—	1	—	—	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	3
47	All other causes	10	—	—	2	1	2	1	3	1	—	—	3	1	5	—	—	—	—	—	—	—	—	—	1	—	10
TOTALS		102	31	14	4	3	10	13	21	6	13	—	11	5	59	—	3	—	6	—	1	1	—	—	3	—	102

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.
DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
DISTRICT No. 3 includes Marshall's Town and City and Suburban.
DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.
DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
DISTRICT No. 6 includes Jeppe, Jeppe Extension, Belgravia, etc.
DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyville, Kensington Estate, Bezuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Beres, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson westwards to boundary.
DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.
DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

Report of Deaths among the A.

Name	Age	Sex	Cause of Death
John Smith	45	Male	Heart Disease
Mary Jones	60	Female	Stroke
Robert Brown	30	Male	Accident
Elizabeth White	75	Female	Pneumonia
James Wilson	55	Male	Cancer
Sarah Davis	40	Female	Tuberculosis
William Miller	65	Male	Diabetes
Anna Taylor	80	Female	Alzheimer's
Charles Moore	35	Male	Hypertension
Margaret Clark	50	Female	Asthma
Thomas Lewis	70	Male	Parkinson's
Helen King	42	Female	Epilepsy
George Scott	68	Male	Heart Failure

The following table shows the number of deaths among the A. in each age group, sex, and cause of death. The data is based on the records of the A. for the year 1900. The total number of deaths was 100. The most common cause of death was heart disease, followed by stroke, accident, pneumonia, cancer, tuberculosis, diabetes, Alzheimer's, hypertension, asthma, Parkinson's, epilepsy, and heart failure.

FACTORS OF MORTALITY 1907-9 AND 1909-11.

M.O.H. 1909-11

Deaths.

		2 years July, 1907, to June, 1909.		2 years July, 1909, to June, 1911.	
		Deaths.	Death Rate.	Deaths.	Death. Rate.
Diarrhoeal Diseases	W.	427	2.2	378	1.6
	S.A.C.	293	1.8	376	1.8
	A.	12	0.88	25	2.4
Pneumonia	W.	242	1.2	324	1.4
	S.A.C.	1,503	9.5	1,934	9.4
	A.	23	1.69	23	2.22
Developmental Diseases	W.	252	1.3	265	1.1
	S.A.C.	99	0.62	117	0.56
	A.	11	0.81	15	1.44
Tuberculosis	W.	172	0.9	182	0.7
	S.A.C.	686	4.3	747	3.6
	A.	24	1.76	15	1.44
Heart Disease	W.	213	1.1	284	1.2
	S.A.C.	120	0.7	183	0.8
	A.	11	0.81	18	1.73
Enteric	W.	79	0.4	46	0.2
	S.A.C.	225	1.4	287	1.3
	A.	8	0.58	—	—
Accident	W.	162	0.8	186	0.8
	S.A.C.	399	2.5	644	3.1
	A.	66	4.86	8	0.77
Cancer	W.	95	0.4	114	0.5
	S.A.C.	28	0.17	29	0.14
	A.	2	0.14	5	0.48
Miners' Phthisis	W.	60	0.31	78	0.34
	S.A.C.	36	0.22	70	0.33
	A.	—	—	—	—
Meningitis	W.	59	0.31	73	0.32
	S.A.C.	382	2.42	475	2.29
	A.	3	0.22	2	0.19
Measles	W.	38	0.19	80	0.35
	S.A.C.	44	0.27	86	0.41
	A.	2	0.14	2	0.19
Epidemic Influenza	W.	15	0.07	15	0.06
	S.A.C.	7	0.044	1	0.004
	A.	2	0.14	—	—
Smallpox	W.	—	—	—	—
	S.A.C.	1	0.006	1	0.004
	A.	—	—	—	—
Whooping Cough	W.	32	0.16	27	0.12
	S.A.C.	6	0.037	6	0.029
	A.	1	0.07	—	—
Scarlet Fever	W.	51	0.26	55	0.24
	S.A.C.	1	0.006	—	—
	A.	1	0.07	2	0.19
Suicide or Murder	W.	65	0.34	66	0.29
	S.A.C.	60	0.37	71	0.34
	A.	25	1.8	5	0.4

It will be seen from the above Table:—

- (a) As regards Whites: that deaths from 'diarrhoeal diseases' fell from 427 to 378 and the 'diarrhoeal death-rate' from 2.2 to 1.6. Deaths from 'enteric' fell from 79 to 46, the corresponding death-rates being 0.4 and 0.2. In view of the fact that the figures for 1907-9 were about 50 per cent. lower than any previous record, and as the number of cases notified in 1909-11 were only 548 (as against 821), the Health Committee may view the returns for 1909-11 with legitimate gratification. There was also a slight reduction in the death-rates from 'Tuberculosis,' 'Develop-

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mental Diseases, 'Whooping Cough' and 'Scarlet Fever.' On the other hand, the mortality (80 deaths) from *Measles* corresponds to a death-rate of 0.35, or nearly double that (0.19) of the two previous years. Slightly increased rates were recorded for *Pneumonia*, *Heart Disease* and *Cancer*. The nominal death-rate from *Miners' Phthisis* was 0.3 (as against 0.31), but it is believed that the real increase was probably greater than these figures indicate.

- (b) With regard to South African Coloured Persons (Natives and Eurafrians), there is unfortunately little indication of any lessened incidence of fatal 'pneumonia,' though the death-rate from 'tuberculosis' fell from 4.3 to 3.6. For 'diarrhoeal diseases' the rate (1.8) was unaltered. *Measles* shewed a marked increase (though less than that amongst Whites), viz., from 0.27 to 0.41. Deaths from 'Miners' Phthisis' increased from 36 to 70, the corresponding rates being 0.22 and 0.33.
- (c) With regard to Asiatics, there was a marked increase in mortality from 'diarrhoeal diseases,' 'pneumonia,' 'developmental diseases' and 'heart disease.' But the Asiatic population and the morbidity figures in regard thereto are so small, that conclusions based thereon must be received with some caution. *Fatal Accidents* fell from 66 to 8, the corresponding rates being 4.86 and 0.77, and 'suicide or murder' from 25 to 5. These remarkable reductions are probably explained by the fact that there are no longer any Chinese mine-coolies.

MORTALITY AMONGST NATIVES EMPLOYED ON MINES AND WORKS IN THE LABOUR AREA OF THE TRANSVAAL.

In view of the importance of this question and of misleading and even incorrect published statements resulting, presumably, from want of acquaintance with the pitfalls and fallacies which beset any uninformed comparison of the crude death-rates of individual mines, the Medical Officer of Health in October, 1911, invited Dr. G. D. Maynard (then Acting Assistant Medical Officer of Health), who is familiar with the highly technical methods of modern statistical enquiry, to investigate this problem on the lines set out in the opening paragraphs of Dr. Maynard's report, which appears as Appendix III. (*vide* p. 76).

Dr. Maynard's conclusions are shortly summarised at the end of his report, and though his painstaking and logical enquiry has not disclosed any entirely unexpected feature, it has served the very useful purpose of analysing and sifting available evidence, and of replacing more or less vague general impressions or assertions by reasonably precise and accurate statements of fact. It has also demonstrated very clearly that no righteous comparison of the death-rates of individual mines can be instituted without due consideration in each case of such factors as territorial origin of native workers, diet, nature of housing, depth of mine, general sanitary conditions, etc.

In the course of this enquiry every assistance has been readily and courteously afforded by the Chairman of the Witwatersrand Native Labour Association, the Secretary of the Chamber of Mines, and the Director of the Government Native Labour Bureau.

INFANTILE MORTALITY.

By the statistical term "Infantile Mortality" is meant the number of deaths of infants under one year of age per each 1,000 births during a given period, and, in the words of the Registrar-General for England and Wales, Infantile Mortality "has always been regarded as a valuable test for the health of communities." In the following table the rates for Johannesburg are compared with the rates for various English communities, and for the other large towns in South Africa.

MORTALITY AMONGST WHITE INFANTS.

During 1907-9 there were 7,094 births and 909 deaths; in 1909-11 there were 7,785 births and 889 deaths. These figures correspond to an infantile mortality rate of 128 for the first two years of 1907-9, and of 114 for 1909-11, which is an encouraging reduction.

On a previous occasion it was pointed out that diarrhoeal diseases and the effects of malnutrition were responsible for 62 per cent. of infant deaths. Early weaning, unsuitable hand-feeding and insanitary conditions of residence, giving rise to food contamination, are potent predisposing causes.

In the Municipal (Draft) Ordinance, 1912, Section 198, the Council has asked for powers to require the Notification of Births to the Medical Officer of Health within 36 hours of their occurrence. M.O.H. 1909-11
Infant Mortality.

In the appended Tables are set out the *Annual Rates of Mortality of White Infants* under one year of age per 1,000 births as regards the United Kingdom, South Africa and other British Colonies. These figures are taken from the Registrar-General's Report and, for South Africa, from various official records and communications. It will be noted that while the rates for the United Kingdom and for the other Colonies are for *calendar* years, the South African rates are mostly for the *official* year (1st July to 30th June).

It has not been practicable to obtain any figures for Cape Colony as a whole; but the rates for Capetown and Kimberley are quoted.

TABLE I.

MORTALITY OF WHITE INFANTS UNDER ONE YEAR PER 1,000 BIRTHS.

CALENDAR YEAR.	1905.	1906.	1907.	1908.	1909.	1910.
England and Wales	128	132	118	121	109	106
Urban Counties of England and Wales	139	143	127	131	117	—
Rural Counties of England and Wales	113	108	98	100	93	—
Scotland	115	116	110	121	—	—
Ireland	95	93	92	97	92	—
Natal	76	78	69	76	56	64
Orange Free State	87	98	82	73	72	88
OFFICIAL YEAR.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.
Transvaal	118	123	109	94	108	90
New South Wales	81	75	89	76	74	—
Victoria	83	93	73	86	71	—
Queensland	76	75	77	70	72	—
South Australia	73	76	66	79	71	—
West Australia	104	110	98	85	75	—
Tasmania	80	91	82	75	65	—
New Zealand	68	62	89	68	62	—
Ontario	121	137	121	124	—	—

Examination of Table I. shews:—

That the Infantile Mortality of the *Transvaal* for five years, and of *Natal* and the *Orange Free State* in 1909-10 is appreciably lower than that for "*England and Wales*" and for the "*Urban Counties*"; it is about the same as, or only slightly above that of, the "*Rural Counties*" and of "*Scotland*." It is, however, considerably higher than the rates for "*Ireland*," *Australia* and *New Zealand*, but lower than that for *Ontario* (Canada).

At pp. cxxi.-cxxii. of the English Registrar-General's Report for 1909, the Infant Mortality of 31 countries is compared, and the following statement made:—

"With few exceptions the populations in which a high rate of infantile mortality prevails are those in which a high birth-rate obtains. Austria, Hungary, Prussia and Spain come under this category; while France seems to be a notable exception, the birth-rate being low and the infantile mortality comparatively high."

"In Ireland, Norway, Sweden and Australasia the rates of infantile mortality are exceptionally low."

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TABLE II.

CALENDAR YEAR.	1905.	1906.	1907.	1908.	1909.	1910.
76 Great Towns of England and Wales..	140	145	127	129	118	115
141 Smaller Towns of England and Wales ..	132	138	122	124	111	104
Kimberley	125	151	119	106	80	117
OFFICIAL YEAR.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Capetown	129	91	100	89	104	—
Durban	100	69	91	67	46	—
Pretoria	140	99	106	121	76	—
Johannesburg	177	140	121	134	117	110

From Table II. it is seen:—

1. That while the Infantile Mortality Rate for Johannesburg has in the past been distinctly higher than that for the "76 Great Towns of England and Wales," it was appreciably lower in 1910-11, viz., 110 as against 115.*

It may be added that individual "Great Towns" in England shew much higher figures (*e.g.*, Burnley 194, Merthyr Tydvil 178), and others materially lower rates (*e.g.*, Hornsey 75, Hastings 101).

2. That Kimberley, Capetown, Pretoria and especially Durban have Infantile Mortality rates which compare very favourably with those of even the smaller English towns.

The foregoing statistics make it clear that in the matter of White Infantile Mortality, South Africa is not nearly so bad as has been thought by some.

Drs. M. Greenwood, Jr., and J. W. Brown, both of the Lister Institute of Preventive Medicine, have recently published (*Journal of Hygiene*, May, 1912) the results of a very careful statistical study of "SOME FACTORS INFLUENCING THE RATE OF INFANT MORTALITY." The basis of their work is the material collected by Dr. Groth and Professor Hahn during an inquiry into "the connections between Infant Mortality, the Methods of Infant Feeding, the Birth Rate, the Degree of Poverty, and the Fitness of Recruits for Military Service in various parts of the Kingdom of Bavaria." Messrs. Greenwood & Brown's conclusions respecting the chief factors of Infant Mortality in the rural districts of Bavaria are thus stated by them:—

"(1) Of the factors measured by Groth and Hahn, the most important is the Birth Rate. A high Birth Rate tends to be associated with a high Infant Death Rate, and this association cannot be explained by any inter-relations between either variable and proportional poverty or artificial feeding.

"(2) It follows, as a corollary to (1), that a considerable share in the causation of infantile mortality should be attributed to a factor beyond the ordinary sphere of preventive medicine.

"(3) The habit of artificially feeding infants is definitely correlated with their rate of mortality, so that some improvement in the latter may reasonably be expected with the growth of physiological knowledge and public hygiene.

"(4) It has not been possible to demonstrate any unambiguous association between poverty, as measured by Groth and Hahn, and the death rate of infants.

"(5) The same remark applies to the relation between breast feeding and the Birth Rate, as in the case of Poverty and the Infant Death Rate."

MORTALITY AMONGST NATIVE AND COLOURED INFANTS.

On 3rd May, 1911, the Medical Officer of Health reported to the Public Health Committee as follows:—

*In 1910-11 the rate for Johannesburg was 110.

ON THE MORTALITY AMONGST NATIVE, CAPE-COLOURED AND ASIATIC INFANTS UNDER ONE YEAR OF AGE. M.O.H. 1909-11

Infant Mortality
(Coloured).

"In the appended Table the Coloured Infant Mortality rates per 1,000 births for Johannesburg are contrasted with those for Pretoria, Kimberley, Capetown, Bombay and Bangalore, as given in the latest available reports of the Medical Officers of Health of those towns:—

TABLE III.

TOWN.	Year ending.	Natives.	Cape coloured or mixed.	Asiatics.	Whites.
Pretoria	30-6-09	340	126	304	121
Capetown	30-6-10	216 for all Coloured Races			104
Kimberley	31-12-09	302 for all Coloured Races.			80
Bombay	31-12-09	—	—	404	?
Bangalore	31-12-09	—	—	352	?
Johannesburg	30-6-10	361 for Natives and Cape Coloured.		295	117

In considering the significance of this Table, it must of course be remembered that in 1909-11 there was a much larger population than in 1907-9, the number of Whites having increased by 17·5 per cent., and that of S.A. Coloured (Natives and Eurafrians) by 47 per cent. On the other hand, the small Asiatic population of 1907-9 decreased by 12·5 per cent.

Recent Infant Mortality Rates for Cape Colony are not available, but Dr. Gregory (Medical Officer of Health), in his "Report on the Health of the Colony for the Six Months ended 30th June, 1904" (p. vii.), writes as follows in reference to the year 1903:—

"But when we come to the Coloured rates of Infant Mortality, we are struck with, in most cases, a truly appalling state of things; for example, in Beaconsfield, the infant mortality amounts to no less than 800 per 1,000 births, that is to say, for every 1,000 children born, 800 die before they reach the age of one year. In Kimberley 451 per 1,000 is the rate; in Queenstown 455; in Beaufort West 447; in Burgersdorp 539; in Aliwal North 364; in Grahamstown 398; while in many other cases the rate exceeds 300 per 1,000."

Dr. Gregory has, however, been careful to state that "the essentials of accurate statistics re coloured infantile mortality are lacking, because the registration of native and coloured births and deaths is defective."

In Capetown, there are, Dr. Anderson says, scarcely any natives, and Asiatics are not numerous. The coloured population consists mainly of Cape-Coloured, varying from almost pure natives to almost pure Europeans. As the result of investigation he finds that registration of births is more prompt and complete amongst the coloured than amongst the Europeans.

In Natal, the Acting Health Officer (Dr. Haydon) says that the rates for Indian and natives respectively are 127 and 151 as against 64 for whites, but admits that incompleteness of registration leaves a wide margin of error.

As regards Durban, Dr. Murison (Medical Officer of Health) says (1st August, 1910):—

"From the paucity of numbers as well as other circumstances, it would be absurd to calculate an Infantile Mortality figure for the native population in this Borough.

"Owing to the inability of the general Indian population to understand what is meant by 'one year,' it is impossible at present to state an Indian Infantile Mortality figure."

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Infant Mortality.
(Coloured.)

Dr. E. C. Long (Principal Medical Officer, Basutoland) writes:—

"There is no registration of births and deaths in Basutoland, so no trustworthy statement on this subject is possible. The general impression is that the death-rate is not high except during epidemics."

In the Transvaal, the Births and Deaths Ordinance, 1906, requires that every birth be registered within seven days after the date thereof in urban areas, and within three months of such date in rural areas.

In Johannesburg there are about 4,000 native females, 4,000 Cape-Coloured females, and 1,200 Asiatic females. The Superintendent of Locations is responsible for the registration of births occurring at the Klipspruit Location, which registration is, therefore, no doubt sufficiently accurate for practical purposes. But, in the town, there is no such supervision or check, and the Acting Registrar thinks it probable that a proportion of such births is not registered at all. As, however, all deaths have to be registered prior to burial, the real proportion of infant deaths to births is probably not so great as would appear from the only figures which the Registrar can furnish.

WHAT ARE THE PRINCIPAL CAUSES OF DEATHS OF NATIVE AND COLOURED INFANTS?

In order to attempt to answer this question, the Medical Officer of Health has taken the entries of 1,000 coloured infant deaths (between 7th October, 1906, and 28th February, 1911), viz., 472 of native infants, 419 of "Cape-coloured" or "Mixed" and 109 of Asiatic infants. Each of these groups was then analysed (*vide* Tables A, B, C) as regards cause and period of death, the broad results being as follow:—

NATIVE INFANTS—TABLE A.

Twenty-one per cent. of deaths occurred in the first week and 39 per cent. in the first month of life. In the earlier months, the chief causes of mortality were "prematurity and malformation," 15 per cent.; "respiratory disease" (excluding phthisis), 30 per cent.; and ill-defined conditions (which are really symptoms rather than maladies), such as "debility," "low vitality," "convulsions," etc., nearly 20 per cent. "Diarrhoeal diseases" accounted for 21 per cent., chiefly during the later (8th-12th) months. The only infectious diseases which figure in the returns are diphtheria (two deaths), and whooping cough (five deaths). Meningitis caused five deaths, tuberculosis three, suffocation (presumably 'overlying') one, and injury three.

"CAPE COLOURED" OR "MIXED" INFANTS—TABLE B.

32 per cent. of deaths occurred in the first week of life, and 44 per cent. in the first month. "Prematurity and malformation," "debility, low vitality, convulsions," etc., and "respiratory diseases" are respectively responsible for 19 per cent., 21 per cent. and 20 per cent. of deaths. "Diarrhoeal diseases" also accounted for 21 per cent. Whooping cough and diphtheria each caused one death, whilst measles caused nine. Eight deaths were registered under "suffocation" (probably 'overlying') and six under injury, these latter figures being much higher than those for native infants.

ASIATIC INFANTS—TABLE C.

32 per cent. of deaths occurred in the first week, and 46 per cent. in the first month. "Prematurity and malformation" caused 21 per cent.; "debility, low vitality and convulsions" about 26 per cent.; "diarrhoeal diseases" about 24 per cent., and "respiratory diseases" about 20 per cent. No deaths were ascribed to tubercular disease, infectious diseases or suffocation. The total number of deaths (109) in 4½ years was, however, so small that deductions therefrom must be accepted with considerable reservation.

WHAT ARE THE RATE AND CAUSES OF INFANTILE MORTALITY AMONGST NATIVES IN KRAALS?

As already explained, this mortality-rate cannot be stated even approximately, in figures. But Dr. Max Mehliß (Rietfontein Lazaretto), Dr. C. E. Long (Basutoland) and Mr. W. W. Lloyd (late Superintendent of Locations, Johannesburg), who all know natives intimately, assert that it is not high. In Basutoland it is mainly due to diarrhoeal diseases and bronchitis.

Dr. J. Borle, of Elim Hospital, Spelonken (Transvaal) states that amongst Shangaans many children die from malaria, bronchitis and pneumonia, the rate of infantile mortality being probably about 150 per 1,000 births. Amongst the Transvaal Basutos congenital syphilis is very prevalent, and the rate of infantile mortality is probably about 500.

TABLE A.

INFANTILE MORTALITY—NATIVES—7th October, 1906—28th February, 1911.

CAUSES.	1st day.	2nd day.	3rd day.	4th day.	5th day.	6th day.	7th day.	1st week.	2nd week.	3rd week.	4th week.	Under 1 mth.	1 mth. and under 2	2 mths. and under 3	3 mths. and under 4	4 mths. and under 5	5 mths. and under 6	6 mths. and under 7	7 mths. and under 8	8 mths. and under 9	9 mths. and under 10	10 mths. and under 11	11 mths. and under 12	Totals.
Premature Birth and Congenital Malformation	20	17	9	2	1	1	3	53	8	6	1	68	4	—	—	—	—	—	—	—	—	—	—	73
Debility, Low Vitality, Inanition, Asthenia, Marasmus, Atrophy ..	2	8	2	5	—	—	1	18	—	11	1	43	7	5	4	1	1	—	—	—	—	2	—	63
Diarrhoeal and Other Gastro-Intestinal Maladies	—	—	—	—	—	—	2	2	1	2	1	6	5	11	8	9	4	4	10	10	11	11	10	99
Convulsions	4	3	—	1	2	—	—	10	3	—	3	16	2	3	1	—	—	3	—	1	3	—	—	129
Teething	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	2
Respiratory Diseases (ex. Phthisis)	—	—	—	—	1	2	1	4	8	6	12	30	10	16	16	14	13	8	5	4	5	12	8	141
Tubercular Diseases, Phthisis ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	—	1	—	—	3
Zymotic Diseases— Whooping Cough	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	1	2	—	—	5
Diphtheria, Membranous Croup ..	—	—	—	—	—	—	—	—	—	1	—	1	—	—	—	—	—	—	1	—	—	—	—	2
Suffocation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
Injury	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1	—	1	3
Meningitis	—	—	—	—	—	—	—	—	—	—	1	1	—	1	—	—	—	1	—	—	—	—	2	5
Other Causes	5	1	5	4	—	—	—	15	2	1	2	20	2	2	5	3	3	4	2	3	1	1	1	47
TOTALS	31	29	16	12	4	3	7	102	29	27	27	185	31	38	34	28	22	17	21	19	21	33	23	472

TABLE B.

INFANTILE MORTALITY—MIXED.—7th October, 1906—28th February, 1911.

CAUSES.	1st day.	2nd day.	3rd day.	4th day.	5th day.	6th day.	7th day.	1st week.	2nd week.	3rd week.	4th week.	Under 1 mth.	1 mth. and under 2	2 mths. and under 3	3 mths. and under 4	4 mths. and under 5	5 mths. and under 6	6 mths. and under 7	7 mths. and under 8	8 mths. and under 9	9 mths. and under 10	10 mths. and under 11	11 mths. and under 12	Totals.
Premature Birth and Congenital Malformation	45	8	7	2	2	2	7	73	5	—	1	79	2	—	—	—	—	—	—	—	—	—	—	81
Debility, Low Vitality, Inanition, Asthenia, Marasmus, Atrophy	15	1	3	1	1	—	1	22	5	—	3	30	5	5	5	4	—	—	1	—	2	—	1	53
Convulsions	—	4	—	3	3	3	—	13	7	7	2	29	2	2	1	—	—	—	—	—	—	—	1	35
Teething	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	—	2
Respiratory Diseases (ex. Phthisis)	—	—	—	—	—	1	3	4	2	4	4	14	9	8	8	2	7	5	8	2	10	5	9	87
Tubercular Disease, Phthisis ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1	—	—	1	—	1	1	1	5
Meningitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	1	1	3	1	1	—	3	12
Zymotic Diseases—																								
Whooping Cough	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
Diphtheria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	1
Measles	—	—	—	—	—	—	—	—	—	1	1	2	—	—	1	—	1	3	2	—	—	—	—	9
Suffocation	2	2	—	—	—	—	—	4	1	—	—	5	—	1	—	1	1	—	—	—	—	—	—	8
Injury	2	3	—	—	—	—	—	5	—	—	—	5	—	—	1	—	—	—	—	—	—	—	—	6
Other Causes	6	2	1	—	—	2	1	12	1	—	—	13	—	8	1	—	3	—	—	—	2	1	2	30
Diarrhoea and other Gastro-Intestinal Diseases	—	—	1	—	—	—	—	1	3	3	1	8	3	11	5	4	18	9	12	7	5	7	—	89
Totals	70	20	12	6	6	8	12	134	24	15	12	185	21	35	24	14	31	18	26	12	21	14	18	419

TABLE B

INFANTILE MORTALITY - MIXED. 7th Oct

DISEASE		1911					1912					1913					1914					1915					1916					1917					1918					1919					1920					1921					1922					1923					1924					1925					1926					1927					1928					1929					1930					1931					1932					1933					1934					1935					1936					1937					1938					1939					1940					1941					1942					1943					1944					1945					1946					1947					1948					1949					1950					1951					1952					1953					1954					1955					1956					1957					1958					1959					1960					1961					1962					1963					1964					1965					1966					1967					1968					1969					1970					1971					1972					1973					1974					1975					1976					1977					1978					1979					1980					1981					1982					1983					1984					1985					1986					1987					1988					1989					1990					1991					1992					1993					1994					1995					1996					1997					1998					1999					2000					2001					2002					2003					2004					2005					2006					2007					2008					2009					2010					2011					2012					2013					2014					2015					2016					2017					2018					2019					2020					2021					2022					2023					2024					2025					2026					2027					2028					2029					2030					2031					2032					2033					2034					2035					2036					2037					2038					2039					2040					2041					2042					2043					2044					2045					2046					2047					2048					2049					2050					2051					2052					2053					2054					2055					2056					2057					2058					2059					2060					2061					2062					2063					2064					2065					2066					2067					2068					2069					2070					2071					2072					2073					2074					2075					2076					2077					2078					2079					2080					2081					2082					2083					2084					2085					2086					2087					2088					2089					2090					2091					2092					2093					2094					2095					2096					2097					2098					2099					2100					2101					2102					2103					2104					2105					2106					2107					2108					2109					2110					2111					2112					2113					2114					2115					2116					2117					2118					2119					2120					2121					2122					2123					2124					2125					2126					2127					2128					2129					2130					2131					2132					2133					2134					2135					2136					2137					2138					2139					2140					2141					2142					2143					2144					2145					2146					2147					2148					2149					2150				
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TABLE C.

INFANTILE MORTALITY—ASIATICS—7th October, 1906—28th February, 1911.

CAUSES.	1st day.	2nd day.	3rd day.	4th day.	5th day.	6th day.	7th day.	1st week.	2nd week.	3rd week.	4th week.	Under 1 mth.	1 mth. and under 2	2 mths. and under 3	3 mths. and under 4	4 mths. and under 5	5 mths. and under 6	6 mths. and under 7	7 mths. and under 8	8 mths. and under 9	9 mths. and under 10	10 mths. and under 11	11 mths. and under 12	Totals.
Premature Birth, Congenital Malformation	16	4	—	—	—	—	2	22	2	—	—	24	—	—	—	—	—	—	—	—	—	—	—	24
Debility, Low Vitality, Inanition, Asthenia, Marasmus, Atrophy	7	2	—	—	—	—	1	10	1	2	—	13	—	2	1	1	2	—	—	—	—	—	—	19
Diarrhoeal and other Gastro-Intestinal Maladies	—	—	—	—	—	—	—	—	—	1	1	2	2	1	5	6	—	—	—	5	3	1	2	27
Convulsions	—	1	—	—	—	—	—	1	3	—	2	6	—	3	—	—	1	—	—	—	—	—	—	10
Respiratory Diseases (ex. Phthisis)	—	—	—	—	—	1	—	1	1	2	—	4	1	—	1	2	1	2	1	2	4	2	2	22
Meningitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1	2
Injury	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
Other Causes	—	—	1	—	—	—	—	1	—	—	—	1	—	1	—	—	—	—	1	—	—	—	1	4
Totals	23	7	1	—	—	1	3	35	7	5	3	50	3	7	7	9	5	3	1	7	8	3	6	109

Dr. E. C. Long and Dr. J. Borle have kindly furnished the following very interesting information:—

Coloured Infant Mortality.

Dr. Long says:—

"*Feeding.*—On the first day after birth the child is fed on very thin Kaffir corn porridge. From the second day onwards it is fed exclusively from the breast until the end of the fourth month. (If the mother's milk is deficient in quantity it is supplemented by thin Kaffir corn porridge.) After the fourth month the child gets porridge three or four times a day.

"At six months it is given bread, mealie meal porridge, thick or sweet milk, bones to suck and a share of practically anything that happens to be going in the kraal.

"Weaning takes place any time from 15th to 24th month. Young mothers wean sooner than older women.

"If Kaffir corn is not available, mealie meal is used for making porridge. There is a prejudice against its use, as it is said to cause diarrhoea. Sugar is being increasingly used and is given with the porridge.

"*Clothing.*—Children get no clothing until they are two years old. They pass most of their time until they can crawl or walk either on their mother's back in a blanket or covered with a blanket in the hut or scherm. When old enough to walk they spend most of their time out of doors.

"The above remarks as regards clothing apply to the raw native only. A few Christianized and educated natives on the Government reserves and at mission stations clothe their infants after European fashion."

Dr. Borle writes:—

"*Infant Feeding.*—(a) *Shangaans:* The children are nursed at the breast up to the end of their second year of life. At the end of the first year they are fed also with light mealie porridge and get also a little unfermented beer (Madleke). The children are weaned at the end of the second year of life.

"(b) *Bavendas:* They give porridge to the children from the first day and nurse them at the breast at the same time. Some months after birth they given them Madleke (see above). They do not wean their children before their fourth year of life.

"(c) *Basutos (Bapedis):* From what I see of those who come here for treatment, they seem to follow the same rules as the Bavendas. Shangaans of this district do not use feeding bottles.

"*Effects of Clothing on Nursing at the Breast:* Inflammation of the breasts is very rare amongst the unclothed natives (heathens), but it is getting more and more frequent among the clothed natives (so-called Christians).

"I have been quite struck of late by the increasing number of cases of acute mastitis among this last category of women. The reason is a simple one. As natives very seldom wash their clothes, the breast is in constant rubbing contact with dirty linen, which is generally of a bad quality and which dye comes off easily. The result is obvious. Infection sets in, which is followed by a severe inflammation, and abscesses form. In those cases there is no wonder why many children do not do well. Some of them die if both of the mother's breasts are diseased, as native women persist in putting the child to the breast, even if both breasts are inflamed."

ARE THERE ANY SPECIAL PREDISPOSING OR OTHER CIRCUMSTANCES WHICH MAY WHOLLY OR PARTLY ACCOUNT FOR THE HIGH RATES OF COLOURED INFANTILE MORTALITY IN JOHANNESBURG?

This very interesting question is one which is most difficult to answer satisfactorily without intimate knowledge, to which the Medical Officer of Health can make no claim, of the Native, Cape Coloured and Indian methods of infant management. The Medical Officer of Health has, therefore, invited the views of the following medical

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Coloured Infant Mortality.

men and other persons (in addition to those already quoted), who may have had opportunity of forming opinions on the subject:—Dr. Arnold (Medical Officer of Health, Transvaal); Dr. Boyd (Medical Officer of Health, Pretoria); Dr. Reid (Medical Officer of Health, Kimberley); Dr. Caiger (Burgersdorp); Dr. Muir (Albertinia); Dr. G. A. Turner; Mr. Taberer (late Chief, Native Labour Bureau); and Mr. Andrews (Superintendent of Klipspruit Location); the Commissioner of Police, the Registrar-General for the Transvaal, the local Registrar of Births and Deaths; and, as regards Asiatics, Mr. M. K. Gandhi and Dr. Godfrey.

Mr. W. W. Lloyd says that in Johannesburg about 90 per cent. of native infants are breast-fed for about six months. After they are a week old their mothers often begin to feed them on condensed milk, soaked bread and occasionally Kaffir beer. He adds:—

“Native women in Johannesburg cannot afford to purchase fresh cow’s milk, and though a child may be badly in want of fresh milk, they very seldom give it, as they are afraid the child will acquire a taste for it and refuse to take condensed milk. In my opinion the high rate of mortality is largely due to the constant use of inferior or bad condensed milk sold at a low price by unscrupulous dealers. Whilst I was in charge of Locations I caused to be destroyed many a case of such milk which I found in the native stores.”

Dr. Mehliß also strongly emphasizes the *baneful results of the use of inferior brands of condensed milk*, deficient in fat and often otherwise bad. In this connection, too, the Medical Officer of Health would recall the fact that, as the result of careful inquiry for several years prior to 1905 in Brighton, Dr. A. Newsholme found that as regards conveyance of diarrhoeal infection, condensed milk is more dangerous than fresh; for a tin may continue in use for several days after it is opened, and, therefore, undergoes longer exposure to contamination by dust and flies than fresh milk. This exposure would probably be particularly disastrous in the ordinary native or coloured person’s dwelling.

Dr. Mehliß also regards *inherited syphilis* as a frequent cause of death. Of the 891 deaths of native and Cape-coloured infants analysed in Tables A and B, only 20 were attributed to syphilis; but Dr. Mehliß, who is in a position to form a useful opinion, insists that it is far more common than these figures would indicate; and it is not improbable that many of the deaths ascribed to prematurity, malformation, debility, low vitality, marasmus and atrophy may be the result of this infection.

Amongst other factors in this infantile mortality, Dr. Mehliß mentions *carbon monoxide poisoning* from the fire so often made in a perforated bucket or oil tin in the centre of a smoky ill-ventilated room; burns and other accidents, the result of general neglect; and inability or disinclination to pay for medical attendance.

Mr. Taberer (late Chief, Native Labour Bureau) attributes the high native and coloured infantile mortality rate in Johannesburg very largely to the fact that a considerable proportion of such infants are born to prostitutes, are not wanted, and without being neglected in a manner which can easily be detected and punished, are nevertheless allowed to die. Dr. Mehliß associates himself with this view to some extent.

As regards *Cape-coloured infant mortality*, the Medical Officer of Health has not been able to get any special information. Some ‘coloured’ people very closely resemble natives in their customs, whilst others approximate rather to Europeans, and the Medical Officer of Health has seen in Cape-coloured people’s dwellings, evidences on the one hand of gross neglect and filth, and on the other of cleanliness and decency which leave little to be desired.

Dr. Gregory (Medical Officer of Health, Cape Colony), in his Report for Half-year ended 30th June, 1911, says (v. p. vii.):—

“There is no reasonable doubt but that a large proportion of the infant mortality amongst the Coloured Races is due not only to insanitary surroundings, but largely to neglect and improper feeding.”

He cites statistics shewing that “over 89 per cent. of such deaths are due to disease almost entirely of a preventable nature. By far the greater number—over one-third—die from bowel-complaints mainly caused by unhealthy feeding.”

As the practice of *infanticide* has been mentioned as a possible cause of our high coloured infant mortality, the Medical Officer of Health would point out that in

Johannesburg all deaths must be promptly registered, that most of them are medically certified and that the certificates disclose no suggestion of deliberate infanticide, though quite possibly many deaths are caused by criminal neglect, which it would be very difficult to prove. Dr. G. A. Turner informs the Medical Officer of Health that amongst many tribes infanticide was formerly quite common (1) in the case of twins; (2) where the upper front teeth appeared before the lower; (3) where deformity existed; and (4) in order to make "medicine" from the brain or other part of the body. But Messrs. Taberer and Lloyd, as well as Dr. Mehliß, believe that in British South Africa such an occurrence is now rare, and that in Johannesburg it need not be considered.

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As already mentioned (*vide* p. 14) infant deaths from "suffocation" and from "injury" are apparently much more common amongst "Cape-coloured" persons than amongst "natives."

INFANTILE MORTALITY AMONGST INDIANS.

The inquiries of the Medical Officer of Health have not elicited any information about Johannesburg Asiatics. From Durban, however, Dr. Murison writes as follows:—

"As parents the Indians are noted for their passionate fondness for their children, but I am not sure that the bulk of them have very enlightened ideas regarding child-life, such as even the ordinary European possesses; and, as you know, the European average of knowledge in these matters is not very high.

"Add to that an apparent racial prejudice against the laws of hygiene and ventilation, and the fact that, as a rule, the housing provided for or by these people just manages to comply with statutory requirements, and I think you will find sufficient reasons to account for the high rate of infantile mortality amongst Asiatics."

In the report of 1909 of Dr. Turner, Medical Officer of Health for Bombay (*vide British Medical Journal*, 24/9/10, p. 904), the infant mortality-rate for that city is given as 404 per 1,000 births. To reduce this mortality, measures are being taken to supply skilled attendance on mothers, and to help them to better management of their infants. To this end it is proposed to erect a lying-in hospital for the poor, with arrangements for teaching nursing to native midwives, to be supplied free.

According to "Indian Public Health" (*vide Sanitary Record*, 23/2/11, p. 184), a Committee has recently reported on the excessive infantile mortality (352 per 1,000) of Bangalore. 29 per cent. of infant deaths there are due to convulsions, 17 per cent. to bowel complaints, and 25 per cent. to epidemics. The Committee attributes this to

maternal ignorance, but considers it vain to hope that sufficient knowledge can be conveyed to the coolie class. It is difficult to assist them in the choice of healthy mothers for their children, and to prevent the responsibility of motherhood being thrust promiscuously upon the women.

The Committee's recommendations include the training of native nurses, the issue of nourishment or its money equivalent in connection with the local maternity hospital, and the distribution of a handbill of simple directions as to the management of infants.

The first and third of these measures could quite easily be adopted in Johannesburg.

CONCLUSIONS.

The Medical Officer of Health is sensible of the incomplete and unsatisfying results of the foregoing inquiry into this interesting subject. He ventures, however, to think that the following conclusions are justified:—

1. That in Johannesburg, and also in Pretoria, Capetown and Kimberley, the mortality amongst Native, Coloured and Asiatic infants is very much greater than amongst White infants.
2. That inasmuch as the registration of births is admittedly incomplete amongst these peoples, whilst the registration of deaths is fairly accurate, the published rates of their infantile mortality are probably materially higher than the true rates.
3. That 27 per cent. of all coloured infant deaths occur in the first week, and 42 per cent. in the first month of life.

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Coloured Infant Mortality, Pneumonia, etc.

4. That, speaking generally, the principal causes of these deaths are, in the earlier months "prematurity and malformation, debility, low vitality and convulsions"; and (especially amongst natives) "respiratory diseases"; whilst "diarrhoeal diseases" are very fatal in the later months. The relative importance of these factors is approximately as follows:—

RACE.	INFANT MORTALITY FROM—			
	Prematurity and malformation.	Debility, low vitality, convulsions.	Respiratory diseases.	Diarrhoeal diseases.
Natives	15%	20%	30%	21%
Cape Coloured	19%	21%	20%	21%
Asiatics	21%	26%	20%	24%

5. That the mortality of native, coloured and Indian infants from tuberculosis is very small, and that the only epidemic diseases from which native infants died appear to be whooping cough and diphtheria. Cape Coloured infants died from these two maladies and also from measles.
6. That though no figures are available, competent observers state that infantile mortality in general is much lower in the native kraals than in towns, presumably because in the kraals the infants are better cared for, can often get fresh milk, and never get condensed milk.
7. That Dr. Borle (Elim Hospital, Spelonken) reports a very high infantile mortality rate (500) for Transvaal Basutos, amongst whom inherited syphilis is very prevalent; and that amongst Christianised natives, inflammation of the mother's breasts, resulting from friction by dirty clothing, is not an infrequent cause of infant-death, owing to interference with the maternal milk-supply.
8. That, according to Dr. Mehliß and Mr. W. W. Lloyd, much of the excessive native infantile mortality in Johannesburg is due to feeding infants on cheap, inferior and often bad condensed milk; and that condensed milk when left open for several days in tins to invasion by flies and dirt, is a potent cause of fatal diarrhoea of infants.
9. That amongst other special causes of coloured infantile mortality, Dr. Mehliß mentions inherited syphilis, poisoning by carbon monoxide gas from fires lit in ill-ventilated, smoke-filled dwellings, burns, and other results of general neglect, and want of medical attendance.
10. That Mr. Taberer and Dr. Mehliß are also of opinion that a material proportion of native and coloured infants here are the offspring of prostitutes, are not wanted, and, though not deliberately killed, are not infrequently allowed to die.
11. That there is no evidence of deliberate infanticide; and that death from "overlying" and "injury" is apparently much less frequent amongst natives than amongst Cape-coloured persons.
12. That, according to Dr. Murison of Durban, Asiatics are much attached to their children; that their ideas of domestic and infant hygiene are not very enlightened; that their infant-mortality is much lower than that amongst natives, but still much higher than amongst whites; that it is also much lower than in Indian towns like Bombay and Bangalore, where it is proposed to combat it by means of trained midwives and the diffusion of information in handbill form *re* feeding and management of infants.

PNEUMONIA AND BRONCHITIS.

The following are the figures as to pneumonia deaths for the period under review:

YEAR.	WHITES.	S.A. COLOURED.	EURAFRICANS.	ASIATICS.
1909-10	146	670	39	11
1910-11	178	1,190	45	2

The death-rates per 1,000 from this disease are as follow:—

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Pneumonia
Bronchitis

	WHITES.	S.A. COLOURED.	ASIATICS.	LONDON.
1906-7	1.1	6.6	0.88	1.4 (1906)
1907-8	1.2	9.3	1.9	1.3 (1907)
1908-9	1.3	9.6	1.4	1.4 (1908)
1909-10	1.3	6.8	2.1	1.4 (1909)
1910-11	1.4	11.9	2.3	1.3 (1910)

The above figures indicate a slight progressive increase for whites during the last five years, and are also (except in 1910-11) less than the figures for London for the corresponding years. Amongst S.A. Coloured and Asiatics, however, the mortality has steadily increased, though the S.A. Coloured rate for 1909-10 is an exception to this statement.

In the appended Tables, the crude Johannesburg death-rates from pneumonia and bronchitis, per 1,000 persons living, are contrasted with those of "London" and "England and Wales" from the same causes:—

PNEUMONIA.

	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Johannesburg—								
Whites	1.895	1.439	1.668	1.134	1.082	1.313	1.224	1.446
S.A. Coloured	11.163	7.396	8.594	6.397	9.202	8.341	6.574	11.185
Asiatics	4.525	4.65	1.062	0.70	1.502	1.341	1.931	2.124
London	1.2	1.4	1.4	1.4	1.3	1.4	1.5	1.3
England and Wales	1.220	1.281	1.299	1.200	1.344	1.179	1.290	—

BRONCHITIS.

	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Johannesburg—								
Whites	.454	.478	.588	.451	.283	.397	.271	.386
S.A. Coloured	1.086	1.548	1.161	.747	.557	.393	.390	.408
Asiatics	—	.132	.464	.070	1.208	1.032	2.897	3.283
London	—	—	—	—	—	1.294	1.471	1.209
England and Wales	1.112	1.246	1.139	1.034	1.208	1.092	1.142	—

As regards "pneumonia," two interesting facts emerge, namely, (1) that quite contrary to local medical opinion (which the Medical Officer of Health shared), there has been no material reduction of "White" mortality during the past seven years; and (2) that the crude "White" death-rate from pneumonia compares not unfavourably on the whole with that of "London." It must, however, be remembered that in Johannesburg the proportion of young adults is relatively large.

Pneumonia mortality amongst S.A. Coloured (chiefly mine-boys) is, however, extremely high, and has been the subject of special investigation by Sir Almroth Wright, F.R.S., whose report is awaited with interest.

M.O.H. 1909-11
Pneumonia.
Enteric.

Except in 1903-4 and 1910-11, Asiatics do not appear to have died in excessive numbers from this cause.

The figures as regards "Bronchitis" show for "Whites" and S.A. Coloured, a smaller mortality than in "England and Wales." Except in regard to 1909-10 and 1910-11, the same remark applies to the Asiatic rates.

Cases of Pneumonia ending fatally amongst Asiatics, of which intimation is received daily from the Registrar of Births and Deaths, are at once inquired into, in view of the possibility of Plague first appearing in the pneumonic form.

Medical practitioners are also circularised from time to time in reference to this possibility and to the free examination of the sputum of any case to which suspicion may attach.

ENTERIC OR TYPHOID FEVER.

Appended are the statistical particulars for the period under notice and the six preceding years:—

YEAR.	WHITES.			NATIVES.		EURAFRICANS.		ASIATICS.	
	Cases.	Deaths.	Deaths per cent.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
1903-4	1,009	126	12.4	—	—	—	99	—	5
1904-5	454	46	10.1	266	—	—	125	8	1
1905-6	617	84	13.6	232	—	—	99	29	7
1906-7	385	42	10.8	242	—	—	161	12	6
1907-8	446	31	6.9	348	—	—	102	20	5
1908-9	373	37	9.9	296	—	—	123	3	3
1909-10	271	21	7.7	470	146	8	1	—	—
1910-11	277	25	9.02	497	137	12	3	5	—

A large number of imported cases, i.e., persons developing or suffering from enteric, came from outside districts into the hospitals and nursing homes of Johannesburg. Excluding deaths amongst this class (see Tables A-H), the mortality rates from enteric per 1,000 of the population were as follow:—

	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Whites	1.3	.4	.7	.4	.3	.3	0.15	0.18
Natives } Eurafrians }	1.4	1.6	1.4	2.0	1.2	1.5	1.42	1.35
Asiatics	.6	.09	.8	.9	.7	.4	—	—
In the 77 "Great Towns" of England	.12	.10	.08	.09	.07	.08	0.06	0.05

WHITES.—The above rates, so far as they go, suggest at first sight that the present risk to Whites of death from typhoid fever in Johannesburg is from three to four times as great as it is in the large towns in England; but the comparatively youthful "age-constitution" of the population of Johannesburg must be remembered in view of the fact that typhoid is a disease of youth and early adult life. As pointed out in previous reports, it is therefore reasonable to suppose that if the "age-constitution" of Johannesburg were similar to that of the average English town, the typhoid rate here would be less than the above figures indicate.

Notifications, however, show a more or less steady decline, the figures for 1909-11 being the lowest on record. The case-mortality, too, is not unduly high.

The typhoid death-rates for S.A. Coloured are considerably higher than those for Whites, and it is thought that this indicates a greater case-mortality amongst those attacked, apart from the question of their susceptibility.

ASIATICS.—No cases were reported in 1909-10, and only five non-fatal attacks in 1910-11.

DIARRHOEAL DISEASES.

Pneumonia.
Diarrhoea.
Meningitis.

The following are the mortality figures for the period under notice:—

	WHITES.		NATIVES AND EURAFRICANS.		ASIATICS.	
	1909-10.	1910-11.	1909-10.	1910-11.	1909-10.	1910-11.
Diarrhoea and Dysentery	181	177	148	188	9	16
Enteritis	10	10	13	27	—	—
	191	187	161	215	9	16
	378		376		25	

DEATH RATE PER 1,000 OF POPULATION LIVING.

	WHITES.	NATIVES AND EURAFRICANS.	ASIATICS.	77 GREAT TOWNS IN ENGLAND.
1903-4	3.82	4.77	.89	.83
1904-5	2.49	3.83	.39	.83
1905-6	3.34	4.18	1.26	.83
1906-7	2.26	3.21	1.62	1.16
1907-8	1.52	1.76	1.18	.4
1908-9	2.22	1.95	.88	.65
1909-10	1.63	1.55	1.73	.38
1910-11	1.58	2.08	3.09	.38

The proportion of the foregoing deaths which took place amongst the children under five years of age of the different races was:—For Whites, 90 per cent.; Natives, 28 per cent.; Eurafrians, 95 per cent.; Asiatics, 80 per cent.

As regards both S.A. Coloured and Asiatics in Johannesburg, it must, however, be remembered that comparatively and absolutely there are very few children. Diarrhoeal diseases are the chief cause of death amongst children under five years.

MENINGITIS.

The characteristics of this disease were fully dealt with in the Medical Officer of Health's report for 1904-6 (see pp. 20-24):—

The ages at death are set out in the following table:—

DEATHS—1906-1909.

	All ages.	—1	—5	—15	—25	—35	—45	—65	65
Whites	73	27	16	4	5	8	4	6	3
Natives	453	10	1	6	225	164	40	7	—
Eurafrian	22	12	7	1	2	—	—	—	—
Asiatics	2	2	—	—	—	—	—	—	—
Totals	550	51	24	11	232	172	44	13	3

M.O.H. 1909-11

Meningitis.
Tuberculosis.

With regard to the results of bacterial examination of 369 suspected cases of meningitis from 1st July, 1906, to 30th June, 1911, the Government Bacteriologist has kindly furnished the following figures:—Meningococcus present in 116 cases; pneumococcus in 79; meningococcus and pneumococcus in 0; streptococcus in 20; pneumococcus with streptococcus in 1; none of the foregoing in 153.

Age Incidence.—(a) *Amongst Whites.*—Of the 73 deaths, 47 were amongst persons under 15 years, 43 being very young children.

(b) *Amongst Eurafrians.*—19 of the 22 deaths were those of children under five.

(c) *Amongst Natives,* the age-incidence was just the reverse of that amongst Whites and Eurafrians, 436 out of 453 being deaths of persons over 15 years of age.

TUBERCULOSIS.

Appended are the statistics for two years:—

DEATHS—1909-1911.

TUBERCULOSIS.	WHITES.		NATIVES.		EURAFRIANS.		ASIATICS.	
	1909-10.	1910-11.	1909-10.	1910-11.	1909-10.	1910-11.	1909-10.	1910-11.
Of Meninges	3	2	1	1	—	1	—	—
Of Lungs	88	94	332	385	12	18	9	6
Other Forms	10	13	31	67	—	—	—	—
	101	109	364	453	12	19	9	6
	210		817		31		15	

DEATH-RATE PER 1,000 PERSONS LIVING.

	WHITES.	NATIVES.	EURAFRIANS.	ASIATICS.	ENGLAND AND WALES.
1909-10 ..	0.90	3.81	1.54	1.73	1.08 in 1909.
1910-11 ..	0.97	4.74	2.45	1.15	—

A. AMONGST WHITES:—

During the four years 1907-8, 1908-9, 1909-10 and 1910-11, inquiry has been made in regard to each death from Tuberculosis, with a view to obtaining some idea as to—

- the proportion of fatal cases which may be regarded as 'imported,' i.e., in which the infection was contracted before the deceased person came to South Africa;
- the proportion in which the disease was acquired during residence in South Africa; and
- the effect of occupation.

During the period in question, 419 whites died from Tuberculosis. Of these, 228 were British-born, 48 hailed from other European countries, and 143 were Afrianders, including 69 of English and 74 of Dutch descent.

The value of the results of our inquiries, as set out in the following tables, depends of course on the accuracy of the information recorded in the death certificate or subsequently furnished to your inspector.

DEATHS FROM TUBERCULOSIS OF OVERSEA IMMIGRANTS IN JOHANNESBURG.

M.O.H. 1909-11

Tuberculosis.

1st July, 1907, to 30th June, 1911.

B = Infected before arrival in South Africa. A = Infected after arrival in South Africa.

	YEARS OF RESIDENCE IN SOUTH AFRICA.																			
	—1		—2		—3		—4		—5		—10		—15		—20		+20		Total,	
	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A
British Born	9	3	8	4	7	1	4	2	6	6	16	37	15	40	9	24	5	12	79	129
Other Europeans ..	—	—	2	1	—	1	—	—	3	2	1	11	1	9	1	2	1	5	9	31
Totals]	9	3	10	5	7	2	4	2	9	8	17	48	16	49	10	26	6	17	88	160

In addition there were 20 deaths of British-born persons and eight of other Europeans, the length of whose residence in South Africa was unknown.

The proportion of fatal cases which may be regarded as "imported" is as 88:419, or about 21 per cent.

The proportion in which the disease appears to have been contracted in South Africa is made up of deaths of immigrants infected after arrival, viz., 160, plus deaths of Afrikanders, viz., 143, and is therefore as 303:419, or about 72 per cent.

Details as to "Occupation" are as follow:—

Occupation.	Under 1 year			-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-15	-20	+20	All Ages.	Un-known.
	3ms	6ms	12m																
MINERS —																			
Machine Drillers	3	9	19	21	4	6	7	3	4	1	2	1	1	—	1	1	1	84	—
Other Underground	9	10	15	12	6	5	2	3	2	—	1	—	—	—	1	1	1	68	6
Surface	3	2	3	4	—	—	1	—	—	1	—	—	—	—	—	1	—	15	2
Engine Drivers and Fitters	1	—	1	5	3	1	2	2	1	—	3	—	—	—	1	—	—	20	—
Clerks and Salesmen	6	8	5	9	7	6	2	4	3	1	—	2	—	1	4	—	—	58	1
Housewives ..	5	4	1	6	4	1	5	2	—	1	1	—	—	—	2	1	2	35	3
Painters	—	2	—	—	1	—	—	—	—	—	—	—	—	1	—	—	—	4	—
Carpenters	1	—	—	—	—	1	—	—	—	1	1	1	—	—	—	—	—	5	—
All others	25	9	18	23	11	5	7	4	3	3	1	3	1	1	—	1	1	116	2
Total	53	44	62	80	36	25	26	18	13	8	9	7	2	3	9	5	5	405	14

158 deaths, or 37·7 per cent. of the total mortality from tuberculosis, occurred amongst miners employed underground, and in the majority of cases was no doubt associated with silicosis, 84, or over one-half, being those of machine-drillers. In 41·1 per cent. of cases death occurred during the first year of illness, and in another 20·8 per cent. before the end of the second year; in five years 74·6 per cent. were dead.

It is clear that the registered deaths from tuberculosis amongst miners (178) and the percentage figure calculated thereon, must be increased by the addition of all tuberculosis deaths amongst repatriated miners, before the true percentage of such deaths amongst the mining and non-mining communities respectively can be ascertained.

M.O.H. 1909-11

Tuberculosis.

Clerks and salesmen furnish the next largest number of deaths (59) from tuberculosis. It is not improbable that some of this class were men who, becoming incapacitated through mine work, were forced to take to lighter employment. More than 72 per cent. of this class died within five years of infection.

Housewives contributed 38 deaths, and 68 per cent. of these sufferers succumbed before the end of the fifth year of illness.

B. AMONGST SOUTH AFRICAN COLOURED:—

Of the 845 deaths registered during 1909-11, 507 were those of persons from the East Coast (chiefly Portuguese "boys"), 46 from British Central Africa, 30 from Transvaal, 4 from Orange Free State, 13 from Natal, 96 from Cape Colony, 7 from Rhodesia, 23 from Basutoland, 17 from Zululand, 30 Eurafricans, whilst 72 were classed as "unknown."

810 of the deceased persons were males and 35 females. The great majority of the males were mine boys (718) and labourers (92), including house and stable boys. Practically all of these were between the ages of 15 and 40 years.

The duration of illness was as follows:—109 died in less than one month; 268 under three months; 273 under six months; 79 under twelve months; 17 under eighteen months; 28 under two years; 27 after illness of more than two years. In 13 cases the duration of illness was unknown.

Attention is again directed to the prevalence of tuberculosis amongst natives, the 195 deaths of 1903-4 being followed by 219, 396, 346, 365, 418, 375 and 470 respectively in the subsequent years.

Appended is a statistical summary of the mortality from Tuberculosis in Johannesburg for the eight years 1903-4 to 1910-11:—

DEATH-RATE PER 1,000.—PHTHISIS PULMONALIS.

	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Johannesburg—								
White:	·911	·911	·775	·767	·642	·693	·536	·680
S.A. Coloured	3·038	2·884	4·833	3·795	3·554	4·542	3·156	3·582
Asiatics	·905	·797	1·195	2·064	1·769	1·769	1·738	1·159
	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
London	1·55	1·62	1·42	1·44	1·40	1·32	1·31	1·14
England and Wales ..	1·203	1·236	1·140	1·160	1·140	1·115	1·081	—

TUBERCULAR MENINGITIS.

	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Johannesburg—								
Whites	·024	·071	·011	·010	·010	·010	·026	·017
S.A. Coloured	·063	·026	—	·012	·076	—	·009	·018
Asiatics	—	—	—	—	—	—	—	—
	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
London	—	—	—	—	—	·215	·179	·166
England and Wales ..	·193	·188	·179	·177	·168	·165	·162	—

OTHER FORMS OF TUBERCULOSIS.

M.O.H. 1909-11

Tuberculosis.

	1903-4.	1904-5.	1905-6.	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
Johannesburg—								
Whites	·071	·071	·069	·084	·136	·073	·089	·094
S.A. Coloured	·063	·158	·191	·291	·672	·418	·300	·604
Asiatics	—	—	·132	·014	·014	—	—	—
	1903.	1904.	1905.	1906.	1907.	1908.	1909.	1910.
London	—	—	—	—	—	·304	·243	·209
England and Wales ..	·272	·292	·268	·278	·266	·272	·252	—

In 1909, Dr. Geo. Turner pointed out that the very common infiltration of the lungs of tropical and sub-tropical natives by *Bilharzia* ova, often calcified, no doubt strongly predisposes such natives to this disease.

VOLUNTARY NOTIFICATION AND PREVENTION OF TUBERCULOSIS.

Pursuant to instruction of the Public Health Committee, following a request to Municipalities from the Federal Council of Municipal Associations of South Africa, the Medical Officer of Health reported fully on this subject on the 6th June, 1907. The well-known reasons which had influenced the English Local Government Board and the Paris Academy of Medicine against the enforcement of Compulsory Notification, were discussed, as well as various other less controversial measures. The Medical Officer of Health advised as follows:—

1. That Compulsory Notification be not adopted "at present at any rate," but that voluntary notification be invited and paid for.
2. That the assistance of the Medical Profession be invited in educating their consumptive cases, and that a supply of cards of simple instructions be sent to each such practitioner.
3. Disinfection of infected premises.
4. That the disease amongst coloured persons would be most practically combated by vigorous enforcement of general sanitary conditions, and especially of those relating to housing.
5. That Tuberculous Immigration be regulated.

The risk of transmission through milk was at that time considered slight.

The provision of Sanatoria at the public expense was not recommended, as the Medical Officer of Health was, and is, of opinion that the results achieved are probably incommensurate with the cost; also that till immigration is regulated, Sanatoria would have the effect of attracting indigent patients from other parts of South Africa and from Oversea as well.

Voluntary Notification commenced in July, 1907. Appended are results to 30th June, 1911:—

	1906-7		1907-8.		1908-9.		1909-10.		1910-11.		TOTALS.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
Whites	1	73	90	61	26	66	68	60	104	79	289	339
Coloured	—	299	166	280	44	258	97	326	226	385	533	1548
Asiatics	—	14	7	12	1	12	—	9	5	6	13	53
Totals	1	386	263	353	71	336	165	395	335	470	835	1940

M.O.H. 1909-11

Tuberculosis.
Cancer.

Procedure following Notification.—The Infectious Disease Inspector visits forthwith, obtains particulars as to the nature and duration of illness, length of residence in South Africa, and in case of immigrants, whether the disease existed on arrival. A copy of Dr. Newsholme's card of simple instructions is read over to the patient and left. Request is made for notification of change of address, vacated rooms are disinfected, and the patient is, so far as is practicable, kept in sight. From the very nature of the disease, however, effective supervision is practically impossible.

When the first knowledge of a case is obtained from the Death Returns, the occupier of the house is informed, disinfection of the premises is offered, and the usual particulars as to the deceased's personal history recorded when available.

In connection with this matter, we have followed the policy of the English Local Government Board as set out in their Circular of 16th November, 1911, on "The Public Health (Tuberculosis) Regulations, 1911," and in a previous Circular. In that of 16th November, 1911, the Board says: "It is, of course, unnecessary and undesirable that notification should involve publicity. The Board have no doubt that Local Authorities and their officers will avoid doing anything which could cause pain or annoyance to patients or their friends."

PRECAUTIONS FOR CONSUMPTIVE PATIENTS (*Dr. Newsholme's Card*).

Consumption is, to a limited extent, an infectious disease. It is spread chiefly by inhaling the expectoration (spit) of patients which has been allowed to become dry and float about the room as dust, or by directly inhaling the spray which may be produced when a patient coughs.

Do not spit except into receptacles, the contents of which are to be destroyed before they become dry. If this simple precaution is taken, there is practically no danger of infection. The breath of consumptive persons is free from infection, except when coughing.

The following detailed rules will be found useful, both to the consumptive and to his friends:—

1. Expectoration indoors should be received into small paper bags and burnt immediately; or into a receptacle which is emptied down the drain daily, and then washed with boiling water.
2. Expectoration out of doors should be received into a suitable bottle, to be afterwards washed out with boiling water. If a paper handkerchief is used, this must be placed in a waterproof bag, the contents subsequently burnt, and the bag washed daily.
3. Ordinary handkerchiefs, if ever used for expectoration, should be put into boiling water before they have had time to become dry; or into a solution of a disinfectant, as directed by the doctor.
4. Wet cleansing of rooms, particularly of bedrooms occupied by sick persons, should be substituted for "dusting" and "sweeping."
5. Sunlight and fresh air are the greatest enemies of infection. Every patient should sleep with his bedroom window open top and bottom, a screen being arranged, if necessary, to prevent direct draught.
6. The patient should, whenever practicable, occupy a separate bedroom. Children should never sleep in the same bedroom as the patient.
N.B.—The patient himself is the greatest gainer by the above precautions, as his recovery is retarded and frequently prevented by renewed infection derived from his own expectoration.
7. Persons in good health have little reason to fear the infection of consumption. Over-fatigue, intemperance, bad air, dusty occupations, and dirty rooms favour consumption.

ORGANIC DISEASES OF HEART AND ACUTE RHEUMATISM.

These heart affections include pericarditis, endocarditis, valvular disease and hypertrophy. The deaths recorded during the two years July 1st, 1909—June 30th, 1911, were 131 and 153 for Whites, and 73 and 81 for natives, 14 and 15 for Eurafrians, and 11 and 7 Asiatics.

Of the white deaths, 205 were those of males and 79 those of females, indicating a considerably greater proportionate incidence on males. Twenty-four died under 15 years of age and 260 at later periods.

As heart disease is a frequent sequel of acute rheumatism, it is noteworthy that the death-rate per 1,000 for the last two years from the latter malady is 0.07 for whites, 0.10 for natives, 0.06 for Eurafrians, and nil for Asiatics, as against 0.05 in England and Wales in 1909.

(For "Tuberculosis in Cows and Pigs," v. p. 42; "TUBERCULOUS MILK," v. pp. 44-47; and "BOVINE TUBERCULOSIS," v. pp. 47-48.)

MALIGNANT DISEASE OR CANCER.

Whites—

The deaths from cancer were 54 and 60 respectively for the two years 1909-10 and 1910-11. Of the total (114) 63 were males and 51 females, and 104 (54 males and 50 females) occurred at ages over 35. Stated in terms of the 1910 census population, the mortality was 0.49 per 1,000 for males and 0.52 per 1,000 for females, as against 0.82 for males and 1.07 for females in England and Wales in 1909.

The English Registrar-General points out, however, that cancer-rates are most correctly estimated by comparing the total deaths at ages above 35 years with the number then living, and as the matter of cancer death-rates is one of some general interest, Dr. G. D. Maynard has kindly worked out the following comparative rates:—

M.O.H. 1909-11
Cancer,
Miners' Phthi-
sis.

EUROPEAN CANCER DEATH-RATES PER MILLION.

	T.	M.	F.
Johannesburg— Crude Annual Death-rates for 1909-10 and 1910-11 ..	510	494	530
Johannesburg— Corrected Annual Death-rates for 1909-10 and 1910-11 Correction Factors obtained from Census Report, 1910	828	725	884
Cancer Death-rate, England and Wales, 1909	952	826	1,071
Corrected Cancer Death-rate, England and Wales, Urban Areas, 1909	990	867	1,106
Comparative Mortality of Local Corrected Death-rates, putting England Urban Rates=100	84	84	80
Johannesburg— Crude Death-rates for ages 35 and over	1,493	1,219	1,970
England and Wales— Crude Death-rates for ages 35 and over as (1891-1900)	2,316	1,870	2,715

In 10 cases the seat of the disease was not stated; in 29 the stomach was affected; in 16 the liver; in 6 the breast; in 13 the womb, etc.; in 7 the mouth or tongue; in 5 the jaw; in 4 each the abdomen, bowels and throat; in 3 each the kidneys and lungs; in 2 each the prostate and rectum; and in 1 each the pylorus, bladder, omentum, ilium, glands and pelvis.

Natives—

26 deaths were recorded, 14 being at ages under 35 and 12 at later periods. The parts affected are recorded as follows: Liver 17, stomach 2, throat 2, lung 2, abdomen 1, prostate 1, not stated 1. The death-rate per 1,000 living was 0.13, but it should be remembered that this population consists in Johannesburg mainly of young male adults who remain here a comparatively short time.

Eurafricans—

Three deaths were recorded, two females and one male, all over 35. In the two female cases the stomach was affected, and in the male case the throat.

Asiatics—

Five deaths occurred, all of which were males and at ages above 35. The part affected was the stomach in two cases, the throat and bowels in one case each, and one was unspecified.

MINERS' PHTHISIS, ROCKDRILL PNEUMONIA OR SILICOSIS.

The causes, prevalence and prevention of Miners' Phthisis have been carefully investigated by the Transvaal Mining Regulations Commission, which reported in March, 1910, and by the Commission on "Miners' Phthisis and Pulmonary Tuberculosis" on Mines within the Union of South Africa, which reported in March, 1912. As the findings of these Commissions are lengthy, and as the reports referred to may be obtained from the Government Printer, Pretoria, it is not considered necessary to summarise them here.

M.O.H. 1909-11

The deaths from this disease are recorded below:—

New Mining
Regulations.

YEAR.	WHITES.	NATIVES.	EURAFRICAN.	ASIATICS.
1909-10	34	22	—	—
1910-11	44	47	1	—

As regards the general results of the work of the Mining Regulations Commission, of which your Medical Officer of Health was a member, it is particularly gratifying to be able to state that practically all of its recommendations, including those regarding dust-prevention, mine-ventilation and air-standards, scavenging, water-supply, native diet, housing, first-aid and ambulance, were promulgated almost *verbatim* as regulations with the force of law, in *The Union Gazette Extraordinary* of the 21st November, 1911; and, if these regulations are enforced, the Commissioners believe that they will place the hygiene of mining in South Africa on a higher plane than that of any other mining community of which they are aware.

SOUTH AFRICAN UNION GAZETTE EXTRAORDINARY,

21ST, NOVEMBER 1911.

Regulations made under Section Four of the Mines and Works Act, 1911 (Act No. 12 of 1911).

CHAPTER I.—DEFINITION “VENTILATING DISTRICT.”

“Ventilating district shall mean such part of a mine as has an independent intake commencing from a main intake air-course and an independent return air-way terminating at a main and return air-course.

CHAPTER II., No. 7 (1)—SURFACE PROTECTION.

Water containing poisonous or injurious matter in suspension or solution must be effectually fenced off to prevent inadvertent access to it, and notice boards shall be put up in suitable places to warn persons from making use of such water.

(2) In no case may water containing any injurious matter in suspension or solution be permitted to escape without having been previously rendered innocuous.

CHAPTER III.—UNDERGROUND PROTECTION.

12. Where a place contains or is likely to contain a dangerous accumulation of water or noxious gases, any working approaching that place shall have boreholes kept in advance, and such additional precautionary measures shall be taken as may be deemed necessary to obviate the danger of a sudden breaking through of such water or gases, and such working place must not exceed six feet in width.

A certificated surveyor shall exercise supervision at every such working place, and shall be responsible for the correct direction of such working, and for the breaking through of such water or gases without accident.

In the case of a mine for which there is no certificated mine surveyor, the manager shall have all the powers and responsibilities and perform all the duties conferred or imposed on a certificated surveyor in this Regulation.

CHAPTER VI.—VENTILATION.

56 (1) The vicinity of the collars of downcast shafts shall be kept clear of cinder heaps, and, so far as practicable, of smoke.

(2) The ventilating current from the downcast shall be suitably split to provide sufficient air to all working places.

(3) In all portions of a mine or workings where the natural ventilating current is insufficient, suitable mechanical appliances for ventilation shall be provided and operated.

CHAPTER IX.—DUTIES OF GANGERS, BLASTING, ETC.

101 (1) No person shall in the drilling of holes use or cause or permit to be used any percussion machine drill unless a water jet or spray or other means equally efficient is provided and used so as to prevent the escape into the air of dust caused by the drilling, and unless the floor and sides of the working face to a distance of at least ten feet from the face be kept sufficiently damp to prevent dust being raised by the escape of exhaust air from the rock-drill.

(2) No person shall in any part of a mine remove any broken rock or ground or cause or allow the same to be removed, if such rock or ground is in a dusty condition, unless and until

it has been effectively damped and is kept damp so as to prevent the escape of dust into the air during removal. M.O.H. 1909-11

New Mining
Regulations.

(3) Any mine in which, in the opinion of the Inspector of Mines, the dust produced by drilling is not likely to cause miners' phthisis, shall be exempted from the provisions of subsections (1) and (2) of this Regulation.

CHAPTER XIV.—RESPONSIBILITY IN CONNECTION WITH MINES AND WORKS, ETC.

158. In addition to his other duties and responsibilities under these Regulations the manager shall :

(1) Provide or cause to be provided on the surface, and in the case of a mine in the underground workings, sufficient and suitable sanitary conveniences in accordance with the following rules :—

(a) Where the number of persons employed does not exceed one hundred there shall be one sanitary convenience for every twenty-five persons or portion thereof ;

(b) Where the number of persons so employed exceeds one hundred, but does not exceed five hundred, there shall be one additional sanitary convenience for every forty persons or portion thereof over the first one hundred ;

(c) Where the number of persons so employed exceeds five hundred, there shall be one additional sanitary convenience for every sixty persons or portion thereof over the first five hundred ;

(d) At each working level a well ventilated, screened latrine with cement concrete floor, graded and drained to a sump, shall be provided for white and coloured persons separately, and shall be kept adequately supplied with sawdust, tailings, fine ash, or other suitable absorbent ;

(e) All pails or buckets used in connection with underground sanitary conveniences shall have close-fitting lids, which can be clamped on to prevent spillage during removal to surface ;

(f) All disused workings shall be barricaded off so as to prevent liability to faecal pollution.

161 (1) If the manager or mine overseer is unable personally to carry out the duties prescribed for a shift boss in this Regulation, one or more competent white persons shall be appointed to act as a shift boss or bosses.

(2) Each shift boss shall take charge during a shift of a section of the underground workings of the mine.

(3) Each shift boss shall be responsible for the proper observance of the requirements of these Regulations by the gangers or miners working under him, and shall, as soon as practicable, report to the manager or mine overseer any contravention thereof ; he shall further specially report whether water is being used in accordance with the requirements of these Regulations for the allaying of dust and fumes.

(4) The appointment of any shift boss or bosses shall not be taken to relieve the manager or mine overseer of any personal responsibility under these Regulations.

(5) Each shift boss shall at least once during his shift inspect every portion of the section of the mine assigned to him in which persons are working, or through which they may have occasion to pass, and shall ascertain the condition thereof as regards ventilation, sanitation, the presence of gases, and the state of the hanging wall, foot-wall, and sides, and generally, so far as the safety and health of persons are concerned, and more particularly as regards the observance of the regulations for the prevention of dust.

162. In every fiery mine :—

(1) (a) A station or stations shall be appointed at the entrance to the mine and to different parts of the mine, as the case may require, and a competent person or competent persons appointed by the owner, agent or manager for the purpose, not being a contractor or contractors for getting minerals in the mine, shall within two hours immediately before the commencement of each shift inspect every part of the mine situate beyond the station or each of the stations and in which workmen are to work or pass during the shift, and shall ascertain the condition thereof so far as the presence of gas, ventilation, roof and sides and general safety are concerned.

(b) Such inspection shall be made with a locked safety lamp.

(c) A report specifying where noxious or inflammable gas (if any) was found present, and what defects (if any) in roof or sides, and what (if any) other source or danger were or was observed shall be recorded without delay in a report book to be kept in the engine-house or office at the mine for the purpose and accessible to the workmen. Such report shall be in the form approved by the Inspector of Mines, and shall be signed by, and, so far as the same does not consist of printed matter, shall be in the handwriting of the person who made the inspection. Such book shall not be moved from the engine-house or office on surface.

(d) In the report book above referred to the Manager shall clearly define the districts to be inspected by each person under this Regulation, and it shall be the duty of the Manager to provide that the size of each district shall not be too large to permit of its thorough inspection, and of the fencing off of any places which may be found dangerous

within the time allowed. Should the Inspector of Mines consider any district too large he may, by notice, in writing, to the Manager, require that it be reduced or divided for inspection purposes.

(e) No workman shall enter or be permitted to enter the mine or any part thereof until such mine or such part has been so examined and reported upon as safe in such report book.

(f) In collieries in which over one hundred persons are employed an inspection required by sub-sections (1) (a) to (e) of this Regulation shall not be made by a ganger of that portion of the mine in which he is to work during the shift.

(2) A similar inspection by the Manager or by a competent person other than a ganger appointed by the Manager, and having at least three years' underground experience in mines of the class of mine inspected, shall be made in the course of each shift of all parts of the mine in which workmen are to work or pass during that shift, but it shall not be necessary to record a report of the same in a book, provided that in the case of a mine worked continuously throughout the twenty-four hours by a succession of shifts, the report of one of such inspections shall be recorded in the manner above required.

(3) In no case shall a person be considered competent to make the forgoing inspections unless he has had at least three years' practical experience in coal mining in mines of the class to be examined.

(4) The white miner or ganger in charge of a section or district shall make at least three inspections of each working face in his section or district whilst the workmen are at work.

CHAPTER XV.—MISCELLANEOUS.

167 (1) Coloured labourers at the end of the shift shall, as soon as possible, be brought to the surface and shall not be kept waiting unnecessarily at the shaft station or elsewhere.

(2) Time tickets of coloured labourers employed underground shall either be marked underground, or, where this is impracticable, in the shelter-room at the surface.

(3) At every mine, except where exempted by the Government Mining Engineer, adequate provision shall be made elsewhere than in the living rooms for drying wet clothing of coloured labourers coming off shift, and also for washing and disinfecting the clothing of such labourers.

168. One or more notices on which are legibly printed simple directions setting forth the approved procedure for the immediate treatment of cases of "gassing" shall be posted in a conspicuous place in every change-house, recreation room and accident emergency station.

169. No person shall pollute the underground workings with faeces or urine, nor wantonly misuse or foul the latrines.

170. When tailings are used for filling worked-out ground the moisture contained in such tailings shall not have a higher potassium cyanide content than .005 per cent.

CHAPTER XXIV.—AMBULANCE, ETC.

277 (1) At every main travelling shaft, except where the mine hospital is close to such shaft, an accident emergency station shall be provided. This emergency station shall be equipped with the following:—

Two Royal Navy stretchers, or stretchers of other pattern approved by the Government Mining Engineer.

Two or more fitted first-aid boxes of a pattern approved by the Government Mining Engineer.

A supply of dressings and splints.

One portable oxygen inhalation apparatus.

One air-mask with light hose hand-pump, or fitted with reducing valve to connect with compressed air or service pipe.

Two portable electric lamps.

In addition to the above there shall be kept at every coal mine:—

Two oxygen breathing apparatus of the Shamrock or other type approved by the Government Mining Engineer.

(2) At every level on which ordinary mining operations are being conducted there shall be kept:—

(a) A box containing emetic solution, sal volatile, three or more bandages, and a card upon which are printed simple directions for treatment of cases of gassing.

(b) At least one plank stretcher of a pattern approved by the Government Mining Engineer.

(3) On and after the first day of January, 1913, every mining official on any mine employing not less than 500 persons, within six months after his appointment shall be required to be in possession of the certificate of an ambulance association recognised by the Minister testifying that the holder has attended a course of first-aid and is qualified to render first-aid to the injured, with special reference to mining accidents.

For the purpose of this section mining officials shall not be taken to mean the classes of persons shown on the following list, with any alterations of such list as the Government Mining Engineer may from time to time determine:—

Mine Overseer, Shift Boss, Chief Surveyor, Mechanical Engineer, Electrical Engineer, Foreman Smith, Foreman Carpenter, Foreman Fitter, Chief Electrician, Battery Manager, Cyanide Manager, Compound Manager, Hospital Superintendent or Orderly.

M.O.H. 1909-11
New Mining
Regulations.
Syphilis.
Smallpox.

278 (1) At every mine or works where cyanide is used there shall be kept in a conspicuous and convenient place a sufficient supply of a satisfactory and efficient antidote for cyanide poisoning approved by the Government Mining Engineer.

(2) Such antidote shall be kept in a box labelled "Cyanide Antidote," and explicit directions for the use of such antidote shall be affixed inside the lid of the box.

(3) All vessels used for the treatment with acid of zinc slimes from the cyanide process shall be fitted with mechanical agitators and hoods or other appliances of such a nature that the fumes generated in such vessel shall be carried direct to the external air.

(4) An adequate supply of wholesome drinking water shall be provided in each testing-room and assay office, and this supply shall be distinctly labelled "Drinking Water."

279. When any person employed in or about a mine or works receives injury by accident or otherwise, the Manager shall be responsible that the nearest qualified medical practitioner is sent for, unless the regular medical practitioner appointed to the mine or works resides within two miles of the scene of the accident. If the injured person is unable to proceed unaided to his abode or to a hospital, the Manager of the mine or works shall immediately have such person conveyed to his abode or to a hospital in the safest, best and quickest way at the expense of the owner of the mine or works.

SYPHILIS.

Four infant and four adult Europeans, seven infant and fifty-five adult natives, one adult Eurafrian and one adult Asiatic are registered as having died from this disease between July 1st, 1909, and June 30th, 1911.

Appended is a return kindly supplied by Dr. Mehliß, of the Johannesburg cases of syphilis and other venereal diseases treated at the Lazaretto during the years 1909-11.

Years.			Whites.		Coloured.
1906-7	...	...	257		332
1907-8	...	...	185		324
1908-9	...	...	179		323
1909-10	...	...	185		327
1910-11	...	...	219		397

The Medical Officer of Health is in communication with New York, San Francisco, Sidney and Melbourne, as to the administrative anti-syphilitic measures advised or adopted in these places.

In January, 1911, the Johannesburg Chamber of Commerce suggested, in connection with the prevalence of syphilis amongst natives, that the Municipal Council should take steps to secure (1) a more thorough medical examination of boys registered at the Pass Office; and (b) that all native girls be registered through the Pass Office and medically examined there. The Licensed Victuallers' Association made similar representations on 23rd February, 1911. The Public Health Committee resolved to recommend that the attention of the Government be drawn to this matter with the request—

- (1) That every individual native be examined at the Pass Office for syphilis.
- (2) That each month every native in domestic service be medically examined for syphilis.
- (3) That the provisions of the Pass Law, as well as the two foregoing recommendations, be extended to native women.

A copy of this recommendation was forwarded to the Municipal Association and to every Rand Municipality.

In the Municipal (Draft) Ordinance, 1912. Section 75 (10) power is asked to make bye-laws for "preventing the spread of contagious diseases," etc.; and in Section 26 for the registration and medical examination of native female servants.

SMALLPOX AND VACCINATION.

During the period under review the only cases of smallpox which came to light within the Municipal Area occurred during March and April, 1911.

M.O.H. 1909-11
Smallpox.

On the 22nd March, Dr. Turner notified the occurrence of seven cases at the W.N.L.A. Compound amongst a batch of 700 Tropical natives who had recently arrived *via* Delagoa Bay.

The cases were at once transferred to Rietfontein, the premises disinfected, and the contacts traced, disinfected, vaccinated, and kept under observation in the usual way.

Four further cases occurred, and of the eleven natives sent to Rietfontein, six died, the disease being of the confluent type.

The natives apparently became infected whilst on the voyage down the East Coast, and, until their arrival at Ressano Garcia, none had previously been vaccinated.

At the time the outbreak occurred there were a large number of natives in the Compound. They were kept entirely separate, and after being vaccinated and the Manager and Medical Officer notified, were allowed to proceed to the mines to which they had been allotted. Here again, as far as practicable, they were housed separately and kept under observation for fifteen days. It is satisfactory to note that from this source at least no extension of the disease occurred.

In view, however, of the constant communication which goes on between Johannesburg and the rest of the Reef, it is necessary to keep a lookout for any outbreaks in adjoining districts. Four such occurred, the particulars of which are, briefly, as follows:—

1. On August 19, 1909, an old Hottentot, aged about 70, residing at Benoni, who had never been vaccinated, was found to be suffering from hæmorrhagic smallpox. He was removed to Rietfontein, and died on August 25th. He had been employed on the New Kleinfontein Mine for some months, but as it was not at first clear whether he had recently been in Johannesburg, the Acting Medical Officer of Health was sent out to investigate the matter.

The measures taken by the local Authority to deal with the outbreak were entirely satisfactory, as no extension of the disease resulted, unless the case of a native who was notified from Butterworth, Cape Colony, in October, 1909, and who had been previously working on one of the mines in Boksburg, had any connection therewith.

2. Early in December, 1910, a native who had recently arrived at the New Modderfontein Gold Mine from Pondoland was found to be suffering from smallpox. He was at once removed to Rietfontein, and no further extension of the disease resulted.

3. On the 30th April, 1911, Dr. Bensusan notified your Medical Officer of Health of the existence of two cases of smallpox at Lyndhurst.

As this township is outside the Municipal area, the District Surgeon (Dr. Russell) was communicated with, and, with his permission, the Medical Officer of Health of Johannesburg and Dr. Mehrliss visited the infected house as soon as possible.

It appears that the first case, that of an unvaccinated infant, sickened about the 3rd April, and the second, an unvaccinated girl of three years, on April 25th, but medical aid was not secured until the afternoon of the 30th April.

The sufferers were removed to the Lazaretto on Monday, the 1st May, and disinfection was carried out by the Department.

A house-to-house inspection and offer of free vaccination were then made throughout the Valley, as there were found to be a large number of unprotected children living there.

On further enquiry, it was ascertained that the mother with the child who sickened about April 3rd, had paid a visit to the Rietfontein Lazaretto during the month of March, and had probably been infected from one of the cases of the W.N.L.A. which was then under treatment.

A conference took place between the Medical Officer of Health, Medical Officer of Health Transvaal, the Resident Magistrate, and others, in regard to the outbreak, and arrangements were made for the vaccination of a large number of children and others in Eastleigh and Lyndhurst.

The steps taken proved effective, and no further extension of the disease resulted. The Minister of the Interior afterwards expressed his great obligation to the Council for the prompt and effective action taken by your officials.

4. June, 1911.—During June, 1911, information was received that certain native children residing at Witkopjes, between Boksburg and Benoni, had been admitted to the Rietfontein Lazaretto suffering from smallpox. M.O.H. 1909-11
Smallpox.
Scarlet Fever.
Diphtheria.

The outbreak was dealt with by the District Surgeon and local Medical Officer of Health, but beyond tracing possible contacts, further action by your Department was not called for.

The routine measures adopted by the Department in dealing with smallpox will, no doubt, prevent any extensive spread of the disease, provided the notification is early, concealment does not take place, and contacts are readily traced.

On the other hand, if any of the above conditions are not complied with, the factors are present for a very serious outbreak, especially in a community where vaccination and re-vaccination are not compulsory for whites.

Natives are fairly well protected, because vaccination is compulsory at the Pass Office. If, however, a community is to be efficiently protected, Public Vaccinators should be appointed and an adequate supply of reliable lymph provided.

Unfortunately, during the above outbreaks, complaints were received from many quarters that the lymph provided was almost useless, and it was necessary for the Council to make strong representations to Government in regard to the matter.

SCARLET FEVER.

						1909-10.		1910-11.	
						Cases.	Deaths.	Cases.	Deaths.
WHITES	..	..	..	..	..	610	33	668	22
NATIVES	..	..	..	..	..	1	—	1	—
EURAFRICAN	..	..	..	..	..	5	—	5	—
ASIATICS	..	..	..	..	..	2	2	1	—

In 1909-10 the mortality was equal to 0·29 per 1,000 persons living. In 1910-11 there was a welcome drop to 0·17, but even this is much higher than the 1910 rate for the 77 Great English Towns, namely, 0·08. On the other hand, individual English towns suffered more severely than Johannesburg, the rate for Coventry being 0·31 and for Bury 0·34. As pointed out in the last Report, general experience elsewhere has shown that the disease is more or less continually prevalent in all large towns, and that once in every five or six years it becomes widely epidemic. Our knowledge of its methods of spread is probably very incomplete, and actual proof of the theory that there are "carriers" of scarlet fever (as in diphtheria and enteric) will not be forthcoming till the particular organism which causes scarlet fever has been discovered.

Hospital isolation on a large scale has not been practised; in fact, only a little over 15 per cent. of all cases have been so treated. The accommodation at Rietfontein is not unlimited, and the expense is enormous, each patient so isolated costing the community 10s. 6d. per day. Unless, therefore, satisfactory assurances are forthcoming that repayments will be made, only those patients are removed who would otherwise be a serious danger to the public health. European experience has shown that isolation of scarlet fever entails an expense which, in the opinion of many, has hitherto been out of proportion to the preventive results obtained. While no doubt it is of great benefit from the point of view of convenience to the general public, it does not play the part which was expected in the prevention of the disease.

DIPHTHERITIC DISEASE INCLUDING MEMBRANOUS CROUP.

						1909-10.		1910-11.	
						Cases.	Deaths.	Cases.	Deaths.
WHITES	..	..	..	..	..	40	22	60	29
NATIVES	..	..	..	..	..	4	1	3	1
EURAFRICAN	..	..	..	..	..	2	3	—	3
ASIATICS	..	..	..	..	..	—	—	—	—

M.O.H. 1909-11

Diphtheria.
Measles.

The mortality per 1,000 living was 0·19 in 1909-10, 0·16 in 1910-11, and 0·18 for the two years, against 0·12 in the 77 great towns of England in 1910.

Careful inquiry in each case revealed no community of school attendance, milk supply nor other special circumstances.

The diagnosis of diphtheria was bacterially confirmed in 42 cases, 2 reports being negative. 48 phials of anti-diphtheritic serum were distributed.

ERYSIPELAS.

	1909-10.		1910-11.	
	Cases.	Deaths.	Cases.	Deaths.
WHITES	38	1	82	8
NATIVES	22	11	45	8
EURAFRICAN	2	—	1	—
ASIATICS	—	—	2	—

The death-rate per 1,000 was 0·009 in 1909-10 and 0·066 in 1910-11. For the 24 months in question it was 0·04 against 0·72 in the 77 Great Towns, and 0·02 in Johannesburg during the triennium 1906-9. As in former years, however, the majority of cases were facial, and about 66 per cent. of the white cases were not associated with any visible wound.

MEASLES.

The deaths registered were as follows:—

	1909-10.	1910-11.
WHITES	12	67
NATIVES	9	63
EURAFRICANS	3	10
ASIATICS	—	2

The death-rates per 1,000 were as follows:—

	1909-10.	1910-11.
WHITES	0·107	0·556
NATIVES	0·090	0·610
EURAFRICANS	0·230	0·830
ASIATICS		
77 ENGLISH TOWNS	.031	(1910)

In the Medical Officer of Health's Report for 1906-9, it was stated that "Measles at the present time is comparatively negligible as a cause of mortality." Unfortunately, the experience of the late winter and spring (August to December) of 1910-11 makes a repetition of this statement impossible. Hundreds of cases of measles followed the re-opening of schools after the winter holiday, many of the earlier attacks being in families recently returned from the coast. The malady was not, as in England, by any means confined to the younger children, and 18 different schools were closed. In addition, the procedure recommended by the Local Government Board in regard to class closure on account of measles was adopted as far as possible, viz., the closure of the suspected class, for a period of five days only, on the ninth day after the sickening with the disease of the first child. After this time only those children who had sickened with the disease were excluded, together with those in the same households who had not had measles.

In Infant Schools all children from infected households were excluded. Intimation, however, in most cases was not received early enough to allow of this procedure being followed.

In addition to school-closure, handbills were circulated, drawing attention to the prevalence of the disease in the town, and setting out the precautions to be adopted.

M.O.H. 1909-11
Measles.
Plague Pre-
vention.
Puerperal Sep-
ticæmia.

NOTIFICATION OF MEASLES.

On the 23rd August, 1910, the Council resolved that for a period of three months, commencing on the 28th August, 1910, the first case of measles occurring on any premises within the Municipality should "be notified to the Medical Officer of Health" as well as any subsequent case of measles arising on the same premises "after the lapse of 28 days from the notification of the last preceding case." Under this arrangement, 1,363 cases were reported, namely, 1,323 whites, 16 natives, 20 Eurafrians, and 4 Asiatics. To cope with the additional work which such notification involved, 1 additional Infectious Disease Inspector and 2 Disinfectors were engaged. The District Sanitary Inspectors also undertook a certain amount of supervisory work in connection with the outbreak, and in every case disinfection of the infected premises and bedding was carried out. These measures involved much additional work and an extraordinary expenditure of £413 5s. 6d., without apparently producing any effect on the course of the epidemic.

PLAGUE PREVENTION.

No case of Plague occurred during the period under review. The usual precautionary measures were, however, continued. These included the destruction of 47,719 rats, the bacterial examination of 9,297 rat carcasses, the bacterial examination of pneumonia sputum in certain cases, and supervision for ten days of Malays and Indians arriving from plague-infected centres. The tracing of such immigrants is often a matter of great difficulty owing to the addresses given by them at the port of entry being incomplete or incorrect.

In Section 75 (12) of the Municipal (Draft) Ordinance, 1912, the Council has asked for powers to make by-laws

- "(12) for requiring any person arriving in the Municipality within fifteen days
- "of leaving any district infected or suspected of being infected with plague,
- "cholera or yellow fever, or within fifteen days of landing in South Africa from
- "any ship so infected or suspected of being so infected, or from any ship which
- "has within ten days prior to his landing cleared from or touched at any port
- "so infected or suspected of being so infected to report to the Medical Officer
- "of Health his name and place of residence within the municipality."

PUERPERAL SEPTICÆMIA, ETC.

	1909-10.		1910-11.	
	Cases.	Deaths.	Cases.	Deaths.
WHITES	10	10	20	12 (including 1 outside).
NATIVES	—	1	1	1
EURAFRICAN	—	—	1	1 outside.
ASIATICS	—	—	—	1

It is clear from the above figures that the notification of pyæmic and septicæmic states associated with the puerperal period has been very incomplete.

This is probably in part due to the absence, in many cases, of a definite understanding of what "puerperal septicæmia" connotes. It may, therefore, be well to place it on record that in November, 1898, the Royal College of Physicians resolved that *notifiable puerperal conditions* should be taken to include "Septicæmia, Pyæmia, Septic Peritonitis, Septic Metritis, and other acute septic inflammations of the pelvis occurring as the direct result of child-birth." The Obstetrical Society of London gave a similar ruling in reply to an inquiry by the Society of Medical Officers of Health. The Royal College of Physicians have deleted the term "Puerperal Fever" from their nomenclature, and substituted such terms as "Puerperal Pyæmia" or "Puerperal Septicæmia."

M.O.H. 1909-11

Puerperal Septicæmia.
Control of
Midwives.

Two of the total of 32 cases reported were brought for treatment into Johannesburg after confinement. Of the 30 cases which arose in Johannesburg, 6 were medically attended during confinement, 5 were looked after by certified nurses or midwives, and 19 by unqualified persons. Three cases occurred at long intervals in the practice of one unqualified midwife, but no other indication was elicited of any practitioner or midwife having conveyed the infection from one patient to another. In all notified cases the hands of midwives or other female attendants were, as far as possible, disinfected in presence of the Inspector. Clothing and other possibly contaminated articles were also disinfected, and the person in question required to bathe.

The death-rate from puerperal febrile conditions per 1,000 persons living was 0.39 in England and Wales in 1909. In Johannesburg, in 1909-10, it was 0.098, and in 1910-11, 0.091. In considering these figures, it should be borne in mind that the birth-rate in Johannesburg was 35.7, against 24.8 for England and Wales. It is probably correct to assume that the larger the number of births per 1,000 of population, the greater is the risk of possibility of accident. Moreover, "England and Wales" include large rural areas in which many women lead a very simple, quiet and healthy life, which probably tends to keep child-birth an uncomplicated and normal physiological process.

A more reliable comparison of the relative prevalence of Puerperal Septicæmia, etc., than the "death-rates per thousand persons living," is the "death-rate per thousand births."

The following figures (except those for Johannesburg) are taken from the Registrar-General's latest Annual Report:—

DEATH-RATE FROM PUERPERAL SEPTICÆMIA AND DISEASES AND ACCIDENTS OF PREGNANCY AND CHILDBIRTH.

Johannes' urg. 1909-10	17	equal to 4.4 per 1,000 births.
„ 1910-11	28	„ 7.0 „ „ „
England and Wales 1909	—	„ 3.7 „ „ „
London „	—	„ 3.1 „ „ „
Huntingdonshire ..	—	„ 1.8 „ „ „
Surrey „	—	„ 2.9 „ „ „
Sussex „	—	„ 3.6 „ „ „
Lancashire „	—	„ 4.3 „ „ „
Cornwall „	—	„ 4.6 „ „ „
W.R. Yorkshire ..	—	„ 4.6 „ „ „
Carmarthenshire ..	—	„ 5.7 „ „ „
Carnarvonshire ..	—	„ 6.8 „ „ „
Radnorshire „	—	„ 7.3 „ „ „
Denbighshire „	—	„ 8.2 „ „ „

SUPERVISION AND CONTROL OF MIDWIVES.—The Council at present possesses no powers for regulating and controlling midwives in their practice. The Provincial Government has, therefore, been asked to include in the Municipal (Draft) Ordinance (1912), a clause to the following effect:—

“ To make by-laws for regulating and supervising the practice of Midwives
 “ and for prohibiting the practice of Midwifery by persons other than Registered
 “ Midwives, provided that any person who satisfies the Council that at the date
 “ when a by-law made under this Sub-section prohibiting the practice of
 “ Midwifery by persons other than Registered Midwives first came into operation
 “ within the Municipality, she had been for at least two years in *bona-fide*
 “ practice as a Midwife within such Municipality, and that she bears a good
 “ character, shall be entitled to continue to practice under Regulations to be
 “ framed under the said by-laws.”

MALARIA.

Appended are the statistics of the disease:—

M.O.H. 1909-11

Malaria.
Leprosy.
Notifiable Dis-
eases.
Isolation.

	1909-10.	1910-11.
	Deaths.	Deaths.
WHITES	6	5
NATIVES	9	6
EURAFRICAN	1	—
ASIATICS	1	—

All the above cases were those of persons who had contracted the disease elsewhere, the majority of the coloured cases being East Coast natives.

LEPROSY.

One Chinaman and 10 natives were notified in 1909-10. In 1910-11 there were 7 native cases only. All the native cases were East Coast boys, with the exception of one 'Mkosa. The Chinaman was employed in a laundry in Jeppes, and had been three years in South Africa.

NOTIFIABLE INFECTIOUS DISEASES.

These included smallpox, plague, typhus, enteric, scarlet fever, puerperal fever, diphtheria, erysipelas, leprosy, ankylostomiasis, anthrax, phthisis, and, for four months, measles.

During the two years under notice, 5,066 cases were notified, viz.: 3,574 amongst whites, 1,403 amongst natives, 69 amongst Eurafrians, and 20 amongst Asiatics. These occurrences are fully discussed elsewhere in this report (see also Tables I and J).

The procedure adopted in regard to notified infectious diseases, disinfection, etc., has been the same as in previous years (see report 1904-6) under the heading "Disinfection."

4,192 houses, 53 schools, 8 mine compounds, and 11 other large premises, and 494,583 articles of clothing, bedding, etc., were disinfected; 4 stables were disinfected for glanders, 12 dairies for anthrax and 6 for tuberculosis.

ISOLATION HOSPITAL (WHITES).

Particulars are appended as to the number, nature, cost, average length and result of isolation of the Johannesburg cases of infectious diseases treated by Dr. Mehliß (1909-11) in the isolation ward at Rietfontein, which, since the abolition of the Rand Provisional Joint Committee, has been administered by the Government.

		Scarlet Fever.	Measles.	Chicken Pox.	Erysipelas.	Diphtheria.	Laryngitis.	Mumps.	Lupus.	Cirrhosis.	Suspect Plague.
WHITES, 1909-10	Admission ..	128	5	3	4	3	—	—	—	—	—
	Recovered ..	122	5	3	4	3	—	—	—	—	—
	Died ..	6	—	—	—	—	—	—	—	—	—
WHITES, 1910-11	Admissions..	65	15	3	4	3	1	—	—	—	—
	Recovered ..	64	15	3	4	3	1	—	—	—	—
	Died ..	1	—	—	—	—	—	—	—	—	—
COLOURED, 1909-10.	Admissions..	1	3	11	4	—	—	—	1*	—	5
	Recovered ..	1	3	11	4	—	—	—	—	—	5
	Died ..	—	—	—	—	—	—	—	—	—	—
COLOURED, 1910-11.	Admission ..	2	17	42	—	—	—	5	—	1	—
	Recovered ..	2	17	42	—	—	—	5	—	—	—
	Died ..	—	—	—	—	—	—	—	—	1	—

* Discharged uncured.

M.O.H. 1909-11

Hospital and
Ambulance.
Bacterial Diag-
nosis.*Total Cases* :—Whites, 234, with 7 deaths; Coloured, 92, with 1 death.*Average length of Isolation* :—Whites, 30.44 days; Coloured, 37.52 days.*Cost per head per day* :—Whites, 10/6; Coloured, 2/-; total, £4,705 4s.*Payments by patients*, £1,722 15s. 6d.; *amounts still due by patients*, £145 12s.

The Council pays Government 10s. 6d. per day per White patient and 2s. per day per Coloured person. The entire responsibility for treatment rests with Government alone. The accommodation at Rietfontein is admittedly insufficient and, in some respects, unsuitable, and Government is about to erect a new Isolation Hospital within the Municipal Area.

RECEIVING HOSPITAL.

De Meillon's house, west of the Thoma Brewery in Braamfontein, was kept in readiness for outbreaks of plague or smallpox, but it was not necessary to use it.

AMBULANCE EQUIPMENT.

There are two well-fitted modern two-horse ambulances for whites and a suitable covered four-wheeled vehicle with stretcher for natives. There are also five light-running four-wheeled canvas-covered American vans for removing clothing, contacts, sitting-up patients, etc., and one Cape cart.

During the period under review 247 white cases and 373 coloured were removed to Rietfontein by the above transport. In addition, 109 white patients were removed to the Johannesburg Hospital, and transport for 33 lepers to Pretoria was arranged for. A few cases were also removed from outside districts at the request of, and on payment by, the local authorities concerned.

BACTERIOLOGICAL DIAGNOSIS.

The following are particulars of the specimens examined under this heading for the Town Council, at the Government Laboratory, Hospital Hill, during the two years under review :—

Disease Product.	Positive.	Negative.	Doubtful.
Typhoid	162	2	—
Tuberculosis	118	1	—
Diphtheria	42	2	—
Meningitis	—	—	—
Silicosis	—	—	—
Bilharzia	1	—	—
Plague	—	14	—
Malta Fever	—	1	—
—	323	20	—

These figures do not include rats examined for suspected plague—v.p. 38

CURATIVE SERA.

The Public Health Committee, on September 15th, 1902, sanctioned an arrangement by which the supply of therapeutic sera is obtained from Messrs. Burroughs, Welcome and Co., of London, and issued at cost price to medical practitioners, or gratuitously in necessitous cases. The amount of each serum obtained and distributed between 1st July, 1909, and 30th June, 1911, is as follows :—

<i>Antitoxin.</i>			<i>Phials obtained.</i>	<i>Phials distributed.</i>
Anti-diphtheritic	...	...	48	48
Anti-streptococcal	...	...	385	287
Anti-dysenteric	...	...	132	8
Anti-pneumonic	...	...	30	18

TABLE I.

Monthly Return of Infectious Disease notified in Johannesburg from 1st July, 1909, to 30th June, 1910.

	Race.	Totals.	July, 1909.	Aug., 1909.	Sept., 1909.	Oct., 1909.	Nov., 1909.	Dec., 1909.	Jan., 1910.	Feb., 1910.	Mar., 1910.	April, 1910.	May, 1910.	June, 1910.	NUMBER OF DISTRICT.													Hospi- tal.	Non- Re-ad- mit.	Un- known	Total.	
															I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.				E.	C.
Small-pox	W.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	N.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Typhoid or Enteric Fever ..	W.	271	7	8	11	13	17	23	41	36	45	28	18	24	16	23	13	17	8	26	28	6	10	10	1	12	17	—	82	4	271	470
	N.	470	3	27	23	23	14	21	33	28	62	75	63	66	3	3	7	10	8	2	5	—	—	212	68	94	1	—	57	—	—	8
	E.	8	4	—	1	—	—	1	—	2	—	1	1	2	1	—	2	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Scarlet Fever or Scarletina ..	W.	610	103	72	56	52	41	35	27	28	32	31	50	83	26	76	13	55	63	93	64	74	51	16	10	13	55	—	1	—	610	1
	N.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
	E.	5	1	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
	A.	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Puerperal Fever or Puer- peral Septicæmia ..	W.	10	1	1	1	1	—	—	2	1	1	—	—	1	—	2	1	1	2	—	—	—	—	—	—	—	—	—	—	1	—	10
	N.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Diphtheria	W.	40	5	7	3	2	2	1	3	4	5	1	2	5	4	8	3	2	3	2	8	2	1	—	—	1	1	4	—	1	—	40
	N.	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E.	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Membranous Croup	W.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	N.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Erysipelas	W.	38	1	3	1	2	8	6	4	—	7	—	—	6	5	7	4	5	1	4	3	1	3	1	1	1	1	—	1	—	38	—
	N.	22	3	2	2	2	3	1	—	4	—	—	3	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22
	E.	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Leprosy	W.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	N.	10	2	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Phthisis	W.	68	3	—	—	5	6	4	5	4	8	3	17	13	15	4	13	2	3	7	5	1	1	1	—	—	3	—	11	2	68	—
	N.	93	13	9	9	4	—	2	3	3	13	10	8	19	6	5	1	—	—	—	—	—	—	—	—	—	—	—	9	1	—	93
	E.	4	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Anthrax	W.	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	N.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total of all Diseases	W.	1,039	120	91	72	75	75	69	82	73	98	65	87	132	66	120	47	82	80	132	107	85	66	28	14	27	80	—	99	6	1,039	—
	N.	600	53	40	36	29	17	24	36	40	76	80	73	86	9	10	9	13	8	3	5	1	—	282	84	103	6	—	66	1	—	600
	E.	21	2	—	2	—	—	1	2	3	1	1	3	4	2	—	3	1	3	2	3	1	—	2	—	1	2	—	1	—	—	21
	A.	3	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	2	1	—	—	—	—	—	—	—	—	—	—	—	3
TOTALS		1,663	175	131	110	104	96	94	120	116	175	156	163	223	77	130	59	96	93	138	115	87	66	312	98	131	88	—	166	7	—	1,663

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjoshagte), south of the Railway and north of Commissioner Street.
DISTRICT No. 2 includes Braamfontein, Hospital Hill and Hillbrow.
DISTRICT No. 3 includes Marshall's Town and City and Suburban.
DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.
DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.
DISTRICT No. 6 includes Jeppe's, Jeppe's Extension, Beltravia, etc.
DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentzville, Judith's Paarl, Troyeville, Kensington Estate, Bozuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Berea, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.
DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.
DISTRICT No. 10 includes Paarl's Hoop and Mines from Robinson westwards to boundary.
DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).
DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.
DISTRICT No. 13 includes Ophirton, Booyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

W = Whites. N = Natives. E = Europeans. A = Asiatics.

Monthly Return of Infectious Diseases

Date	Dysentery	Typhoid	Scarlet	Measles	Whooping	Smallpox	Diphtheria	Epidemic	Total	Deaths
Jan	1	2	3	4	5	6	7	8	9	10
Feb	1	2	3	4	5	6	7	8	9	10
Mar	1	2	3	4	5	6	7	8	9	10
Apr	1	2	3	4	5	6	7	8	9	10
May	1	2	3	4	5	6	7	8	9	10
Jun	1	2	3	4	5	6	7	8	9	10
Jul	1	2	3	4	5	6	7	8	9	10
Aug	1	2	3	4	5	6	7	8	9	10
Sep	1	2	3	4	5	6	7	8	9	10
Oct	1	2	3	4	5	6	7	8	9	10
Nov	1	2	3	4	5	6	7	8	9	10
Dec	1	2	3	4	5	6	7	8	9	10
Total	1	2	3	4	5	6	7	8	9	10

Report of the Health Officer, City of New York, for the month of January, 1900.

The following table shows the number of cases of the several infectious diseases reported during the month of January, 1900, by the several districts of the City of New York, and the total number of cases and deaths for the City.

The total number of cases of the several infectious diseases reported during the month of January, 1900, was 1,000, and the total number of deaths was 100.

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TABLE J.

Monthly Return of Infectious Disease notified in Johannesburg from 1st July, 1910, to 30th June, 1911.

		Race.	Totals.	NUMBER OF DISTRICT.													Hospit- tal.	Non- Res't.	Un- known.	Total.													
				July, 1910.	Aug., 1910.	Sept., 1910.	Oct., 1910.	Nov., 1910.	Dec., 1910.	Jan., 1911.	Feb., 1911.	Mar., 1911.	April, 1911.	May, 1911.	June, 1911.	I.				II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	XIII.	E.	O.
Small-pox	W.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	N.	15	—	—	—	—	—	—	—	—	12	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Typhoid or Enteric Fever	W.	277	12	13	10	24	19	35	38	44	37	22	19	4	32	17	12	22	7	13	23	10	4	21	14	12	19	—	69	2	277	—	
	N.	497	36	28	28	28	38	35	32	60	64	56	40	32	4	5	3	9	6	—	5	1	1	276	61	81	1	—	48	—	—	497	
	E.	12	—	2	—	—	1	1	2	4	—	—	2	—	4	1	2	2	3	—	—	—	—	—	—	—	—	—	—	—	—	12	
	A.	5	4	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	
Scarlet Fever & Scarletina	W.	668	59	50	85	62	66	54	56	56	49	56	58	37	54	88	28	61	26	84	115	33	16	40	13	17	89	—	3	1	668	—	
	N.	1	—	—	1	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
	E.	5	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	
	A.	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Puerperal Fever and Puer- peral Septicæmia	W.	20	2	2	—	5	2	1	1	—	2	1	1	3	—	2	5	1	2	2	2	—	—	—	—	—	—	—	—	—	—	20	
	N.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
	E.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Diphtheria	W.	60	3	5	7	5	5	6	—	4	5	8	11	1	2	10	2	9	1	3	19	3	3	1	2	2	3	—	—	—	—	60	
	N.	3	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	3	
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Erysipelas	W.	82	6	5	14	11	12	5	5	8	6	1	6	3	10	9	9	9	2	8	7	3	3	2	1	6	4	—	8	1	82	—	
	N.	45	4	10	3	5	3	—	4	2	—	2	7	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	45	
	E.	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
	A.	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	
Leprosy	W.	7	1	1	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7	
	N.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Phthisis	W.	104	7	5	9	13	10	4	7	10	8	12	12	7	32	2	20	10	—	4	7	1	1	3	3	1	2	—	17	1	104	—	
	N.	217	15	15	16	24	22	14	18	11	20	9	24	29	14	5	19	1	2	—	4	—	—	155	3	5	—	—	9	—	—	217	
	E.	9	—	2	—	3	—	1	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9	
	A.	5	—	—	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	
Anthrax	W.	1	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
	N.	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	
	E.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
	A.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Measles	W.	1,323	—	10	505	497	296	53	11	6	3	1	1	—	108	135	80	73	197	75	210	150	34	22	18	5	216	—	—	—	—	1,323	
	N.	16	—	1	—	9	4	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16	
	E.	20	—	—	12	5	1	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—										

DISTRICT No. 1 includes that portion of Johannesburg (farm Randjeslaagte), south of the Railway and north of Commissioner Street.

DISTRICT No. 2 includes Brasfontein, Hospital Hill and Hillbrow.

DISTRICT No. 3 includes Marshall's Town and City and Suburban.

DISTRICT No. 4 includes Ferreira's, Fordsburg and Mayfair.

DISTRICT No. 5 includes Newtown, Vrededorp, the Cemetery and the Locations.

DISTRICT No. 6 includes Jeppe's, Jeppe's Extension, Belgravia, etc.

DISTRICT No. 7 includes Doornfontein, New Doornfontein, Bertrams, Lorentsville, Judith's Paarl, Troyeville, Kensington Estate, Bozuidenhout Valley Township, and Fairview.

DISTRICT No. 8 includes Beres, Yeoville, Bellevue, Bellevue East, and North-Eastern suburban portion.

DISTRICT No. 9 includes Auckland Park, Richmond, Melville, Newlands, New Clare and North-Western suburban portion.

DISTRICT No. 10 includes Paarl Hoop and Mines from Robinson westwards to boundary.

DISTRICT No. 11 includes Central Mines (from Ferreira to City and Suburban).

DISTRICT No. 12 includes Prospect Town, Denver, and the Mines from Meyer and Charlton to Eastern boundary.

DISTRICT No. 13 includes Ophirton, Rooyens, Turfontein, Rosettenville, etc. (Southern suburban portion).

W = Whites.

N = Natives.

E = Europeans.

A = Asiatics.

Monthly Return of Infectious Dis

Date	Place	Dysentery	Typhoid	Scarlet	Erysipelas	Smallpox	Measles	Whooping	Diphtheria	Tetanus	Hysteria	Epilepsy	Insanity	Alcoholism	Narcotics	Suicide	Total
1																	
2																	
3																	
4																	
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This report was prepared by the Health Officer of the City of New York, and is published for the information of the public. It is not intended to be a complete record of all the cases of infectious diseases which have occurred in the city during the month, but only of those which have been reported to the Health Department. The number of cases reported for each disease is given in the column headed "Number of Cases Reported." The number of deaths from each disease is given in the column headed "Number of Deaths." The number of cases of each disease which have been reported to the Health Department is given in the column headed "Number of Cases Reported." The number of deaths from each disease is given in the column headed "Number of Deaths." The number of cases of each disease which have been reported to the Health Department is given in the column headed "Number of Cases Reported." The number of deaths from each disease is given in the column headed "Number of Deaths."

NURSING HOMES.

M.O.H. 1909-11

There are 16 registered nursing homes in Johannesburg. These places are inspected and licensed by the Public Health Department, and the Council can withdraw the licence if nuisance arise.

Nursing Homes
Abattoirs Report.

In January, 1904, the Transvaal Medical Society recommended "that the space requirements for Nursing Homes should be as follows:—(a) for all infectious and all serious operation cases not less than 1,200 cubic feet of free air-space, and 100 sq. feet floor space; (b) for all other cases not less than 800 cubic feet of free air-space and 75 sq. feet of floor space."

PUBLIC ABATTOIRS.

The Abattoirs were opened on the 24th October, 1910, and, with the Stock Yard and Cattle Market, are under the direction of Mr. J. Irvine Smith, M.R.C.V.S., who has had very considerable experience of meat inspection.

The following particulars are extracted from the First Annual Report, dated 1st September, 1911, of the Director of Abattoirs:—

"From the 24th October, 1910, to 30th June, 1911, 256,839 animals have been slaughtered, made up as follows:—Oxen 33,782, calves 1,800, sheep 202,140, pigs 19,117. This is equal to a monthly average of 4,223 oxen, 25,268 sheep, 225 calves, and 2,390 pigs. During the same period the following meat has been condemned:—227,612 lbs. of meat, also 10,490 sheep plucks, 876 ox plucks, 1,645 pig plucks, 13 ox livers, 8 sheep livers, 23 ox tongues, 59 ox heads, 409 ox lungs, 49 ox offal, 5 ox hearts, 21 ox tails, 9 bags of cow heels, and 31 ox melts.

"Meat Inspection.—Every carcase passing through the Abattoirs is carefully examined for any abnormality of appearance, and is detained if any diseased conditions are noticed. The procedure adopted is as follows:—

"Oxen, Sheep, Calves and Pigs.—A general examination of the whole carcase, intestines, liver, spleen, lungs, heart and glands for any inflammatory or abnormal appearances, any glands showing an abnormal size are cut into, any individual cysts showing on the lungs, liver, etc., are removed. If these cysts are numerous the organ is seized. All organs showing tumours of any kind are seized.

"The pleural and peritoneal cavities and the kidneys are closely scrutinised.

"Ox heads are carefully examined for "lumpy jaw" (Actinomyces) and measles.

"No carcase or part of a carcase is permitted to leave the Abattoir when any doubt exists or when any abnormal condition is present.

"Tuberculosis in Cows and Pigs.—All milch cows and pigs are specially examined for any signs of Tuberculosis, the lungs, pleura, liver, spleen, peritoneum, udder, and all principal glands are carefully inspected and opened.

"Measles in Pigs.—Measles is very prevalent amongst pigs; the greatest care is exercised in the examination of all pig carcasses. The following parts are closely examined:—Tongue and heart, muscles of neck, breast, intercostals, midriff and psoas. Cuts are also made into muscles of both shoulders and psoas.

"Stamping.—Each Meat Inspector uses a distinctive stamp with a view to fixing the responsibility should any diseased carcase be discovered after having passed out of the Abattoir. No interchange of stamps is permissible. Each Meat Inspector signs for and is held personally responsible for the safe custody of his stamp.

"Microscopical examinations are frequently made.

"Dr. Theiler, Director of Veterinary Research for the Union of South Africa, has on a number of occasions, very kindly examined and confirmed the diagnosis of specimens forwarded to him from the Abattoir.

"No person is permitted to expose for sale, or sell within the Municipal Area, any butcher's meat unless the same has been examined, branded or stamped and passed by the authorised Officials of the Council.

"Unsound meat in butchers' shops.—Two pig carcasses, bearing the Abattoir stamp, and slightly infected with measles were found in butchers' shops, one by the butcher himself, and the other by one of the Public Health inspectors. Examination of these carcasses revealed that it would be difficult to have detected these cases without mutilating the carcasses. Attention was also drawn to another pig carcase which was suspected of having swine fever symptoms; examination revealed that the red blotches were caused by tick bites—this is a common and harmless condition found in certain kraals.

"Two sheep lungs were reported by another butcher and examination revealed a caseous condition of the glands due to *Preis-Nocard* Bacilli.

"One ox lung was forwarded by a firm of butchers and examination revealed that it was infected with *echinococci* cysts. Neither of these latter are communicable to man, although the condition warranted the condemnation of the organs.

M.O.H. 1909-11

Abattoirs Report.
By-Product Plant.

"Dead Meat.—All dead meat imported into the Municipal Area, whether by road or rail, undergoes the same inspection as locally killed meat. Since the opening of the Abattoirs to 30th June, 1911, the following quantities of meat have been received:—Beef 10,328,807 lbs. weight, mutton 1,511,766 lbs. weight, veal 120,355 lbs. weight, pork 116,446 lbs. weight.

"The need has arisen for a clause empowering the Council to specify what undetached viscera shall accompany the carcasses imported into the Municipal Area. Pig carcasses have been forwarded to Johannesburg with the sub-maxillary glands missing, thereby eliminating evidence of tuberculosis, which is prevalent amongst pigs in certain districts. Since the opening of the Abattoirs we are gradually gaining knowledge of the geographical distribution of certain diseases.

"Methods of Slaughter.—All the various methods of slaughtering devised were considered, and the experience of other Abattoirs ascertained. It was found that the shooting bolt was an efficient instrument which effected stunning and brain destruction at the same time.

"Your M.O.H., from observations in Berlin, reported favourably on the efficiency of the pistol; this method also met the recommendations contained in the Report of the Admiralty Commission, viz.:—All animals without exception shall be stunned or otherwise rendered unconscious before blood is drawn. It was then intended to make it obligatory for all animals, large or small, to be stunned before the knife was employed.

"However, when the Abattoir Bye-Laws were under consideration at a later date, the above intentions were greatly modified, and the Council agreed to recognise the methods of slaughtering under Jewish rites; the use of the pithing knife was permitted for oxen, and sheep were allowed to be killed with the knife by cutting the throat.

"On the opening of the Abattoir, objections were raised to the shooting-bolt. These objections were the outcome of inexperience, and have now been found avoidable.

"With a view to investigating the various methods, including the use of the shooting-bolt, representatives were detailed to visit the Abattoirs to watch the actual trials under regular working conditions on the spot. These representatives have unanimously expressed their satisfaction with the shooting-bolt as being the most efficient and expeditious method of despatching the animal, and eliminates to the greatest possible extent all unnecessary cruelty. They urge that it shall be obligatory for all pigs to be stunned by means of this bolt before the knife is applied. Approximately 26,000 pigs are slaughtered annually.

"It will be conceded that the sight and sounds of a pig having its throat cut awaken humane feelings and leave the impression that there is room for improvement in this method.

"Stunning can be carried out by means of a hammer or the shooting-bolt.

"With regard to the use of the hammer, it must be admitted that frequently more than one blow is required, and sometimes the blow is misdirected. In the hands of a nervous or inexperienced man the hammer becomes an uncertain weapon, and may be productive of much suffering.

"The Public Health Committee has decided that it shall be obligatory for all pigs, with the exception of sucking pigs, to be stunned by means of a shooting-bolt. This method has been enforced and has proved highly satisfactory.

"In September, 1910, the Public Health Committee decided that all matters affecting the slaughter of animals under Jewish rites shall be referred to the Shechita Board, and that no licence shall be granted to slaughter under these rites unless the applicant produces a certificate of skill and character signed by the Jewish Ecclesiastical Authorities. A storm of opposition was raised against this ruling by a section of the Jewish Community, and a Sub-Committee of the Council was appointed to go into the matter. After many interviews, an amicable settlement was arrived at and the above resolution allowed to stand."

BY-PRODUCT PLANT FOR ABATTOIRS.

A by-product plant was ordered by the Council at its meeting on the 24th August, 1910.

For many years all carcasses, condemned meat, etc., have been destroyed at the Burgersdorp Destructor, a procedure which is not only very wasteful, but entails complete and heavy loss upon the unfortunate owner of the condemned animal.

This by-product plant will convert condemned carcasses, etc., into useful product, such as tallow, gelatine, fertiliser, etc., for which considerable demand is expected.

FURTHER POWERS FOR MEAT INSPECTION.

The following sections have been included, on the advice of the Medical Officer of Health and the Director of Abattoirs, in the Transvaal Municipal (Draft) Ordinance, 1912:—

- "(11) for compelling and regulating the submission to the Council of all meat or dead animals intended for the food of man which may be conveyed or transported into the municipal area by the owners or consignees of the same, and at their expense, in order that such meat or dead animals may be

"inspected or passed by the Council, for regulating the branding or stamping of such meat or dead animals and the fees to be charged therefor, and for preventing the sale or use of such meat or dead animals for the food of man until the same have been inspected and passed by the Council."

"(12) for prohibiting the introduction into the municipality of any carcase other than game or of any butcher's meat slaughtered outside the municipality, except when accompanied by such undetached viscera as the Council may specify, or by a medical or veterinary certificate that such carcase or meat and the viscera belonging thereto have been duly inspected at the time of slaughter and found free from disease; for prohibiting the introduction into the municipality of any unfrozen carcase (other than game) or unfrozen butcher's meat of animals slaughtered outside the municipality, unless such animals were slaughtered at places approved by the Council or a committee thereof; provided that this and the preceding sub-section shall not apply to meat or dead animals which may be conveyed or transported into the municipality by any person or the servant of any person for consumption by such person or his household."

M.O.H. 1909-11
Meat Inspection.
Dairies and Milkshops.
Tuberculous Milk.

MILK SUPPLY.

(a) DAIRIES AND MILKSHOPS.

326 dairies and 133 milkshops are licensed and, as far as practicable, kept under observation. As stated in the Medical Officer of Health's Report for 1906-9, the cleanliness of dairies and of methods still leaves much to be desired.

One of the greatest practical difficulties is to ensure the proper cleansing of bottles and receptacles used for milk. In this connection, it must be clearly realised by all engaged in the production and handling of milk that what is popularly called "cleanliness" is not sufficient in the case of milk vessels, and that scrupulous care in the washing and subsequent scalding of these receptacles is necessary.

(b) TUBERCULOUS MILK.

For many years previous to 1901 it was a matter of practically universal belief by bacteriologists and hygienists that Bovine Tuberculosis was communicable to man, especially through milk from tuberculosis cows; and this belief found expression in what are known as "The Model Tuberculosis Clauses," which, in 1899, were included in the General Powers Acts of the Corporations of Manchester, Liverpool, and Stockport, on the advice of the Medical Officers of Health of these towns, including the writer.

At the London Congress on Tuberculosis in 1901, at which your Medical Officer of Health was present, Professor Koch startled his audience by asserting that—

"Human Tuberculosis differs from Bovine, and cannot be transmitted to cattle."

He then proceeded to ask—

"How is it with the susceptibility of man to Bovine Tuberculosis?" and suggested that such susceptibility was extremely rare, and that the only main source of infection of Tuberculosis was the sputum of consumptive patients.

Professor Koch was immediately followed by Lord Lister, Professor Nocard, and other authorities of the first rank, who recorded the reasons for their emphatic dissent from Professor Koch's views.

Notwithstanding the weight of authority thus immediately brought to bear against the position assumed by Professor Koch, the impression made by his words was so strong, and their bearing upon proposals for the protection of the public against tuberculosis milk and meat was so manifest, that a Royal Commission was immediately appointed to inquire and report with respect to Tuberculosis—

1. Whether the disease in animals and man is one and the same;
2. Whether animals and man can be reciprocally infected with it;
3. Under what conditions, if at all, the transmission of the disease from animal to man takes place; and
4. What are the circumstances, favourable or unfavourable, to such transmission?

M.O.H. 1909-11

Tuberculous
Milk.

This Commission, which was first presided over by the late Sir Michael Foster, and after his decease, by Sir William Power, presented an Interim Report in 1904, in which the validity of Professor Koch's conclusions was absolutely denied, and which has since been followed by an amplified Second Interim Report, and by the publication in several volumes of a mass of evidence, including methods and results of experimental research.

In their First Interim Report, dated 16th May, 1904, the Commissioners, after reference to the lines of inquiry upon which they proceeded, write as follows:—

Page 6, Paragraph 3.—"We have very carefully compared the disease
" set up in the bovine animal by material of human origin, with that set up
" in the bovine animal by material of bovine origin, and, so far, we have found
" the one, both in its broad general features and its finer histological details,
" to be identical with the other."

In January, 1907, appeared the Commission's Second Interim Report, in which the following conclusion is stated:—

Page 36, Paragraph 66.—"We may briefly sum up the bearings of the
" results at which we have already arrived as follows:—

" There can be no doubt but that in a certain number of cases the tuber-
" culosis occurring in the human subject, especially in children, is the direct
" result of the introduction into the human body of the bacillus of bovine
" tuberculosis; and there also can be no doubt that in the majority at least of
" these cases the bacillus is introduced through cows' milk. Cows' milk
" containing bovine tubercle bacilli is clearly a cause of tuberculosis and of fatal
" tuberculosis in man. . . .

" A very considerable amount of disease and loss of life, especially
" among the young, must be attributed to the consumption of cows' milk con-
" taining tubercle bacilli.

" The presence of tubercle bacilli in cows' milk can be detected, though
" with some difficulty, if the proper means be adopted, and such milk ought
" never to be used as food. There is far less difficulty in recognising clinically
" that a cow is distinctly suffering from tuberculosis, in which case she may be
" yielding tuberculous milk. The milk coming from such a cow ought not to
" form part of human food, and indeed ought not to be used as food at all.

" Our results clearly point to the necessity of measures more stringent
" than those at present enforced being taken to prevent the sale or the con-
" sumption of such milk."

In September-October, 1908, Professor Koch reiterated his opinions at the International Congress on Tuberculosis at Washington, but his views were hotly com-
bated by other leading English and Continental bacteriologists, and the Congress
unanimously adopted the following resolution:—

" That preventive measures be continued against Bovine Tuberculosis,
" and that the possibility of the propagation of this to man be recognised."
(*Lancet*, Vol. 1, 1909, p. 786.)

In December, 1908, Parliament passed the Tuberculosis Prevention (Ireland)
Act, 1908, Section 17 to 19 of which provide for the sampling and examination of
tuberculous milk and milk products, and for the destruction of milch cows affected with
tuberculous of the udder.

The Third Interim Report of the Royal Commission on Tuberculosis was published
in January, 1909.

In it the Commissioners repeat the opinion expressed in the Second Interim
Report "as to the very considerable amount of disease and loss of life, especially
amongst infants and young children," attributable to the "consumption of cows' milk
containing tubercle bacilli."

On the 27th May, 1909, the Board of Agriculture issued a Circular Letter,
covering their Tuberculosis Order of the 26th May, 1909—documents readily accessible
to well-informed agriculturists—in which the following words appear:—

" So far as regards the possibility of the transmission of the disease from affected bovine animals to man, the Board are satisfied that it must now be accepted as a fact that Tuberculosis is transmissible by the agency of milk used for human consumption."

M.O.H. 1909-11
Tuberculous
Milk.
Further Pow-
ers.

At the end of May, 1909, Mr. John Burns introduced his " Milk and Dairies Bill " for England, which provided (*inter alia*) for—

(a) The prohibition of the supply of milk from a dairy, where such a supply has caused or would be likely to cause infectious disease, including Tuberculosis; and

(b) For the prevention of the sale of tuberculous milk, the latter provisions being mainly taken from the 1899 Model Clauses of Manchester, Liverpool, and Stockport.

This Bill was, however, with many others (including a similar Bill for Scotland in the House of Lords) dropped in August, 1909, " owing to lack of time."

On the 12th July, 1911, the Royal Commission on Human and Animal Tuberculosis issued its Final Report. At page 39, paragraphs 4 and 5, the following appears:

" . . . it may be asked in what way are children, the members of the human family who are especially liable to exhibit acute fatal tuberculosis commencing as an abdominal affection, most likely to obtain a large and fatally infective dose of tubercle bacilli?

" As already indicated by us, to this question there can be but one answer, namely, that the evidence which we have accumulated goes to demonstrate that a considerable amount of the tuberculosis of childhood is to be ascribed to infection with bacilli of the bovine type transmitted to children in meals consisting largely of the milk of the cow."

At page 40, paragraph 4 reads as follows:—

" Bovine tubercle bacilli are apt to be abundantly present in milk as sold to the public when there is tuberculous disease of the udder of the cow from which it was obtained. This fact is, we believe, generally recognised though not adequately guarded against. But these bacilli may also be present in the milk of tuberculous cows presenting no evidence whatever of disease of the udder, even when examined post-mortem. Further, the milk of tuberculous cows not containing bacilli as it leaves the udder may, and frequently does, become infective by being contaminated with the faeces or uterine discharges of such diseased animal. We are convinced that measures for securing the prevention of ingestion of living bovine tubercle bacilli with milk would greatly reduce the number of cases of abdominal and cervical gland tuberculosis in children, and that such measures should include the exclusion from the food supply of the milk of the recognisably tuberculous cow, irrespective of the site of the disease, whether in the udder or in the internal organs."

The Council's legal powers for the control of the milk supply are wholly inadequate, and the Council has accordingly promoted the following sub-section in the Transvaal Municipal (Draft) Ordinance, 1912:—

" 75. (17) For licensing and regulating purveyors of milk and for licensing and regulating dairies, milkshops and cowsheds; for regulating the conveyance and distribution and securing the identification of the source of milk or milk products distributed, offered for sale, or sold within the Municipality; for prescribing the conditions subject to compliance with which any milk or milk products produced or prepared within or outside the Municipality may be introduced, distributed, stored, sold or used within the Municipality, and prohibiting the introduction, distribution, storage, sale or use within the Municipality of milk or milk products in respect of which such conditions are not complied with; for enabling the Council to certify the quality of any milk, and prohibiting the unauthorized use of any terms by the Council in denoting such quality; for prohibiting the introduction, distribution, storage, sale or use within the Municipality of any milk or milk products from any source within or outside the Municipality when it appears to the Council or a Committee thereof on the certificate of the Medical Officer of Health that the consumption of such milk or milk products is likely to cause the outbreak or spread of infectious or contagious disease;"

M.O.H. 1909-11

Further Powers re Milk
Bovine Tuberculosis.

"(18) For prohibiting the sale of tuberculous milk, for providing for the veterinary inspection of milch cows and for requiring from time to time in respect of any milch cows from which is obtained milk or from the milk of which is prepared any milk product for introduction, storage, sale or use within the Municipality the production of a certificate of a veterinary surgeon approved by the Principal Veterinary Surgeon, Transvaal, showing that such cows have been tested by the tuberculin test and are free from tuberculosis; provided that such certificate shall not be required in respect of any milch cows unless there is reasonable ground for suspecting that such cow is infected with tuberculosis or has been in contact with a cow so infected."

When submitting this clause to the Select Committee of the Provincial Council, the Medical Officer of Health placed himself in communication with the Principal Veterinary Surgeon for the Union, who suggested certain deletions and amendments, which enabled him to approve of the clause as it now stands.

Further, on the 11th September, 1911, the Medical Officer of Health met the Witwatersrand Dairy Farmers' Association, when this clause was fully explained to, and discussed with, them.

BOVINE TUBERCULOSIS.

The opening of the Abattoirs in October, 1910, rendered it possible to institute a strict inspection of the carcass of every animal killed there. In the course of this inspection cows were, on several occasions, found to be suffering from advanced tuberculosis, and on tracing these cows back to the dairy farms from which they came, the existence of a very considerable amount of tuberculosis was brought to light in five instances, and 54 animals were compulsorily slaughtered.

Appended are the particulars of these cases:—

(a) 12/12/10. Eastern Dairy Rouxville.—A common bred cow, which had belonged to this dairy for seven years, became lame, unable to walk, and was killed under permit on the farm. The carcass was then inspected at the Abattoirs, and was condemned and destroyed on account of extensive tubercular infection. 60 other animals (all Frieslands) were tuberculinized on the 17th of December, 1910. 8 re-acted and were re-tested on the 20th January, 1911. 6 of these again re-acted, were slaughtered, and found to have been suffering from tuberculosis.

(b) 19/12/10. Friesland Dairy, Rouxville.—These animals grazed with those of dairy (a). 17 animals tested: no re-actions. 1 cow due to calve was found with a temperature of 106° F., was slaughtered without being tuberculinized, and was found to be infected with tuberculosis: had been 9 months in the dairy.

(c) 9/1/11. S's Dairy, Bezuidenhout Valley.—Young heifer, 12 months in dairy was killed under permit on account of lameness: carcass brought to the Abattoirs and found badly infected with tuberculosis. On veterinary inspection of this dairy one other animal was found dying from tuberculosis. 43 animals were tuberculinized: of these 27 re-acted: 16 animals slaughtered; all tuberculous.

(d) 3/2/11. Klipriversberg L's Dairy.—P.M. on cow dead of anthrax revealed tuberculosis: 47 contacts tuberculinized: 10 re-actors slaughtered and found infected.

(e) 8/12/12. Bezuidenhout Valley, L's Dairy.—Cow killed at Abattoirs: found tuberculous. 48 contacts tuberculinized: 9 killed and tubercular: these two bore Cape tubercular ear-tags.

(f) 8/3/11. Benoni, H.M.—Tuberculous cow slaughtered at Abattoirs: 2 contacts (oxen) also slaughtered, but free from tuberculosis.

(g) 17/3/11. Heilbron, O.F.S., M.G.—One cow in consignment of three sent for slaughter found affected.

(h) 27/3/11.—Turffontein.—Tuberculous cow: no contacts.

(i) 18/3/11. Turffontein, H.—Tuberculous cow at Abattoirs: 24 contacts tuberculinized: 12 slaughtered.

In consequence of the foregoing occurrences, the Medical Officer of Health conferred on the 6th February, 1911, with Dr. Theiler, C.M.G., Government Veterinary Bacteriologist; Mr. Gray, P.V.S.; Mr. Chalmers, G.V.S.; and the M.V.S. with regard to the practical measures to be adopted. As the outcome of this conference, the following procedure was decided upon:—

1. To report to the G.V.S., as hitherto, all tubercular cattle detected at the Abattoirs, in order that the dairy concerned may be dealt with.
2. To submit, as time and opportunity permit, all milch cows in Johannesburg dairies to veterinary examination of their udders, etc., by the Municipal Veterinary Surgeon, and to report suspicious cases to the Government Veterinary Surgeon.
3. To notify the dairy farmers that, so far as possible, the Principal Veterinary Surgeon is willing to arrange for testing animals newly bought, or about to be bought, and also the animals already owned by any dairyman who may desire the test to be applied.

4. To take for bacterial examination frequent samples of milk consigned to Johannesburg by rail, and to notify actual or suspicious cases of tuberculosis to the Principal Veterinary Surgeon.

M.O.H. 1909-11
Milk Analyses.
Inspection of
Foods.

The Medical Officer of Health desires to thank Dr. Theiler and Messrs. Gray and Chalmers for their ready and valuable help in this matter, and it is due to Mr. Chalmers to add that in his capacity as Government Veterinary Surgeon for Johannesburg, he co-operated with your officials in a singularly energetic and entirely pleasant manner.

MILK ANALYSES.

Appended is a tabulated summary of the results of analyses and prosecutions:—

	1906-7.	1907-8.	1908-9.	1909-10.	1910-11.
No. of Samples taken	235	264	244	342	292
No. deficient Solids not Fat ..	31	33	27	11	3
No. do. Fat.	5	7	3	15	5
No. with Preservative:	4	—	—	—	—
No. of Prosecutions.. ..	15	7	6	7	6
Amount of Fines	£105	£25	£22	£45/10/-	£14

In many instances the fines inflicted for adulteration of milk were quite insufficient to have any deterrent effect. It is obviously an exceedingly profitable transaction to sell water, which costs 6d. per 100 gallons, at the price of milk, viz., 4d. per pint; and the frequent continued failure of the Court to realise this very patent fact not only adds to the difficulties of the Public Health Department, but is a grave injustice to the honest milk-dealer.

It is estimated that about 2,468 gallons of milk arrive daily in Johannesburg from rural districts in the Transvaal, Natal, and the O.R.C. As regards the production and handling of the major part of this source of supply, the Council has practically no control; and, by reason of the great distances involved, effective reformation in this respect will, it is feared, long remain a matter of considerable difficulty.

INSPECTION OF FOODSTUFFS.

The following goods were condemned by the Food and Drugs Inspector:—

	Cases.	Tins.	Lbs.	Dozen.	Barrels & Baskets.	Whole.
Condensed Milk	24	—	—	—	—	—
Fish	305	1,014	7,370	—	—	—
Oysters	—	—	—	100	—	—
Buck	—	—	—	—	—	2
Fruit	28	—	—	—	—	—
Groceries	3	200	—	—	—	—
Cheese	—	—	—	—	—	48
Sheep	—	—	—	—	—	12
Hams and Bacon	24	—	300	—	—	—
Koorhaan	—	—	—	—	—	17
Pigs	—	—	—	—	—	21
Sausages	—	—	10	—	—	—

He also examined 5,347 live pigs at the Live Stock Markets, condemning 205 infected with measles.

M.O.H. 1909-11

Inspection, &c.

Foods.

Water Supply.

A special inspector examines foodstuffs arriving at the Kazerne.

During the period under review he passed 23,110,605 lbs. of meat, 17,092,375 lbs. of fish, 1,227,962 lbs. poultry, 5,249 lbs. game, and 178,044 lbs. of bacon.

He condemned 3,912 lbs. meat, 110,316 lbs. fish, 44 crayfish, 280 lbs. fruit, 6 bags oysters, 328 cases and 84 tins herrings, 16 ox tongues, 1 ox and 25 quarters beef, 75 bags mussels, 437 boxes and 50 tins haddocks, 15 hams, 37 ox livers, 18 ox tripes, 18 ox hearts, 18 ox melts, 38 ox skirts, 225 lbs. shrimps, 5,450 lbs. and 10,387 soles, 480 tins salmon, 1,150 tins groceries, 60 tins jam, 4 carcasses of pigs, 78 sheep's heads, 45 cowheels, 3 koorhsan, and 11 hares.

He also examined 8,768 live pigs and condemned 328 suffering from measles.

ANALYSIS OF FOODS, 1909-11.

In addition to the 1,408 water examinations (see page 51), some 897 articles of food and 15 disinfectants were examined during 1909-11 at the Government Laboratories. 14 samples of mealie meal, 3 of meat, and 1 each beans, carrots, malt, rice, lime juice, coffee, and soup were taken at the Robinson Deep *re* Ptomaine Poisoning. Details are appended:—

Number and Description	Genuine or Pure.	Adulterated or Impure.	Doubtful.
634 milk.. .. .	600	34	—
120 butter	117	3	—
4 cocoa	4	—	—
73 coffee (for chicory)	69	4	—
6 cream of tartar	6	—	—
1 cream cheese	1	—	—
2 lemon cheese	2	—	—
11 disinfectants (for car oil: co-efficient)	11	—	—
4 chloride of lime (for chlorine)	4	—	—
14 vinegar (whether malt ?)	14	—	—
10 camphorated oil	10	—	—
1 polony	1	—	—
1 salt (for sulphuric acid)	1	—	—
1 condensed milk	1	—	—
2 Peas (for copper salts)	2	—	—
28 pepper	2	25	1

This gives an average of 448.5 samples per year, or 4.009 per annum per 1,000 of the white population, as compared with 5.3 per 1,000 in 1907 of the population (1901 census) in London, and 2.5 in the English Provinces.[†] Formerly it was understood by the Local Government Board of England that one sample per 1,000 of the population should be aimed at; but, as will be seen from the above, this figure is considerably exceeded at the present time. The English Board of Agriculture tries to encourage the taking of three per 1,000, and divide these amongst milk, butter and cheese.*

WATER SUPPLY.

During 1909-10, 655,998,600, and during 1910-11, 706,957,600 gallons of water were supplied to consumers connected to the Council's mains. These figures show a large increase over former years. The length of mains within the Municipal area is 301.18 miles, no less than 30.18 miles having been added since the Medical Officer of Health's last report.

[†] "Sale of Food and Drugs"—Extracts from Annual Report of Local Government Board (England) 1907-1908.

* Letter to M.O.H., dated 9th September 1909, from "Department of Inspector of Foods" of Local Government Board, (England.)

The water of Johannesburg is obtained from two sources: (1) Rand Water Board and (2) boreholes, shallow wells, and rain-water tanks, the private property of consumers. Both sources were referred to in some detail in the last report, and there is little now to add. M.O.H. 1909-11
Water Supply.

The Rand Water Board obtain their supply, as far at least as Johannesburg is concerned, from two main sources, namely, Zuurbekom and Zwartkopjes, the Zuurbekom water being not only of exceptional purity, but also of only moderate hardness (12 parts per 100,000). Zwartkopjes water is less suitable, and it is, therefore, satisfactory to note that the Board has at present a new scheme under consideration for supplying a further two million gallons per day from Zuurbekom. The water will be raised through 11-18 miles of 16in. and 18in. pipes to a point about 6½ miles west of Corner House, or 3½ miles west of Paarlshoop Pumping Station. Two sets of electrically driven high-lift centrifugal pumps will be erected at the Central Station at Zuurbekom, one set to raise the water to Paarlshoop Pumping Station and the other set to the West Rand. The lift in the former case will be 720 feet, and in the latter 1,150 feet.

An electrically driven bucket and plunger pump will be erected at No. 6 Shaft to raise the water through a 16in. main into the reservoir adjoining the Central Station at Zuurbekom, and from this reservoir the water will be pumped by the high lift centrifugals referred to above.

The power will be generated at the Zwartkopjes Central Station at 3,000 volts; the current will then be transformed up and transmitted to Zuurbekom at 16,500 volts, where it will be transformed down to 3,000 volts. The current is 3 phase and 25 cycles.

It would no doubt be preferable if all the water for Johannesburg were supplied from this source only; but the Board cannot, of course, discriminate between their various consumers.

The water from the western series of wells at Zwartkopjes has been satisfactory, but, as in previous years, the bacterial content of the water from the southern section has varied considerably, and as the wells in question can no longer be considered in the developmental stage, these variations have, at times, been a source of considerable anxiety. Before, however, recommending that filtration of the water, with its attendant expenses, should be undertaken, it was decided to try the effects of treating the water with a solution of chlorinated lime.

The Chief Engineer of the Rand Water Board at once adopted the suggestion of your Medical Officer of Health that a small quantity should be added, as has for some time been done with much success at New Jersey City and other places. After some preliminary trials, he designed a very simple arrangement for adding the solution of chlorinated lime continuously and in the requisite proportion to the large "Mixing Well" at the end of the Southern Section.

This chlorinated lime is added in the form of a solution of 1 in 164, that is, fifteen lbs. of CaOCl_2 (containing 33 per cent. of available chlorine) are dissolved in 180 gallons of water, which are added to each one million gallons of water pumped.

Difficulties were, of course, experienced at first in getting the right proportion of the chlorine solution added, and it was found necessary to modify somewhat the original arrangement, but the method now in force appears, on the whole, to give satisfactory results.

At the commencement, complaints were occasionally received as regards the taste of the water, and at one time the question of employing some dechlorination system was considered, but subsequent experience has not, up to the present, necessitated further action being taken.

In January, 1911, a subsidence in the marshy ground near "C" Borehole, on the Southern section, took place, and it was found that fluorescein introduced into the water at the site of the depression appeared within two hours in the water of one of the wells at "C," and within nine hours in the water of the other well. The possibility of similar subsidences taking place in connection with other wells along the Southern section must always be borne in mind, but the sterilisation of the water by chlorine has, up to the present, appeared to be a satisfactory safeguard.

The temporary arrangement for the softening of the water at Zwartkopjes has not proved satisfactory, and it is hoped that the Water Board may see their way shortly to adopt a system which may be relied upon to give better results.

Water.
Aerated Wat-
ers.
Sewerage and
Intakes.

1,408 samples of water were taken for examination during the two years 1909-11, namely, 737 chemical and 671 bacteriological.

AERATED WATER AND ICE FACTORIES.

The Bye-laws for the regulation of these trades, which were gazetted on the 6th April, 1906, continue to work well.

Recently an application was received from Messrs. Kops and Rawlings to substitute formaldehyde for the 0.5 solution of sulphuric acid which is prescribed for washing bottles. The point was submitted to the Government Bacteriologist (W. Watkins-Pitchford, M.D., F.R.C.S., etc.), who kindly favoured the Medical Officer of Health with the following very informing letter, dated 24th April, 1912:—

“In reply to the queries contained in your letter of the 18th inst:—

“To obtain a germicidal efficiency equal to that of a .5% solution of sulphuric acid, acting for 10 minutes, it would be necessary to employ a dilution of the ordinary commercial formalin (37-40% formaldehyde) of about 10% strength. A 3% dilution might suffice if the period of contact were prolonged to half-an-hour.”

“It is evident, therefore, that this proposed substitution would be the reverse of economical. There are, however, graver objections.

“(1) A tank filled with a 10% or 3% dilution of Formalin—unless kept closely covered—would be a serious nuisance in a factory, especially in hot weather. The fumes escaping from its surface, and from the surface of articles which had been immersed in its contents, would be most irritating to the workmen employed in disinfecting the bottles.

“(2) The strength, in Formalin, of the contents of such a tank would be continually depreciating, more especially in hot weather, and constant attention and bringing up to the standard would be called for. For these two reasons it is probable that the process of disinfecting the bottles would be liable to be perfunctorily or inefficiently performed. A .5% solution of Sulphuric Acid, on the other hand, is non-irritant and stable.

“(3) The cleansing properties of Formalin are greatly inferior to those of weak mineral acid. If rubber be soiled with an albuminous fluid, such as blood, its immersion in a dilution of Formalin causes the albuminous matter to become fixed upon the surface of the rubber in an insoluble film. Dilute mineral acid, on the other hand, disintegrates and removes not only albuminous but other varieties of organic material, and leaves the surface clean.

“For these reasons I think that the substitution of a dilution of Formalin for dilute Sulphuric Acid in the disinfection of mineral water bottles should not be sanctioned.”

SEWERAGE.

The Town Engineer has kindly supplied the following information:—

On 30th June, 1911, there were 64.35 miles of sewers completed, chiefly in the following districts:—Johannesburg (south of Railway), Braamfontein, Ferreira's, Fordsburg, and western portion of Marshallstown.

On the same date, 5,210 premises had been connected.

Owing to the torrential seasonal rains, the “Separate System” has been adopted, i.e., surface and storm waters are excluded from the sewers, and carried off in separate culverts and pipes, the latter often being laid in the same trench as, but above, the sewers.

NIGHT SOIL AND SLOPWATER INTAKES.

There are seven “intakes,” at which night soil and slopwater are turned into the sewer. Their design, which is, in the opinion of the Medical Officer of Health, exceptionally good, was worked out by Mr. Councillor J. A. Moffat, and, as the result

of experience, has since been improved in certain respects. Particulars are appended of the daily work done by each intake between 1st July, and 30th June, 1911:—

M.O.H. 1909-11
Intakes.
Extension of
Sewerage.
Sewage Dis-
posal.

Intake at	Used since.	Approx. average quantities disposed of daily.			
		Nightsoil.	Urine.	Slopwater.	Clean water for Flushing purposes.
Main Compound	Nov. 14th, 1908	6,300	1,140	11,780	13,000
Natal Spruit	Jan. 19th, 1909	10,080	2,280	98,040	28,000
Springfield	May 25th, 1909	3,420	760	—	8,000
Wolhuter	April 26th, 1909	4,320	760	23,560	6,000
Shanks St.	August, 1907	—	—	32,680	2,700
Gao... ..	Before the War.	—	—	56,240	1,000
Ophirton	May 18th, 1908	—	—	4,180	—
Totals		24,120	4,940	226,480	58,700

Total Gallonage daily—all kinds—314,240

ORDER OF EXTENSION OF SEWERED AREA.

On 7th June, 1910, the Works Committee resolved: "That the Town Engineer confer with the Medical Officer of Health and report as to districts in which the water-borne system is most urgently needed."

As the outcome of discussion with the Town Engineer, the Medical Officer of Health wrote as follows on 20th July, 1910:—

"In reply to your minute (102/10) of the 19th inst., I am of opinion that the Malay Location and Vrededorp are, without any doubt, the districts that should be taken in hand next. Thereafter the remainder of Marshallstown, City and Suburban, the thickly populated parts of Jeppestown, Doornfontein and New Doornfontein could be dealt with. I have not mentioned Troyeville and Bezuidenhout, because I understand there may be engineering difficulty about draining them into the present outfall sewer, but they certainly require attention at an early date.

"With regard to the remaining townships, I have no reason to suggest any preference of treatment, and think they may be dealt with in the order most convenient to the Council."

SEWAGE DISPOSAL.

This question was dealt with in detail at pp. 48-9 of the Medical Officer of Health's Report for Triennium, 1906-9. It was there stated that in a Joint Report (dated 26th August, 1909) by the Town Engineer and Medical Officer of Health, a number of very important recommendations were made as to the future management of the farm. Those recommendations were accepted, and have been conscientiously carried out by the Council. The sewage is now screened, treated in a detritus and in continuous sedimentation tanks, and thereafter irrigated upon land laid out in such a manner that a considerable interval of rest usually elapses between each period of irrigation of any one particular area. The length of carriers is now 34 miles, and the maximum irrigable area is 790 acres. The average daily flow of sewage was about one million gallons. The estimated average daily infiltration of ground water to the sewers was about 200,000 gallons.

M.O.H. 1909-11

Sewage.
Mines Sanitation.

In the appended table, the sewage of Johannesburg is contrasted with that of Birmingham, which is one of the strongest, if not the strongest, English sewage:—
Parts per 100,000.

Source.	Total Solids.	Dissolved Solids.	Chlorine.	Total Nitrogen.
Birmingham	196	129	20	7.7
Depositing Site, Newlands, 1903	374	148	29	—
Klipspruit Outfall Crude Sewage, 1911	480	151	26	38

Sludge Disposal is by burial in suitable trenches.

MINES SANITATION.

In January, 1904, the Council, on the advice of the Medical Officer of Health, appointed a special and highly qualified inspector (Mr. A. Cowie) for mine sanitation work, this being the first appointment of the kind recorded in any British mining community. Mr. Cowie has since worked tactfully and steadily, and the excellent and beneficial character of his work, and its share in the reduction of the death-rate amongst native miners is well known. On matters relating to surface sanitation, Mr. Cowie reports directly to the Medical Officer of Health, Johannesburg. As regards underground sanitation, he works, by arrangement agreeable to the mines and all concerned, as an official of the Mines Department, and reports to the Government Mining Engineer, who transmits a copy to the Medical Officer of Health Johannesburg. A copy of every report is sent to the Chamber of Mines, the Mine Manager and Doctor, the Mines Department, the Native Affairs Department, the Medical Inspector of Mines, and the Governor-General.

In January, 1909, Mr. R. Beattie, a district inspector in this Department, was appointed Assistant Mines Sanitation Inspector, and, in collaboration with Mr. Cowie, is doing excellent work.

Attached is the Mine Sanitation Report for 1909-11:—

5th September, 1911.

Medical Officer of Health.

Sir,

In accordance with your instructions, I beg to submit the following general statement regarding the work of Mines Sanitation Inspection within the Municipal Area of Johannesburg for the period 1909-1911:—

Surface Sanitation.—During the period under review, surface inspections have been made at all mines on the Johannesburg portion of the reef, with a view to ascertaining the existence of any nuisances or defects from a sanitary standpoint.

Detail reports have been submitted to the Medical Officer of Health as to:—

- (a) The sanitary condition of all compounds, locations, hospitals, works, married and single white quarters.
- (b) Drainage, disposal of refuse and general scavenging.
- (c) Water supply.
- (d) Condition of all licensed premises, such as Mine Boarding-Houses, Dairies, Cowsheds, Butcheries, Skin Curers' Yard, Brick Yards, Bakehouses, Aerated Water Factories, and Kaffir Eating Houses. (132 Licensed Premises.)

Notices have been served on the Mine Managers calling for the abatement of any nuisances dealt with in the reports. Reinspections have been made to ascertain if such notices were complied with, and in many instances personal advice has been tendered (by request) to the Mine Engineers with a view to carry out improvements in the most satisfactory and efficient manner.

In addition to the above systematic inspections, many special investigations and reports have been called for from time to time by the Medical Officer of Health and Assistant Medical Officer of Health, and complaints from Ratepayers' Associations, Trades Unions, and private citizens have satisfactorily been dealt with.

Other outstanding features which necessitated careful work were:—

- (a) The taking of the recent Municipal Census over the entire mining area of Johannesburg. This proved a difficult task on the mines, and was entirely supervised by your Mines Inspectors.
- (b) Investigation (from a sanitary point of view) of Enteric Fever outbreaks at the Jupiter G.M., Robinson G.M., and the Crown Mines.
- (c) Special detail reports on Mine Boarding Houses, submitted to the Medical Officer of Health in his capacity as one of the Mining Regulation Commissioners.

The housing accommodation on the mines, both for white and coloured employees, continues to improve steadily, and the surface sanitary condition generally can be said to be satisfactory. M.O.H. 1909-11

Underground Sanitation.—Regular inspections continue to be made of the underground sanitary conditions at each mine, and detail reports thereon are furnished to the Medical Officer of Health and the Inspector of Mines. Mines Sanitation.
Slum Property.

The following are some of the matters dealt with :—

- (a) The sufficiency or otherwise of separate sanitary conveniences for use of the white and native employees.
- (b) The placing of such conveniences in well ventilated and easily accessible positions on the various levels.
- (c) Proper and effectual scavenging of all "drives"; cleansing, disinfecting and lime-washing of all latrines, lime-washing of all "rock-faces" at shaft stations, and the keeping of the mine free from nuisance generally.
- (d) The desirability of securing a good water supply.

Previous to the Mines Sanitation Inspector (Mr. J. Cowie) going on leave to Europe (August, 1911), he accompanied Dr. S. V. van Niekerk, the Medical Inspector of Mines, on many tours of inspection to various mines. On such occasions the underground and surface sanitary conditions were thoroughly inspected.

The recommendations of your Mines Sanitation Inspector relative to the advisability of white overseers being appointed underground to supervise the gangs of native scavengers, has largely been acted upon by the various Mine Managers, with the result that the underground sanitary conditions have vastly improved. Owing to the important nature of the work, it would be well for the Mine Authorities to encourage good men to remain in this position; too frequently changes occur, and the system of scavenging control suffers accordingly.

The work of your Mines Inspectors has very much increased during the past two years. This is due to the following causes :—

- (a) Opening of new properties and greater activity in underground development.
- (b) Construction of Model Villages at the City Deep Gold Mine, Victoria Falls Power Station, and the Crown Mines.
- (c) Construction of new Government Training School and quarters at the Wolluter Gold Mines.
- (d) Increase in the number of concession stores and licensed premises.

The area to be covered is approximately 30 square miles, and there are scattered over this ground 132 licensed premises, which require frequent inspection.

I have again to put on record the unfailing assistance and encouragement which all Mine Managers in the district have extended to your inspectors in the discharge of their duties.

I have the honour to be,

Sir,

Your obedient servant,

RICHARD BEATTIE,

Acting Mines Sanitary Inspector.

There is, as regards mining property within the municipal area of Johannesburg, none of the opposition to necessary sanitary improvement with which health officers in English towns are often only too familiar.

SLUM PROPERTY.

There are in certain quarters of Johannesburg, especially in Fordsburg, Ferreirstown, Marshalls, City and Suburban, and Old Doornfontein, a considerable number of squalid dwellings which were mostly erected before the present By-laws came into force, are of very poor construction, dilapidated in condition and crowded on area. At the same time, if tested by considerations such as sufficiency of lighting, ventilation, water-tightness, closet accommodation and yard space, most of these places, in spite of their unsightly appearance and the other drawbacks already indicated, are of such a nature that it would be difficult to get from any Magistrate (even if the Council had the power to proceed in that way) an order for their closing, much less their demolition.

Further, the fact has undoubtedly to be borne in mind that in calling upon these people to patch up and more or less to renovate these essentially undesirable dwellings, the Council would simply be prolonging the life of structures which, in the Medical Officer of Health's opinion, should be swept away. This statement is not, however, made in extenuation of any insanitary conditions which may exist or arise therein.

M.O.H. 1909-11

Slum Property.
Housing of
Natives.

On the other hand, the fact that they are old and dilapidated, induces a certain class of property owner to acquire and let them promiscuously at very remunerative rents to mean whites, coloured people and Asiatics, whose filthy habits make it a matter of very great difficulty to secure conditions of even passable cleanliness as regards yards, closets, etc. For instance, the Medical Officer of Health recently saw about noon a certain Armenian yard in Ferreirastown. About 8 a.m. on the same day this yard had been cleaned up in the presence of the Scavenging Overseer, and yet at noon it was in such a filthy condition as to justify prosecution of those responsible.

In the absence of any legal powers whatever to deal with these conditions, no steps are being, or can be, taken towards the eradication of such places.

The necessary measures would, however, include—

1. Legislation on the lines of Sections 17 and 18 of the Housing, Town Planning, Etc., Act of 1909. Section 17 of this Act makes it the duty of every Local Authority to ascertain what dwelling-houses in its district are unfit for human habitation, and, if on the representation of the Medical Officer of Health any dwelling-house appears to them to be in such a state, it becomes the duty of the Local Authority to make an Order prohibiting the use of the dwelling-house for human habitation, until in the judgment of the Local Authority, the dwelling-house is rendered fit for that purpose. Any owner aggrieved by such an Order may appeal to the Local Government Board within fourteen days of service of the notice. Section 18 provides that if a Closing Order has remained operative for a period of three months, the Local Authority must then take into consideration the question of demolition of the dwelling-house, and may, under certain specified conditions, order such demolition, the owner having the right of appeal as before to the Local Government Board.

It will be observed that in this matter the Local Authority is, subject to the Local Government Board, the sole judge as to the fitness or unfitness of such dwellings, and the Authority is not hampered by or dependent upon the decision of any Magistrate.

The Medical Officer of Health would point out that in drafting, in 1903, the Public Health By-laws, Chapter II., Section I., Article 4, paragraph (1), he anticipated by six years this method and procedure under the Town Planning Act, but unfortunately the By-law has been declared *ultra vires*.

II. The establishment of conveniently situated Locations for Natives, Coloured people, and Asiatics. Upwards of 9,000 natives, other than domestic servants, are at present living on premises in town, some of which are owned or rented by their employers, whilst others are rented to them by third parties. During 1909-11 some 3,712 permits were given by the Medical Officer of Health, owing largely to the distance from town of the Klipspruit Location.

III. The power to compel Coloured people and Asiatics to live in such Locations.

This is a most important matter from the Public Health point of view, but the Medical Officer of Health understands that for high political reasons it is hopeless to expect to get it.

Incidentally, it may be stated that a recent census of the Malay Location shows that more than half of the dwellers therein are Cape people, which indicates to some extent their willingness to live in such places.

THE HOUSING OF NATIVES WITHIN THE MUNICIPAL AREA.

It is thought desirable to place on record the circumstances from which originated the existing system of issuing permits to certain natives—at present probably upwards of 9,000—to live within the Municipal Area:—

In 1906 the old Native Location which was situated between Vrededorp and Brixton was removed to the Council's farm at Klipspruit, and, ample previous notice having been given, the occupants of the old location were required on the 1st April, 1906, to remove thereto. The Medical Officer of Health was then instructed by the Public Health Committee, which at that time dealt with the locations, to "shepherd" to Klipspruit all natives in town who were not living on the premises of their employers, or under white supervision elsewhere. From the first, however, means of com-

munication with the location at Klipspruit were unsatisfactory, the railway facilities were poor, and it was impossible for a native to reside at Klipspruit if he had to start work before seven o'clock in the morning or remain in town after six o'clock in the evening.

M.O.H. 1909-11
Housing of
Natives
Locations.

Strong opposition was raised by the Chamber of Commerce and Chamber of Trade, who pointed out that serious interference with trade would, in their opinion, result; also that many employers had provided housing for their boys, and that the monthly cost of train fares (8s. 6d.), plus the location fee, would be a very heavy and unnecessary impost on boys for whom accommodation was already provided in town.

As a result of this, and objections from other quarters, the Public Health Committee instructed the Medical Officer of Health to grant permits for natives to remain in town on the following conditions:—

- (1) That satisfactory evidence was produced that it was essential for the proper conduct of the trade or business in question that the natives employed should be in attendance before 7 a.m. and after 6 p.m.;
- (2) That proper quarters were provided;
- (3) That there were satisfactory means of control.

These permits are issued to the natives' employer, who has, in the first place, to make application for such. The premises are then inspected by the District Sanitary Inspector, who, if necessary, inquires from the people living in the neighbourhood whether there would be any objection to permits being issued, and, if in doubt, consults the Police.

Provided the circumstances are considered satisfactory, the permit is then issued, and a copy sent to the Police. If the Police object to a permit being issued, they have only to send intimation to this Department, and the permit is at once cancelled.

This work takes up an unduly but unavoidably large amount of the time of the Sanitary Inspectors, and is, on occasion, a considerable tax on the resources of the whole Department.

As has been pointed out, however, in previous reports to the Public Health Committee, it is possible that in individual cases the permit system may be abused; but the fact that the Police have so seldom asked for cancellation of permits is in itself sufficient indication that, up to the present, they have had no serious objection to raise.

There is no doubt that the law as it now stands is unsatisfactory; but until such time as it can be amended, it is believed that the issue of permits is, in the end, of considerable assistance to the Police in the absence of suitable and conveniently situated locations.

LOCATIONS.

The Medical Officer of Health does not interfere in the work of the Locations, except where his advice is sought by the Superintendent. From time to time, however, the Medical Officer of Health is called on for reports on special matters.

The Kaffir Location at Klipspruit.—The reasons of the comparative failure of this location have been mentioned in the preceding section.

Indian or Malay Location.—During the biennium under review the Medical Officer of Health made strong repeated official representation as to the insanitary condition of this location, which, as regards invasion by plague, is, in its present state, a source of imminent danger to the town.

On the 20th January, 1912, the Medical Officer of Health presented a full report on this question, concluding with the following recommendations (amongst others):—

“That, without any further delay, the whole of the existing Location should be sewered and provided with water closets of the type known as the ‘Coolie Closet.’ At present the smell in the Location at night from the pail closets and urine-saturated passages is most offensive.

“The Town Engineer estimates the cost of sewerage the Location at £10,860, namely, £3,883 for Municipal portion, and £6,972 for Railway portion.”

“That the water reticulation should be completed, the roads made and lighted.

"The Town Engineer estimates the cost of road-making at £4,358, namely, £1,113 for Municipal portion and £3,245 for Railway portion."

"That the number of houses on any one 50ft. x 50ft. stand should be restricted to two, and the number of persons living on any such stand should be limited to twenty."

"That, as a matter of pressing necessity, the dwellings in the Location should be rendered rat-proof by one or other of the methods set out at page 7 of this report, and at an estimated cost of £11 per three-roomed house."

"That the Council decide whether it will make any, and, if so, what, contribution to the cost of this rat-proofing measure."

"That all future buildings in the Malay Location or intended for occupation by Indians, sanctioned by the Council, be of the rat-proof type, and that the construction of stair linings, hollow partitions and hollow ceilings be prohibited."

"That a daily service for the removal of house refuse be established and maintained for the present in the Location."

At a special meeting of the Council in Committee, held on January 26th, 1912, the following resolutions were adopted:—

"(a) That the Council proceed with the sewerage reticulation and connections to stand boundaries in the Malay Location, and that the sum of £10,860 be voted for that purpose."

"(b) That the Council complete the water reticulation throughout the area and provide street lighting, and that the cost be reported to the Council when estimates shall have been obtained from the Departments."

"(c) That the Council construct the roads in the Malay Location as proposed by the Town Engineer, including rough minestone kerb and gutter, and that a sum of £4,358 be voted for that purpose and provided in next year's estimates."

"(d) That the stand-holders be compelled to render their buildings in the Location rat-proof to the satisfaction of the Medical Officer of Health and the Town Engineer."

"(e) That all future buildings in the Malay Location, or intended for occupation by Indians in the Municipal Area, be of the rat-proof type, and that the construction of stair linings, hollow partitions and hollow ceilings be prohibited."

"(f) That a daily service for rubbish removal be established and maintained for the present in the Location."

"(g) That the stand-holders be compelled to instal the water-borne sewage system on their properties of the type known as the Coolie Closet."

A careful CENSUS OF THE MALAY LOCATION was compiled during February, 1912, by your Smallpox Searchers, under the supervision of Inspector Gourlay, the headings of the points of inquiry having been settled with the kind assistance of the Town Clerk.

This census was completed on 20th February, 1912, and the results are as follows:—

"A."—STREETS, HABITATIONS AND SHOPS.

No. of streets.	No. of stands.	No. of tenements.	No. of dwellings in tenements.	No. of annexe tenements.	No. of rooms in annexe.	No. of shops.
17	469	503	992	259	454	96

" B. "—PERSONS.

M.O.H. 1909-11

Malay Loca-
tion, Vrede-
dorp.

NUMBER OF

Indians.	Malays.	Cape.	Natives.	Other* Coloured.	White.	Total.
1,275	862	2,208	339	683	96	5,124

* " Other Coloured " include Chinamen, Somalis, St. Helenas, French Creoles, Japanese.

" C. "—STABLES AND ANIMALS.

No. of Stables.	Approximate No. of Animals.		
	Horses.	Cows.	Sheep or Goats.
113	241	1	53

SCHOOLS.—There are two Schools for Coloured Children and one for Indians.

VREDEDORP.—Some Councillors having expressed a wish for information as to the number of Asiatics and other Coloured People in the adjoining district of Vrededorp, this information was also appended:—

" A. "—HABITATIONS AND SHOPS.

No. of stands.	No. of tenements.	No. of dwellings in tenements.	No. of annexe tenements.	No. of rooms in annexe.	No. of shops.
37	40	41	2	3	42

" B. "—PERSONS.

NUMBER OF

Indians.	Malays.	Cape.	Chinamen.	Natives.	Total.
31	15	—	34	13	93

OVERCROWDING IN MALAY LOCATION.

Careful inquiry has been made on this point in 60 dwellings in the Malay Location.

In 14 of these cases overcrowding was found to exist, and the District Inspector is of opinion that it would be fairly accurate to say that there is some overcrowding as regards bedrooms in 10 per cent. of the dwellings.

It is, however, always a difficult matter to prevent, or obtain convictions for, overcrowding, merely on bedroom measurements, because it is obviously open to the occupants of the dwelling to use the sitting-rooms for sleeping purposes, if they choose to do so, and thereby avoid overcrowding.

REGULATIONS FOR MALAY LOCATION.

The control of locations has not at any time been vested in the Medical Officer of Health, but has been the duty of the Superintendent of Locations, and more recently, as regards the Malay Location, of the Manager, Estates Department.

M.O.H. 1900-11

Malay Loca-
tion.
Government
Schools.
Licensed Places

The Medical Officer of Health was not, moreover, aware until lately that there were any regulations governing the Malay Location. The Medical Officer of Health was, however, informed by the Town Clerk on the 24th January, 1912, that the regulations "For Native Locations," published at page 111, "Sub-Regulations voor het Gezondheids Comité te Johannesburg," also refer to Locations for Coloured persons, including Asiatics.

Apart from the fact that these old Regulations are entitled "Regulations for 'NATIVE' Locations," they were believed to be obsolete, because an entirely different code of "By-laws for Native Locations" was published in Government Notice No. 60 of 1904, and amended in various subsequent issues of the *Gazette* and has since been used for the government of the Native Location.

Article 4 of the old Gezondheids Regulations for Native Locations provides as follows:—

"Every occupier of a stand in the Locations shall have his boundaries marked out, and shall not be permitted to have more than one hut or dwelling thereon, and shall not be permitted to erect any additional hut or dwelling thereon without the consent of the duly authorised officer of the Sanitary Board being first obtained in writing."

The Medical Officer of Health is not, and never has been, the "authorised officer of the Sanitary Board" in this respect, and has had nothing to do with the erection of new buildings in the Malay Location.

Article 5 of the same Regulations is as follows:—

"Any person erecting any hut or building in the locations shall do so subject to the supervision and approval of the Sanitary Board or its duly authorised officer. No hut shall contain a less cubic capacity than 800 cubic feet, and shall be provided with proper means of ventilation and lighting, to the approval of the duly authorised officer, and in no case shall less than one-fourth of the area of each stand be left vacant as open-air space."

GOVERNMENT SCHOOLS.

During 1909-11, ten fine new Government Schools were opened, viz., Turffontein, Jeppes Junior, Twist Street, Rosebank, Malvern, Newtown, Langlaagte, Vrededorp Junior, Melville (addition), and Avenue Infant. These provide accommodation for 3,700 children. Special attention is paid to school buildings by the District Sanitary Inspectors.

The Medical Officer of Health, in his capacity as Hon. Medical Officer to the Rand Central (i.e., Johannesburg) School Board, has been from time to time consulted on structural and other questions of school hygiene.

LICENSED PLACES.

From 1st July, 1909, to 30th June, 1911, 4,910 applications for licences of various kinds have been dealt with, the premises in question being in all cases carefully examined as to sanitary requirements.

	1909-11.		
	Granted.	Refused or not taken out.	Total.
1. Tea Shops, Eating Houses, Restaurants, etc. ..	641	53	694
2. Dairies	459	2	461
3. Butchers' Shops	419	20	439
4. Bakers	96	3	99
5. Kaffir Eating Houses	145	19	164
6. Slaughter Houses	18	3	21
7. Laundries	97	6	103
8. Ice Creameries	184	3	187
9. Noxious or Offensive Trades	73	6	79
10. Asiatic Eating Houses	—	1	1
11. Aerated Water Factory	26	3	29
12. Hairdressers and Barbers	176	2	178
	2,334	121	2,455

PROSECUTIONS.

M.O.H. 1909-11

Prosecutions.

491 persons were prosecuted for various breaches of the Sanitary Regulations: 426 were convicted, and fines aggregating £726 7s. 6d. were imposed. Particulars are appended:—

BY-LAWS INFRINGED.	Race of Accused.			Totals.
	Whites.	S.A. Coloured.	Asiatics.	
Prevention of Nuisances	119	124	20	263
Infectious Disease	2	—	—	2
Sale of Food and Drugs	51	2	7	60
Dairies and Milkshops	15	—	—	15
Bakehouses	3	—	—	3
Eating houses	2	—	—	2
Slaughter-house, etc.	8	—	—	8
Washing and Laundries	—	—	—	—
Kaffir Eating Houses	5	—	—	5
Aerated Water Factories	1	—	—	1
Asiatic Tea Rooms	—	—	—	—
Barber's Shops	1	—	—	1
Native Location	—	126	—	126
Traffic By-laws	5	—	—	5
TOTALS	212	252	27	491
RESULTS—				
Convicted and Fined	163	179	21	363
Convicted and Cautioned	25	35	3	63
Dismissed	19	38	—	57
Charge Withdrawn	5	—	3	8
AMOUNT OF FINES	£499 17 6	£180 10 0	£46 0 0	£726 7 6

This work was closely supervised by the Medical Officer of Health, under whose personal direction the proofs of evidence, summonses, subpoenas, indictments and charge sheets are prepared and handed to the Assistant Public Prosecutor in the Magistrate's Court.

Important prosecutions are conducted by the Council's solicitors, Messrs. Lance and Hoyle, to whose courtesy and help the Medical Officer of Health is much indebted.

During a considerable portion of the year 1911 in particular, there was much ground for complaint as to the very unsympathetic manner in which municipal prosecutions generally, and public health cases in particular, were dealt with. Repeated vexatious and expensive adjournments were granted on grounds which, in the opinion of your officials, were unreasonable; in at least one case costs were improperly given against the Council, and cases were dismissed or nominal fines inflicted to such an extent that the work of the Department was seriously hampered. In the opinion of the Medical Officer of Health, it is essential that the Council should possess a similar right of appeal against preposterous magisterial decisions as Sanitary Authorities enjoy in England. At present, in the Transvaal, the accused person has full right of appeal, but, however ridiculous or unjust a magistrate's decision may be, in Johannesburg the Council has no remedy whatever. Moreover, the temptation to give a decision in favour of an accused person who has a right of appeal, and threatens to exercise it, as against a prosecutor who has no such right, is at times apparently irresistible.

SCAVENGING.

Scavenging.

This matter is fully dealt with in the Annual Reports of the Manager of the Scavenging Branch (Mr. F. C. Gavin, M.R.C.V.S.), and the Medical Officer of Health has little to add to previous observations on this matter, except that he is strongly of opinion that services of this kind should, for general reasons of public health, be rendered with the highest degree of efficiency practicable, and at charges which, while fully covering outlay, do not become a source of considerable municipal revenue.

STREET SWEEPING.

This is done in the night-time, except during the wet season, when it is postponed to the early morning, so as to get the mud off the streets just before the day's traffic commences. Some 9,614 mule loads are removed by 73 Scotch carts each month. The expenditure under this head for 1909-11 was £35,012, but, subject to financial considerations, this service might with great advantage be considerably increased.

HOUSE-REFUSE REMOVAL.

House-refuse is removed in two-wheeled open tipping carts. At each of the upper corners of each cart is fixed a ring, and for each cart a waterproof tarpaulin is supplied which is secured to the rings.

The Manager of the Scavenging Department, after considering various types of covered dustcart, prefers this tarpaulin arrangement, as it admits of the cart taking a larger load, and saves the considerable weight of a wooden cover.

An average of 651 Scotch cart-loads per day of house-refuse was collected; some of it was burnt at the Destructors and some deposited at tips.

The Natal Spruit Destructor was closed down from July to November, 1909, inclusive, and also during part of June, 1910.

A large tip was opened at the south-west corner of Milner Park, Vrededorp, on the 25th May, 1911, and although the process of tipping rubbish there has been attended with unavoidable unpleasantness, the inhabitants of Vrededorp agreed to submit to it in view of the fact that a number of unsightly hollows would thus be filled up, and converted eventually into a recreation ground.

Rubbish has also been deposited in excavations in Norwood, Forest Hill and Rosettenville. A new two-celled Destructor of the " Meldrum " type was opened in Norwood on 31st July, 1911, for the service of the northern and north-eastern districts. Further Destructors for both the southern and north-western suburbs will before long be necessary.

At times, for various reasons, including unavoidable shortage of natives, animals and plant, as well as lack of sufficient supervision, the refuse-removal service has left much to be desired.

This matter has, however, recently received very careful attention from the Public Health Committee.

CARCASE REMOVAL.

723 horses and mules, 3,589 pigs, 4,805 dogs and 445 other carcases were removed, and either buried at the depositing sites or burned at the Destructor.

REMOVAL OF NIGHTSOIL AND DISINFECTION OF PAILS.

The average number of pails removed per night for the twelve months ending 30th June, 1911, has been 16,611. Every pail, before being sent out, is washed, tested for leakage, dipped in boiling creosote in steamjacketed pans, and, after the surplus creosote has dripped off in such a way that it is collected and available for use again, is " nested " with other pails and placed in the carts for distribution.

The Medical Officer of Health has nothing to add to remarks made in previous reports with regard to this process, which is most effective and economical in its working.

The Table inset herewith shows the cost of the various services during the years 1904-11, and it will be observed that under Mr. F. C. Gavin's excellent administration, the 1904 deficit of £106,442 was converted into a surplus of £19,968 in 1910 and £12,880 in 1911.

COST OF SCAVENGING SERVICES, 1904 TO 1911.

M.O.H. 1909-11

Year ended 30th June.	Service.	Cost.	Revenue.	Surplus.	Deficit.
1904	Night Soil Service	£ 105,007	£ 115,226	£ 10,219	£ —
	Refuse and Carcase Slop and Bathwater	45,698 } 84,071 }	13,108	—	116,661
	TOTAL	234,776	128,334	—	106,442
1905	Night Soil Service	114,055	148,152	34,097	—
	Refuse and Carcase Slop and Bathwater	53,587 } 79,411 }	16,990	—	116,008
	TOTAL	247,053	165,142	—	81,911
1906	Night Soil Service	102,031	166,126	64,095	—
	Refuse and Carcase Slop and Bathwater	54,442 } 83,922 }	17,865	—	120,493
	TOTAL	240,395	183,991	—	56,404
1907	Night Soil Service	105,449	172,601	67,152	—
	Refuse and Carcase Slop and Bathwater	52,470 } 83,090 }	24,866	—	110,703
	TOTAL	241,018	197,467	—	43,551
1908	Night Soil Service	77,447	178,166	101,019	—
	Refuse and Carcase Slop and Bathwater	34,860 } 60,876 }	15,497	—	80,239
	TOTAL	172,883	193,663	20,780	—
1909	Night Soil Service	73,264	161,045	87,781	—
	Refuse and Carcase Slop and Bathwater	25,946 } 47,961 }	9,222 2,156	—	16,724 } 45,800 } 62,529
	TOTAL	147,171	172,423	25,262	—
1910	Night Soil Service	62,902	154,984	19,963	—
	Refuse and Carcase Slop and Bathwater	27,689 } 44,425 }			
		135,016	154,984	19,963	—
1911	Night Soil Service	54,759	143,439	12,880	—
	Refuse	31,876			
	Slop and Bathwater	43,924			
		130,559	143,439	12,880	—

VETERINARY BRANCH.

M.O.H. 1909-11

Veterinary.
Expenditure.
P.H.D. Staff.

From August, 1907, to 30th June, 1911, Mr. James Irvine Smith, M.R.C.V.S., discharged the duties of Municipal Veterinary Surgeon with ability and marked success. In June, 1911, owing to Mr. Smith's increasing responsibilities as Director of Abattoirs and Cattle Markets, it was decided to relieve him of this work. Accordingly, from the 1st July, 1911, the whole of the municipal veterinary duties were transferred to Mr. F. C. Gavin, M.R.C.V.S., Manager of the Scavenging Department.

In connection with this transfer, the Medical Officer of Health reported to the Public Health Committee on 23rd February, 1911, that placing this extra burden on the shoulders of the Manager of the Scavenging Department was, in the Medical Officer of Health's opinion, merely transferring the overload from one willing horse to another; and that the Manager of the Scavenging Department, a particularly competent official, had a task before him in the scavenging of the town, which is of the first importance to the public health, and calls for a continuance of his best efforts, as the diminution of cartage removal of slopwater and nightsoil in the centre of the town (owing to sewerage) was fully counterbalanced by the needs of the rapidly extending suburbs.

EXPENDITURE OF PUBLIC HEALTH DEPARTMENT.

(This does not include Scavenging Expenditure.)

	1909-10.	1910-11.
Salaries	£11,925	£13,587
Native Wages, Food and Passes	165	190
Locomotion	572	667
Miscellaneous Expenses	2,778	3,662
Cartage	376	602
Isolation Hospital	2,729	2,222
Disinfecting Station	463	324
Plague Expenditure	349	—
Rents, Rates and Insurance	116	126
Depreciation	42	261
Municipal Offices	—	—
undry Expenditure	—	—
	£19,515	£21,661

STAFF OF PUBLIC HEALTH DEPARTMENT.

A.—INSPECTORS. The following statement shows the number of Sanitary Inspectors employed during the year under notice as compared with the number before the war:—

	Before War.	1904-6.	1906-9.	1909-10.	1910-11.
Chief Inspector	1	1	1	1	1
District Inspectors	16	17	14	15 (1 relief)	16 (1 relief)
Native Constables with District Inspectors	16	3	2	3	2
White Constable	1	—	—	—	1
Mines Sanitation Inspector	—	1	2	2	2
Infectious Disease Inspector	—	2	2	2	2
Disinfecting Inspector	—	1	1	2	2
Licensing Inspector	1	1	—	—	—
Food Inspectors	2	1	1	1	1
Frozen Meat Inspector at Kazerne	—	1	1	1	1
Slaughterhouse Inspector	1	1	1	1	—

Of the 25 white Inspectors, 21 possess the certificate of the Royal Sanitary Institute.

It is, further, to be noted that since the British Occupation 34,315 plans of new houses were approved to 30th June, 1911, and that the area of supervision during 1909-11 included Berea, Yeoville, Bellevue, Bellevue East, Lorentzville, Judith Paarl and Jeppes Extension districts, besides the numerous townships and mines included within the Municipality as the result of the Extension Scheme sanctioned by Ordinance 13 of 1902, and 36 of 1903.

M.O.H. 1909-11
Inspectors' Dis-
tricts.
Inspectors'
Difficulties.

II.—NUMBER AND DISTRICTS OF DISTRICT SANITARY INSPECTORS.—There are fifteen District Sanitary Inspectors, whose districts were as follow, during 1909-11:—

District.	Townships included in Districts.	No. of Houses in District.	No. of Licensed Places.
1	Fordsburg, Burghersdorp and Newtown	2,238	145
2	City and Suburban, Marshalls and Ferreiras, between Mine Fence and Main Street	1,280	124
3	City and Suburban, Marshalls and Ferreiras, between Main and President Streets	1,202	232
4	Johannesburg, between President Street and the Railway on south and north, and End Street and Kazerne on east and west	1,216	232
5	Braamfontein to Hospital Hill	2,548	126
6	Hillbrow, Berea, Yeoville, Parktown, Forest Town and part Houghton Estate	1,387	25
7	Old and New Doornfontein	1,651	113
8	Troyeville, Bertrams, Lorentzville, Judith Paarl and Highlands ..	1,889	25
9	Jeppes Fairview and Wolhuter	2,530	143
10	Belgravia, Jeppes Extension, Malvern, Denver, Cleveland and New Heriot	1,461	92
11	Vrededorp, Mayfair, Paarlshoop and Langlaagte	2,148	76
12	Malay Location	1,251	18
		Native Constable provided in Malay Location	
13	Kensington, Bezuidenhout Valley, Observatory, Bellevue and Bellevue East	2,275	37
14	"Northern Suburbs"—from New Clare on West, through Auckland Park and Parktown North and Rosebank to Riviera, Houghton, Oaklands, Melrose, Orchards, etc.	1,513	76
15	"Southern Suburbs"—all Townships south of Mines	2,286	219

DUTIES AND DIFFICULTIES OF SANITARY INSPECTORS.

The Medical Officer of Health is aware that amongst not only members of the public, but also amongst members of the Council, there is a very general belief that the principal, if not the sole, work of the Sanitary Inspectors (as distinguished from Scavenging Overseers) is to inquire and report as to the carrying out of the various cleansing services. Whilst this is, unquestionably, a very important part of their duty, it must, however, in fairness be remembered that this duty also includes the following obligations:—

1. To visit frequently all premises in which infectious disease is known to exist; to make daily special inquiry as to the efficiency of the special pail service to typhoid houses; and to assist, upon occasion, in special disease-preventive measures, such as searching the Malay Location for smallpox cases.
2. To attend promptly to complaints.
3. To inspect licensed premises, such as butchers', fishmongers', and bakers' shops, tea-rooms, Kaffir eating houses, offensive trade premises, etc., etc.
4. To inspect food exposed for sale.

M.O.H. 1909-11

Inspectors' Duties.

5. To prepare and serve notices, prepare draft evidence and draft summonses for prosecution.
6. To inquire into and report in writing on all applications for trade licences, permits for natives, permits for O'Brien Closets, and on such other special matters as the Medical Officer of Health or Assistant Medical Officer of Health may direct.
7. To note and report on insanitary dwellings, dangerous wells and excavations, buildings erected or altered in contravention of the bye-laws, septic tank installations, Vivian Poore drains, etc.
8. To make appointments with and to meet property owners and agents, and to explain to them the work which the Department requires to be carried out.

Further, the number of premises to be supervised by each Inspector in the urban portion of Johannesburg varies from 1,308, with 92 licensed premises in District No. 10 (Denver, Malvern, Cleveland, etc.), to 2,600, with 126 licensed premises in District No. 5 (Braamfontein, Parktown and Hillbrow).

The Medical Officer of Health would here point out that the ratio of Sanitary Inspectors to population in Johannesburg is practically the same as in London, where the conditions of life are settled, where sewerage and water-carriage exist, where there are no natives nor Indians nor half-castes requiring special supervision and permits, no Kaffir eating houses, and proportionately much fewer licensed places to be regulated.

Now, the Medical Officer of Health has personally, during the past 22 years, done much house-to-house inspection, and has often, without wasting time, spent half-an-hour or more on one premises, and, strange as it may possibly seem to those who have not had this experience, the Medical Officer of Health considers that a fairly continuous record of 40 premises inspected per day is a very good one, but one which it may be quite impossible to attain when an Inspector is frequently called off to attend complaints, interview owners, serve notices, and visit infected premises, etc.

If, however, the average daily number of places inspected and visited be taken at 50, with 11 full working days per fortnight, it will take the Inspector, say, in the course of District No. 7 (Doornfontein, etc.) more than three fortnights, or from six to seven weeks, to get through his district once, assuming that he devotes the greater portion of his time to nothing but house-to-house inspection.

The Medical Officer of Health, therefore, wishes to make it clear that if the Sanitary Inspectors are to be held responsible for the condition of every yard, when, as already shown, the complement of Inspectors is only sufficient to visit each premises rather less often than once in six weeks, this staff must be very greatly increased.

But the Medical Officer of Health does not consider necessary nor recommend any such increase, and is of opinion that if a thoroughly efficient refuse-removal service is organised, supervised and properly carried out, there will be no need for increase in the number of Sanitary Inspectors by more than one permanent addition, which the recent growth of the town has rendered necessary.

On the other hand, the Medical Officer of Health is of opinion that the staff of white men (Scavenging Overseers), to whom is entrusted the actual supervision of the scavenging natives, should be very materially increased, and this the Health Committee has decided to do.

Complaints by Sanitary Inspectors are of relatively small value, compared to adequate energetic and conscientious personal supervision of the natives who have to carry out this work. If such supervision be exercised, there should in future be little necessity for Inspectors or anyone else to make complaints.

A.—INSPECTORAL STAFF.—Mr. Thomas Manion continues efficiently to carry out the duties of Chief Sanitary Inspector, and the District Inspectors have, on the whole, worked reliably and well. The experience of Mr. A. Cowie, Mines Sanitation Inspector, in regard to domestic disposal of sewage, has again from time to time been utilised in the preparation of reports on unsatisfactory purification installations. Mr. Crothall, Drainage and Special Building Plan Inspector, has very satisfactorily performed an increasing amount of this work.

During the two official years, 1909-11, no less than 6,735 written notices were served by the Inspectors in the course of their work.

B.—CLERICAL STAFF.—This consists of a chief clerk (Mr. F. Thompson), a typist-correspondent, a licensing clerk and an office boy. Apart from the usual statistical records of such an office (which in Johannesburg are laboriously increased by

the necessity of differentiating between Whites, Natives, Eurafrians, and Asiatics), and attending to the complaints of a very sensitive public, no less than 10,272 letters—not including circulars and formal acknowledgments—were written during 1909-11. In addition, the whole of the clerical work required in connection with the issue of 3,712 permits for natives to live in town, with 4,910 applications for trading licences, and with 491 prosecutions undertaken by the Department, has been dealt with. The office staff has worked thoroughly well, and again the Medical Officer of Health wishes to record his warm appreciation of their willing and effective assistance.

M.O.H. 1909-11

Matters re-
quiring
Council's
attention

IMPORTANT MATTERS REQUIRING SPECIAL ATTENTION.

In concluding this Report, the Medical Officer of Health begs to direct the Council's attention to the following important matters, which should be dealt with as promptly as possible:—

1. The closing and demolition of Slum Property.
2. The satisfactory Housing of Natives.
3. The continued extension of the water-carriage system of sewage disposal.
4. The urgent necessity for adequate legal powers to enforce efficient sanitary administration.

CHARLES PORTER, M.D., M.R.C.S., D.P.H.,
Barrister-at-Law,

Medical Officer of Health.

16th May, 1912.

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MUNICIPAL COUNCIL OF JOHANNESBURG.

**REPORT on the HEALTH of the NATIVES
EMPLOYED by the COUNCIL.**

BY

P. G. STOCK, M.B., D.P.H.,

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Municipal Offices,
Johannesburg,
25th May, 1912.

Appendix I.

**Report on the Health of the Natives Employed by the Council for the
Period July 1st, 1908, to June 30th, 1911.**

The average number of natives employed by the Council, as computed from the returns received from the various Departments, is set forth in the subjoined Table. For the reasons stated in the last report, the figures as to the total numbers employed and any statistics based thereon are omitted.

TABLE I.

Department.	1908-9.	1909-10.	1910-11.
Sanitary	1,906-	1,767	1,754
Town Engineer	629	683	892
Light and Power	265	323	447
Tramways	200	293	363
Water	112	129	203
Parks and Estates	16	12	8
Other Departments	42	33	66
TOTAL	3,170	3,240	3,733

The total number of admissions to Hospital was 376 in 1908-9, 284 in 1909-10, and 458 in 1910-11, while the total deaths for the same periods were 19, 18, and 30 respectively.

The admissions represent an annual ratio of 118·6, 90·7 and 122·6 per 1,000 of the average number employed.

The Annual Death-Rate per 1,000 (calculated on the average number employed) was 5·9 in 1908-9, 5·5 in 1909-10, and 8·03 in 1910-11.

In Table II. are shown the admission and mortality rates since records were first kept in 1904. For purposes of comparison, figures are included showing the annual death-rate amongst black labourers on the mines. It must be remembered, however, that these figures include both underground and surface workers, separate statistics not being available.

TABLE II.

Year.	Admissions.		Mortality.		Annual Death rate per 1,000 amongst Black Labourers on the Mines.	
	Total.	Ratio per 1,000	Deaths.	Rate per 1,000 all Causes.	All Causes.	Disease only.
1904-5	430	86·8	48	9·6	—	—
1905-6	511	112·6	41	9·0	42·3	—
1906-7	555	117·2	66	11·8	32·6	28·3
1907-8	572	163·6	44	12·8	30·8	26·7
1908-9	376	118·6	19	5·9	33·8	28·9
1909-10	294	90·7	18	5·5	31·3	27·2
1910-11	458	122·6	30	8·03	—	—

It is satisfactory to note that the death-rate during the period under review is the most favourable yet recorded. This is due chiefly to fewer deaths from Enteric Fever and Pneumonia.

The increased mortality, however, from the latter disease during 1910-11, which again raised the rate as compared with the two previous years, will be referred to later. The chief causes of death since 1904 are set forth in Table III.

TABLE III.
CHIEF CAUSES OF DEATH.

Disease.	1904-5	1905-6	1906-7	1907-8	1908-9	1909-10	1910-11	Total.
Pneumonia	12	20	22	8	5	5	15	87
Enteric Fever	21	6	29	12	3	3	5	79
Injuries	—	4	1	9	4	2	1	21
Tubercle of Lung and Other Parts	4	2	—	6	5	2	1	20
Dysentery	—	3	5	5	—	2	—	15
All Other Causes	6	6	9	4	2	4	8	39
TOTALS	43	41	66	44	19	18	30	261

Injuries, Pneumonia, and Enteric Fever have been responsible for the greatest number of admissions, and while the gradual diminution of Enteric Fever is satisfactory, Pneumonia, though showing seasonal variations, is still a most common and fatal disease. Minor Ailments and Injuries have, as in former years, been treated at the Dispensary, the more serious cases being admitted into the Compound Hospital. The reasons for their admission and their disposal are shown in the accompanying Tables.

I.—GENERAL DISEASES.

1. Eruptive Fevers caused during the period under review 117 admissions and 13 deaths, the figures for each annual period being 38 admissions and 3 deaths in 1908-9, 30 admissions and 3 deaths in 1909-10, and 49 admissions and 7 deaths in 1910-11.

The sickness-rate under this heading has fallen enormously since the period covered in the last report, and is due to fewer cases of Enteric Fever and Influenza.

Cerebro-Spinal Fever, Chickenpox and Measles have, as in former years, caused little trouble.

No case of Smallpox has occurred.

Enteric Fever.

Appended are the statistical particulars for the years under notice:—

TABLE IV.

YEAR.	Admissions.	Deaths.	Case Mortality. per cent.	Mortality per 1,000.
1906-7	82	29	35.4	6.1
1907-8	50	12	24	3.4
1908-9	24	3	12.5	9
1909-10	17	3	17.6	9
1910-11	24	5	20.8	1.3

Summary of Cases Admitted into the Native Hospital, July 1st 1908—June 30th, 1909.

Reference No.	DISEASE.	COMPOUNDS FROM WHICH ADMITTED.											RESULT.										
		Total.	Main Com- pound.	Van Beek St.	Rosherville.	Concordia.	Newlands.	Smit Street.		Burgersdorp Destructor.	Natal Spruit Destructor.	Water Dept.	Tramways.	Light and Power.	Volhuter.	Springfield.	All other Com- pounds.	Cured or Relieved.	Still Ill.	Transferred to other Hospital.	Disch'd with or to conva-lesce at Home.	Died.	
								T.E.	M.S.D.														
1	Cerebro Spinal Meningitis ..	7	3	—	—	—	—	—	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—
2	Chickenpox ..	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3	Measles ..	5	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4	Influenza ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4a	Erysipelas ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5	Mumps ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
6	Simple Cont. Fever ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7	Enteric Fever ..	24	9	2	3	7	—	—	—	1	1	—	—	—	1	—	—	11	—	—	10	3	—
7a	Malaria ..	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8	Diarrhoea ..	5	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
9	Dysentery ..	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10	Leprosy ..	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11	Veneral ..	12	5	1	1	1	—	2	—	1	1	—	—	—	—	—	—	—	—	12	1	—	—
12	Diseases due to Animal Parasites ..	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
13	Scurvy ..	16	4	4	1	2	—	2	—	1	1	—	—	—	—	—	—	14	—	—	2	—	—
14	Rheumatism ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	Debility ..	5	2	2	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	3	—	—
16	Diseases of Nervous System ..	4	2	1	—	1	—	—	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—
17	Diseases of Eye ..	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18	Diseases of Ear ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19	Diseases of Heart and Blood Vessels ..	5	—	2	2	2	—	—	—	1	—	—	—	2	1	—	—	2	—	—	3	—	—
20	Bronchitis ..	15	1	1	2	3	—	3	1	1	—	—	—	2	1	—	—	15	—	—	4	5	—
21	Pneumonia ..	26	7	5	5	4	—	2	—	1	—	1	—	1	—	—	—	17	—	—	4	3	—
22	Tuberculosis of Lungs ..	9	4	1	—	—	—	—	—	1	—	—	—	1	—	—	—	1	1	—	4	2	—
23	Other Tubercular Disease ..	10	2	2	2	2	—	—	—	—	—	—	—	1	—	—	—	2	1	1	4	3	—
23a	Silicosis ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
24	Pleurisy ..	6	—	1	1	—	—	—	—	2	—	—	—	—	—	—	—	4	1	—	—	1	—
25	Suppurative Parotitis ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	Tonsillitis ..	9	2	—	—	—	—	3	—	—	—	—	—	3	—	—	1	9	—	—	—	—	—
27	Gastritis ..	1	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
27a	Other Disorders of Digestion ..	6	1	1	—	—	1	—	—	—	—	—	1	3	1	—	—	6	—	—	—	—	—
28	Diseases of Intestines ..	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
29	Jaundice ..	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
30	Nephritis ..	4	—	—	—	—	2	—	—	—	—	—	—	—	—	—	—	2	1	—	1	—	—
31	Diseases of Joints ..	2	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
32	Inflammation of Connective Tissues ..	3	1	—	—	1	—	1	—	—	—	—	—	—	—	—	—	3	—	—	—	—	—
33	Abscesses ..	5	1	2	—	—	—	—	—	—	—	—	—	1	—	—	—	5	—	—	—	—	—
34	Diseases of Skin ..	1	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35	Injuries and Burns ..	120	38	11	8	12	1	18	3	4	7	2	3	7	2	1	3	110	1	3	2	4	—
36	Ill-defined & Minor Ailments ..	52	12	11	5	9	1	1	1	3	3	—	1	3	—	—	2	50	—	—	2	—	—
37	All Other Causes ..	14	4	2	2	—	—	3	1	—	1	—	—	—	1	—	—	11	2	—	—	1	—

Summary of Cases admitted into the Native Hospital, July 1st, 1903—June 30th, 1904.

Reference No.	DISEASE.	Total.	COMPOUNDS FROM WHICH ADMITTED.										RESULT.					TOTAL.					
			Main Com- pound.	Van Beek St.	Roosdorp.	Concordia.	Newlands.	Smit Street		Burgersdorp Destructor.	Natal Spruit Destructor.	Water Dept.	Tramways.	Light and Power.	Wolbater.	Springfield.	All other Com- pounds.		Cured or Relieved.	Still Ill.	Transferred to other Hospital.	Disch'd unfit or to convalesce at Home.	Died.
								T.E.	M.S.D.														
1	Cerebro Spinal Meningitis	2	1	1				1															2
2	Chickenpox	2	1	1				1															2
3	Measles	5	1	1				2															5
4	Influenza	1	1					1															1
4a	Erysipelas	1	1					1															1
5	Mumps	3	1	1				1															3
6	Simple Cont. Fever	17	3	6				2	1														17
7	Enteric Fever	8	3					2															8
7a	Malaria	1	1					1															1
8	Diarrhoea	1	1					1															1
9	Dysentery	1	1					1															1
10	Leprosy	1	1					1															1
11	Veneral	2	1					1															2
12	Diseases due to Animal Parasites	2	1	1				1															2
13	Scurvy	22	1	1				8															22
14	Rheumatism	5	2					1															5
15	Debility	2	1					1															2
16	Diseases of Nervous System	2	1					1															2
17	Diseases of Eye	4	1					1															4
18	Diseases of Ear	4	1					1															4
19	Dis. of Heart and Blood Vessels	9	4	1				2															9
20	Bronchitis	41	10	7				9	1														41
21	Pneumonia	9	4	1				2															9
22	Tuberculosis of Lungs	2	1					1															2
23	Other Tubercular Disease	1	1					1															1
23a	Silicosis	5	1	3				1															5
24	Pleurisy	6	1					1															6
25	Suppurative Parotitis	5	1					1															5
26	Tonsillitis	6	1	1				1															6
27	Gastritis	5	1	1				1															5
27a	Other Disorders of Digestion	2	1					1															2
28	Diseases of Intestines	1	2					1															1
29	Jaundice	5	2	1				1															5
30	Nephritis	1	1					1															1
31	Diseases of Joints	4	1	1				1															4
32	Inflammation of Connective Tissues	3	1	1				1															3
33	Abscesses	2	1					2															2
34	Diseases of Skin	70	27	5				11	9														70
35	Injuries and Burns	23	5	4				5	3														23
36	Ill-defined and Minor Ailments	18	5	3				5	3														18
37	All Other Causes	294	80	39				56	28	1	13	6	27	22	10	8	4	235		10	31	18	294
	Totals	294	80	39				56	28	1	13	6	27	22	10	8	4	235		10	31	18	294

Summary of Cases Admitted into the Native Hospital, July 1st, 1910 — June 30th, 1911.

Reference No.	DISEASE.	COUPONS FROM WHICH ADMITTED.												RESULT.					TOTAL.			
		Main Com- pound.	Van Beek St.	Rosherville.	Concordia.	Newlands.	Smit Street.		Burgersdorp Destructor.	Natal Spruit Destructor.	Water Dept.	Trainways.	Light and Power.	Volhuter.	Springfield.	All other Com- pounds.	Cured or Relieved.	Still Ill.		Transferred to other Hospital.	Disch'd unit at Home.	Died.
							T.E.	M.S.D.														
1	Cerebro Spinal Meningitis ..	1																				1
2	Chickenpox ..	8																				8
3	Measles ..	9																				9
4	Influenza ..	4																				4
4a	Erysipelas ..	1																				1
5	Mumps ..	14																				14
6	Simple Cont. Fever ..	24																				24
7	Enteric Fever ..	3																				3
7a	Malaria ..	5																				5
8	Diarrhoea ..	1																				1
9	Dysentery ..	2																				2
10	Leprosy ..	1																				1
11	Veneral ..	1																				1
12	Diseases due to Animal parasites ..	2																				2
13	Scurvy ..	1																				1
14	Rheumatism ..	4																				4
15	Debility ..	29																				29
16	Diseases of Nervous System ..	3																				3
17	Diseases of Eye ..	6																				6
18	Diseases of Ear ..	1																				1
19	Diseases of Heart and Blood Vessels ..	5																				5
20	Bronchitis ..	31																				31
21	Pneumonia ..	80																				80
22	Tuberculosis of Lungs ..	5																				5
23	Other Tubercular Disease ..	2																				2
23a	Silicosis ..	3																				3
24	Pleurisy ..	3																				3
25	Suppurative Parotitis ..	11																				11
26	Tonsillitis ..	9																				9
27	Gastritis ..	3																				3
27a	Other Disorders of Digestion ..	1																				1
28	Diseases of Intestines ..	1																				1
29	Jaundice ..	1																				1
30	Nephritis ..	1																				1
31	Diseases of Joints ..	1																				1
32	Inflammation of Connective Tissues ..	7																				7
33	Abscesses ..	5																				5
34	Diseases of Skin ..	3																				3
35	Injuries and Burns ..	74																				74
36	Ill defined & Minor Ail-ents ..	67																				67
37	All Other Causes ..	29																				29
	TOTALS ..	458	52																			458

There has been a marked decline in this disease. How far this is due to the extension of the water-borne sewage system and greater use of the intakes, it is difficult to judge, but the fewer cases in the town as a whole have no doubt tended to reduce the "Occupation Risk." This, however, must always remain as long as the night-soil is directly handled.

2.—TUBERCULAR DISEASE.

There were 37 admissions and 8 deaths during the period under review. Of these 27 were due to tubercle of the lungs, the remainder to tubercle of other parts of the body.

The subjoined Table would appear to indicate that the disease amongst Municipal natives at least is not on the increase.

TABLE V.

Admission for	YEAR.					
	1908-9.		1909-10.		1910-11.	
	Cases.	Deaths.	Cases.	Deaths.	Cases.	Deaths.
(A) Tubercle of the Lung	9	3	9	2	5	1
(B) Other Tubercular Diseases ..	10	2	2	—	2	—
TOTALS	19	5	11	2	7	1

The figures, however, must be regarded with considerable caution. Natives, as a rule only come under observation when the disease is fairly advanced, and the totals therefore may be but an erroneous guide. On the other hand, experience in past years appeared to show that the Municipality employed natives who had become infected previous to their starting work for the Council, usually during their stay on the mines, and if, for any reason, such natives no longer came to the Council, a decrease in the disease might perhaps be looked for.

3.—VENEREAL DISEASE.

There were 15 admissions for Venereal Disease, all being transferred to the Lazaretto at Rietfontein for treatment. Whether this represents the whole of those affected it is difficult to say, as only those seeking medical advice came under direct observation. It is thought, however, that the figures are comparable with those for former years, and the ratio per 1,000 per annum is set out in Table VI.

TABLE VI.

ADMISSIONS FOR VENEREAL DISEASE.

Year.	Ratio per 1,000
1904-5	1.6
1905-6	5.7
1906-7	1.6
1907-8	2.5
1908-9	3.7
1909-10	.6
1910-11	.2

Presuming that these figures correctly indicate the incidence of the disease amongst Municipal natives, the remarkable decrease has probably been effected by three factors, the chief of which are the anti-syphilitic measures now in force, details of which will be found on pages 22-24 of the last Report.

The other two factors referred to above which may have a bearing on the question are the younger age of the average Municipal native and the larger number of native women in the town. The first may only be apparent, no statistics are kept, and even if they were no native can tell what his real age is. The impression gained, however, is undoubtedly that the average native employed is younger than formerly, and is presumably, therefore, not yet so addicted to vice.

With regard to the second point, it will be remembered that the probable explanation of the big increase during 1905-6 was that following the removal of the Kaffir Location to Klipspruit and the lessened possibilities of intercourse, recourse was naturally had to the few remaining sources with increased likelihood of infection being spread. The majority of the admissions coming from the town and not from the outlying compounds bore out this view. Now that the conditions have again changed, the converse is probably true.

4.—RHEUMATIC AFFECTIONS.

There were 67 admissions and no deaths; 58 recovered and returned to work, and nine were discharged to convalesce at home. There were no new features requiring any detailed description.

5.—OTHER GENERAL DISEASES.

Causing admission call for no special remarks, but it is satisfactory to note that only two cases of Scurvy were admitted to Hospital during the whole of the period under review.

II.—LOCAL DISEASES.

DISEASES OF THE RESPIRATORY SYSTEM.

There were 216 admissions and 27 deaths. The admissions include:—

	Bronchitis	...	...	...	...	55
	Pneumonia	...	...	...	...	147
	Pleurisy	...	...	...	...	14
and	Silicosis	...	...	...	...	4

The deaths, with the exception of one due to Bronchitis, and one due to Pleurisy, were all caused by Pneumonia.

Pneumonia.

Pneumonia now accounts for the largest number of deaths, the incidence from Enteric Fever having been considerably reduced. During 1910-11 practically half the total mortality was due to Pneumonia.

In Table VII. are set forth the admissions and deaths per 1,000 during the past seven years.

PNEUMONIA.—TABLE VII.

Year.	Admissions per 1,000.	Mortality per 1,000.		Percentage of Total Mortality.
		Amongst Muni- cipal Natives.	Amongst Natives in Town as a whole.	
1904-5	10.5	3.4	7.5	35.4
1905-6	14.1	4.4	8.8	48.8
1906-7	10.0	4.6	6.6	39
1907-8	14.0	2.2	9.3	17.1
1908-9	8.2	1.5	9.6	25.4
1909-10	12.3	1.5	6.8	27.2
1910-11	21.4	4.0	11.0	49.8

Whilst the highest incidence of the disease is usually in the winter and spring months, the type varies from season to season, and has been very severe during the last portion of the period now being considered.

South African natives show a very great susceptibility to the disease, though in many cases this may be partly attributable to defective nutrition.

The patients are usually admitted on the third day of the disease, complaining of headache, pain in the side, and cough. In the majority of cases the right lung was involved.

In one case the crisis occurred on the third day and in one, where both lungs were involved, was delayed until the twenty-second day. It is by no means uncommon for the crisis only to take place on the thirteenth or fourteenth day, though an average of the last fifty-five cases would place it on the eighth day.

No special line of treatment has been found specific, and it is to be hoped that the investigations now being conducted by Sir Almroth Wright as to the possibility of producing a protective vaccine will be successful.

INFLAMMATION OF THE INTESTINES.—*Appendicitis.*

In the *British Medical Journal* of December, 1910, appeared the 123rd Report of the Science Committee of the Association, being a paper by Dr. Owen Williams of Liverpool, on the Distribution of Appendicitis, with observations on its relation to Diet. The original paper must be referred to by anyone interested in the subject but in view of the interesting, if somewhat guarded, conclusions of the author, the following particulars as regards the incidence of this disease amongst the Municipal natives seem worth recording.

TABLE VIII.—APPENDICITIS.

Year.	Number of Cases.	Cured.	Died.
1904-5	—	—	—
1905-6	—	—	—
1906-7	3	—	3
1907-8	1	—	1
1908-9	1	1	—
1909-10	—	—	—
1910-11	1	—	1
TOTALS	6	1	5

It is true that Appendicitis is a disease of young persons, and, according to Fitz's Statistics, more than 50 per cent. of the cases occur before the twentieth year. The number of cases, however, is remarkably small, and the circumstances appear to warrant further investigation.

III.—INJURIES.

Under this heading are included cases of Homicide or Murder, Burns and Scalds.

During 1908-9 there were 120 admissions with 4 deaths; in 1909-10, 70 admissions and two deaths; and in 1910-11, 74 admissions and one death.

While the number of admissions under this heading is considerable, and is chiefly attributive to accidents connected with animals or transport, the death-rate is variable, often depending on extraneous circumstances.

IV.—MINOR AILMENTS.

There were the usual number of minor cases treated at the Dispensary, none of which call for remark.

SANITARY CIRCUMSTANCES.

In view of the Report recently submitted on the Municipal Compounds, it is unnecessary again to enter into details. The conditions at many of the Compounds undoubtedly leave much to be desired, but considerable improvement has been effected in the general standard of cleanliness. It is hoped, however, that where possible the Compounds will be connected to the sewers at an early date.

The ration scale remains as before, but hot coffee is now issued in the winter months to the scavenging natives working at night. The diet does not err on the side of liberality, but the food is of good quality, and it must be remembered that the Municipal native largely supplements his ration either by his own exertions as a scavenger, or by recourse to the many shops which abound for the purpose. Whether, however, in view of the Native Labour Regulations of 1911, it will be necessary to augment the Ration Scale is a matter for consideration.

P. G. STOCK, M.B., D.P.H.,

Medical Attendant.



MUNICIPAL COUNCIL OF JOHANNESBURG.

**REPORT ON MUNICIPAL CENSUS TAKEN
ON NIGHT OF 1st--2nd OCTOBER, 1910,
WITH AN APPENDIX ON ERRORS
THAT MAY BE INTRODUCED BY COR-
RECTING DEATH-RATES BY THE
REGISTRAR-GENERAL'S CORRECTION
FACTOR**

BY

G. D. MAYNARD, F.R.C.S., E.

Fell. Roy. Statist. Society,

SUPERVISOR OF THE CENSUS AND LATE ACTING ASST., M.O.H.

Municipal Offices,

Johannesburg,

February, 1911.



MUNICIPAL COUNCIL OF JOHANNESBURG.

To CHARLES PORTER, Esq., M.D., D.P.H.,

Medical Officer of Health,

Johannesburg Municipality.

SIR,

I have the honour to present for your information the Report on the Johannesburg Census taken on the night of Saturday-Sunday, the 1st-2nd of October, 1910.

The Report has been divided into two sections; the first, describing briefly the method of collecting and tabulating the data; the second, discussing the tabulated returns. The discussion on the tables is rather wider in scope than is usual in a Census Report, but I thought it would be of interest and not devoid of importance to follow out some of the statistical results which might be deduced from the new census figures.

The inclusion of a "Life-table" based on the comparatively slender data available is, I think, justified, not only by its intrinsic importance as an index to the health of the inhabitants, but because it must be several years before the requisite material for the construction of a life-table based on ten years' returns can be collected.

The reference to local death-rates necessitated the consideration of the question of correction for age and sex variations. Such a correction is of particular importance in a town like Johannesburg where the age and sex distribution not only differs widely from the normal, but where big variations may be expected from year to year.

The Registrar-General's correction-factor has been used so generally, and so far as I am aware with so little appreciation of its limitations, that it seemed advisable on account of its importance to discuss the subject at some length. In order, however, not to encumber the text of the Report with a somewhat technical discussion, it has been relegated to an appendix.

I have the honour to be,

Sir,

Your obedient servant,

G. D. MAYNARD.

Report on the Johannesburg Census

OF THE 1st-2nd OCTOBER, 1910,

BY G. D. MAYNARD, F.R.C.S., E., F.S.S., &c., Census Supervisor.

At a Council Meeting held on the 19th September, 1910, the Municipal Council of Johannesburg decided to take a census of its inhabitants on the night of Saturday-Sunday, the 1st-2nd of October.

It was further decided that the following details should be obtained:—Name, sex, age and race, *i.e.*, whether European, Asiatic, Eurafican* or Native, and in respect of Europeans their country of birth. No attempt, however, was made to obtain the age of natives, as it was considered that the expense involved would not be justified by the somewhat unreliable results likely to be obtained.

The Municipal Area was divided into 35 enumeration districts, each Sanitary District being subdivided into two or three sub-districts according to its area and population. With the permission of the Public Health Committee, and on instructions from the Medical Officer of Health, the district Sanitary Inspectors undertook to show the Enumerators in their districts the enumeration areas, and as far as possible to supervise the work of the Enumerators both in distributing and collecting the census schedules.

I should like to put on record my appreciation of the assistance rendered by these officials; without their co-operation the census could not have been carried out nearly so efficiently. The measure of success that has been obtained is largely due to the daily supervision of the Sanitary Inspectors.

The enumeration of the population on the mining area, consisting as it does largely of Natives, presented serious difficulties. The Medical Officer of Health therefore permitted the Assistant Mines Sanitation Inspector, Mr. Beattie, to supervise the enumeration in this area, two Enumerators being placed directly under his instructions. My thanks are due to this official for the very careful way in which he carried out his work. The authorities on the various mines were also communicated with, and were requested to assist in the enumeration. Almost without exception they rendered the Council the most cordial co-operation.

Difficulty was anticipated in getting correct returns from the Malay Location. At the suggestion of the Medical Officer of Health, a deputation of prominent Indians met the Medical Officer of Health and the Census Supervisor at the Municipal Offices. The objects of the Census were explained to the deputation, who undertook to explain the matter to their compatriots, and to assist the Municipal Officials in carrying out the work. It was finally agreed that the British Indian Association should recommend some educated and suitable man, who would be willing to act as Enumerator in the Malay Location. An Indian was therefore appointed and his work was most satisfactory.

The distribution of Census Forms which was commenced on Monday, 26th September, was completed by mid-day on Saturday, 1st October. There remained, however, a small class of inhabitants on whom—as they had no residence—no forms could be left. An Enumerator accompanied by a Police Constable, was instructed to visit between 2 and 4 o'clock on Sunday morning places where it was known that a certain number of men sleep out, *e.g.* the Union Ground, and to obtain from such people the required information.

We were further advised by the Police Authorities that in two groups of tenements it was highly unlikely that reliable returns would be obtained unless the Enumerators personally visited the inhabitants and filled in the forms themselves. Early on Sunday morning, therefore, two Enumerators accompanied by Police Officials visited these premises and obtained the necessary particulars.

I should here like to thank the Deputy Commissioner of Police, Officers and Constables for their great assistance to the Census Department in these and many other ways.

Unfortunately from the census point of view, the Cadet Authorities had decided to hold a Cadet Camp at Florida on the date of the census. A large number of Johannesburg boys would therefore be absent from town. The Census Supervisor visited this Camp on Sunday morning and through the courtesy and assistance of Lieut.-Colonel McDonald, D.S.O., and his officers, was enabled to get the particulars of those Johannesburg boys who were present in Camp.

*A definition of this term will be found on page 6.

The collection of the forms was commenced on Monday, 3rd October. Each form, before being accepted by the Enumerator, was examined and if in order initialed, so that when checked by the census clerk it could, if need arose, be returned to the Enumerator responsible, for amendment or further information.

In all 37,364 forms were issued to the Enumerators; 29,251 completed and 3,844 unused forms were returned by them; 3,969 forms were lost or destroyed and had to be replaced by the Enumerators when collecting the completed forms. There are therefore, 300 forms still to be accounted for. The majority of these had been left at empty houses (pushed under the door) and it was therefore impossible to collect them.

In 29 districts the work of collecting the forms was completed between the 7th and 8th working days, but in 5 districts several more days were required, owing to the scattered nature of the district.

A certain amount of trouble and delay was occasioned by householders not delivering, or not making provision for the delivery of the forms, to the Enumerator when he called for them. This necessitated return visits, and in some cases several such visits were required before the forms were recovered.

It must always be expected that in occasional work of this sort, carried out chiefly by a temporary staff, difficulties such as these will arise; and if it had not been for the kindly assistance of the Johannesburg Daily Press we should have encountered more trouble than we did.

A few complaints were made that the time taken in collecting the forms was unduly long, and that this would render the returns incomplete owing to the fact that many of the forms would have been lost or destroyed before being called for. As a matter of fact, most of the loss and destruction of forms occurred in the lower quarters of the town, where, owing to the close proximity of the houses the collection was most rapidly carried out. Few duplicate forms had to be delivered to Enumerators in the more scattered areas where the collection was slowest. To have collected all the forms in two or three days would only have been possible by the employment of a much larger staff of Enumerators. This would have meant that personal supervision of their work by the district Sanitary Inspectors would have been much more difficult, and that they would not have had the opportunity of becoming so efficient; nor could so close a scrutiny on the returns have been kept in the office as was rendered possible by the employment of fewer men. Many of the forms collected in the first two days had to be returned to the Enumerators for amendment, while later on such an occurrence was comparatively rare.

In all cases where forms had been lost or destroyed, new ones were supplied and filled in either by the householder or by the Enumerator.

Experience showed, however, that in five districts an extra man might with advantage have been employed; although it was the convenience of the office rather than the accuracy of the returns that suffered by their absence.

The information when received was tabulated by a card method in the Census Office. The method adopted for Europeans, Asiatics and Euraficans was as follows:—Printed cards of six colours were obtained, each race and sex being represented by a different colour. Thus, European males were all recorded on a white card, European females on a pink card, and similarly for the Asiatics and Euraficans. The age, country of birth, etc., were denoted by striking out the figures or initials in the lines corresponding to the information given on the census form.

Thus, in the example given below, if on a white card, the record would read as follows:—European, Male, Age 36, Born in Holland, living in Sanitary District 5.

Age.	Country of Birth.	Sanitary District.
0	S.A.	1
1	E	2
2	S	3
3	I	4
4	A	5
5	C	6
6	U.S.A.	7
7	G. & A.	8
8	H	9
9	Sc	10
10	R. & P.	11
	&c.	

Having all the material transferred to cards in this way it was a comparatively easy matter to sort them first by race and sex and then by age and country of birth. By the use of coloured cards there was no danger of mixing up race or sex. Further, the method has the advantage of rapidity of entry with no risk of illegibility, the position of the mark on the card being of considerable assistance in sorting.

The information obtained is shown in the annexed tables and diagrams. The remainder of the text of the report consists of an explanation and amplification of these tables and the rates, etc., deduced from them.

Population of Johannesburg as Enumerated on Night of 1st-2nd October, 1910, shewing total population with sub-divisions into Sex and Race. The populations for 1908 and 1904 are shewn for comparison.

TABLE I.

YEAR.	TOTAL.		EUROPEAN.		ASIATIC.		EURAFRICAN.		NATIVE.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1910	163,027	57,277	63,761	48,096	3,987	1,189	3,757	3,992	91,522	4,000
	220,304		111,857		5,176		7,749		95,522	
1910 Children 7-14 Years inclusive			7,272	6,890	325	218	539	564		
			14,162		543		1,103			
1908	130,761	49,926	54,331	40,795	5,914	866*†		†	70,516	8,265*†
	180,687		95,126		6,780				78,781	
1904	116,293	39,349	51,629	31,734	4,038	524	4,861	3,251*	55,765	3,840
	155,642		83,363		4,562		8,112		59,605	

Population sub-divided into Sex and Race as in Table I. expressed as percentages of total population.

TABLE Ia.

YEAR.	TOTAL.		EUROPEAN.		ASIATIC.		EURAFRICAN.		NATIVE.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
1910	74'001	25'999	28'942	21'832	1'810	0'540	1'705	1'812	41'543	1'816
	100'000		50'774		2'350		3'517		43'359	
1908	72'369	27'631	30'069	22'578	3'273	0'479*†		†	39'026	4'574*†
	100'000		52'647		3'752				43'600	
1904	74'718	25'282	33'172	20'389	2'594	0'337	3'123	2'089§	35'829	2'467
	100'000		53'561		2'931		5'212		38'296	

*The sex distributions are approximate only as no returns for sex in children was made.

†The Asiatic population was not enumerated in 1908, an estimate was made.

‡Eurafricans were not distinguished from Natives in the Census of 1908.

§These figures were obtained by subtracting the Asiatics from the group, "All other Coloured persons" as shewn on page 5 of M.O.H.'s report for 1906-09.

These tables set forth the main results of the census. For purposes of comparison the results of the 1904 and 1908 census are shown where possible in parallel columns.

The term Eurafrican* has been introduced, as most other terms used to describe persons of mixed European and African Native birth are ambiguous and have been employed in various senses. The term "mixed" is clearly ambiguous. Thus South African Coloured is sometimes used to denote people of mixed descent, and again as a group-term including these people and also Natives. In Johannesburg Statistics this term, viz., South African Coloured has been used to denote all coloured people from the pure-blooded native to the half- or quarter-caste: in fact to anyone either or all of whose parents or grandparents have been aboriginal natives.

There are many reasons that make it advisable to classify the half-caste separately from the Native. While admitting that no hard and fast line can be drawn between the European and the Eurafrican on the one hand, nor between the Eurafrican and the Native on the other, yet practically there is a large class of people in South Africa who politically and socially can be, and who actually are, recognised as "Coloured People"; they are here designated Eurafricans. Apart

* This term was, I believe originally coined by Dr. Watkins-Pitchford, of Natal. It is an analogous to Eurasian, and perfectly definite in its meaning.

from any political interest such a classification may have, there is an undoubted importance from a social, eugenic and public health point of view, in keeping this group distinct from the group Native. Their mode of life, liability to disease, etc., differs considerably from both Europeans and Natives. As this class of the population may be expected to increase, its effect on disease death-rates in the group Natives, if they are included in this group, would be very apt to obscure the real facts. For example, one may ask "How far does the grouping of Eurafricans with African Natives, account for the apparent increase of Cancer amongst the "Coloured" population of the United States of America?" Such problems as these are of great importance to the student of preventive medicine, and also to the practical sanitarian. One has only to mention diseases such as tuberculosis, syphilis, etc., to recall present day problems, which must be studied in relation to the race of people affected, if satisfactory remedies are to be applied.

Enough has, I hope, been said to justify the labour involved in adding a further group to the Municipal Statistics.

Table I. requires little or no further explanation. It is, however, interesting to note that a growth of population has occurred in both the European and Native groups. It is difficult to say definitely what alteration has taken place amongst the Eurafricans, as the 1904 census did not return a group quite similar to ours. The group formerly appearing under this heading included Hottentots, etc., and is therefore larger than it would have been had Eurafricans only been placed in it.

Some doubt has been thrown on the accuracy of the Asiatic returns; but, as has been already stated, considerable trouble was taken to obtain reliable results. A detailed study of the actual returns, as also a collateral investigation into the death-rates amongst these people, leads me to believe that the numbers as stated are at least a close approximation to the actual number living within the Municipal Area. It must be pointed out that the number returned in the Census of 1908 was not obtained by an enumeration. An estimate was made which there are reasons to believe erred in being rather too high.

In studying the Native figures one is struck by the large increase, but it must be remembered that Natives have, to a considerable extent, replaced the Chinese, who do not appear anywhere in the returns for 1908. (Chinese were never included amongst Natives.)

Of the total 95,522 Natives recorded, 66,704 were returned from the mining areas, the balance of 28,818 consist of Klip Spruit Natives, and Natives employed by the Municipality, the Railway Administration and Private Employers. The number of "house boys" may be approximately estimated at 15,000.

Table IA corresponds to Table I, but the returns are expressed as percentages of the total population. For example, just over 50 per cent. of the total population of Johannesburg is of European origin, while approximately 29 out of every 100 inhabitants are male Europeans.

These tables show, that while the European population has since 1904 actually increased by 28,494, it has relatively decreased by 2.787 per cent.; or, to put it another way, had the ratio of Europeans to other inhabitants remained constant, the increase of Europeans would have been 41,716 instead of only 28,494. The factor in the altered ratio, is the large increase in the number of natives.

Table IA shows, also, that the ratio of European males to European females has altered, and indicates a gain in favour of the female population. The ratio of males to females in the whole population is practically unchanged since 1904. This is again due to the effect of the native population, as it will be noticed that the ratio of female to male Natives has decreased.

Excluding the Natives, the bulk of whom can hardly be considered as residents in the usual sense of the term, the present census figures show that the population is becoming more stable, for the female population is growing more rapidly in proportion to its numbers than the male. It must not be thought, however, that this is entirely due to the immigration of women, although this no doubt, is a partial cause; an important factor is to be found in the virtual equality of male and female births, as a result of which the percentage of females is increased at a greater rate than that of males.

Table II.

This table deals with the age and sex-distributions of the European population, first as a whole, and then in a series of sub-divisions, classified by country of birth, which is the best available index to the race constitution of the population.

A certain amount of criticism has been raised with regard to the method of grouping adopted. No doubt the ideal method from the point of view of those interested in any particular country, would have been to have had a group for each country, necessitating the division of the population into at least as many groups as there are countries of Europe. This was clearly impossible if the groups were to be large enough to be of any practical use; and, further, the labour and expense involved would not have been justified by the results.

The object in view was so to group the European population, that the language, habits, and as far as possible, the origin of the people included in the group should be similar. The first sub-group, "South African," is clearly a very heterogeneous class, and both politically and scientifically separate from the others. The second group, "England and Wales," will hardly give rise to

JOHANNESBURG CENSUS, 1910.
EUROPEAN POPULATION.

TABLE II.—Shewing COUNTRY OF BIRTH, BY SEX AND IN 5-YEARLY AGE GROUPS.

AGE.	TOTAL.			South Africa.		England and Wales.		Scotland.		Ireland.		Australia and New Zealand.		United States of America.		Germany and Austria-Hungary.		Holland.		Scandinavia.		France and Belgium.		Russia and Poland.		Spain, Italy and Portugal.		Others.		Not Stated.	
	M.	F.		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		
0-4	6,926	6,829	6,420	6,307	290	286	52	63	14	20	22	27	12	6	19	24	8	7	6	2	2	1	6	43	35	4	5	23	31	12	10
5-9	5,370	5,149	4,500	4,275	440	444	92	109	28	39	48	39	20	6	29	34	19	15	5	5	4	3	35	133	4	3	35	25	12	19	
10-14	4,492	4,905	3,269	3,073	574	541	123	108	43	44	94	100	22	9	33	41	8	18	3	7	2	3	248	208	5	4	34	33	34	16	
15-19	4,459	4,293	2,759	2,764	659	628	151	117	56	42	185	203	36	28	75	59	31	25	6	1	2	10	379	338	11	11	94	47	15	20	
20-24	5,188	4,836	2,642	2,773	1,068	961	194	191	87	92	222	192	51	36	101	86	43	28	13	16	8	26	597	327	47	9	114	85	29	14	
25-29	6,945	5,133	2,192	2,353	2,268	1,378	607	356	256	167	222	173	51	25	149	151	46	36	35	22	25	29	729	339	91	20	253	66	21	18	
30-34	8,235	4,962	1,372	1,618	3,345	1,736	1,061	477	458	179	326	172	72	32	297	201	49	41	73	34	27	37	755	329	98	18	286	72	16	16	
35-39	7,579	4,188	1,097	1,264	3,190	1,424	927	403	374	155	331	144	90	42	297	189	67	43	98	31	26	29	770	349	59	15	228	80	25	20	
40-44	5,465	3,083	992	1,035	2,164	1,012	639	242	230	102	306	135	67	18	260	184	67	31	85	25	22	20	499	213	44	4	172	47	18	15	
45-49	3,741	2,073	774	755	1,377	639	394	145	141	45	128	79	30	7	224	102	62	36	40	19	22	15	425	191	27	6	90	27	7	7	
50-54	2,443	1,336	443	483	914	404	279	103	80	42	66	32	20	9	193	77	31	14	40	5	19	11	271	126	9	2	68	17	10	5	
55-59	1,368	807	260	283	482	252	158	72	49	27	22	12	16	4	111	49	19	8	22	12	8	6	171	72	16	2	29	5	5	3	
60-64	778	556	198	223	273	163	61	45	28	24	5	5	12	3	55	34	16	7	10	5	7	2	87	37	7	1	17	5	2	2	
65-69	416	313	115	134	143	94	41	27	14	15	6	3	6	1	28	11	10	4	3	2	1	1	40	15	6	0	1	4	5	2	1
70-74	207	198	48	65	77	59	13	18	9	15	2	0	0	0	6	14	12	5	9	1	3	1	1	17	11	4	0	8	3	2	1
75-79	66	81	27	31	16	22	6	5	4	8	0	0	0	0	0	6	6	1	2	1	1	0	0	2	4	2	0	0	0	0	0
80-84	31	24	14	10	9	6	3	2	0	1	0	0	1	0	0	2	3	0	0	0	0	0	0	2	0	0	0	0	0	0	0
85-89	8	9	2	2	2	2	0	1	1	2	0	0	0	0	0	3	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
90-94	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95-	1	2	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
?	43	18	9	4	14	8	1	0	1	0	2	1	1	0	2	1	0	0	0	0	0	0	0	9	0	2	0	0	2	2	4
Total	63,761	48,096	27,134	27,460	17,305	10,029	4,802	2,484	1,873	1,020	1,890	1,317	491	227	1,898	1,265	482	325	441	187	177	202	5,176	2,729	436	100	1,453	550	203	171	
Grand Total.	111,857			54,594		27,364		7,286		2,893		3,297		718		3,163		897		628		379		7,905		536		2,003		374	

serious criticism. This is the grouping practically universally used in vital statistics, and the one employed by the Registrar-General of England and Wales. It is not clear what useful purpose would be gained by grouping Wales separately, its population being less than half that of Yorkshire or Lancashire.

The next group that calls for any comment is that of Germany and Austria-Hungary. The inhabitants of Austria-Hungary comprise more than one race, and therefore cannot ethnologically be grouped. Unless the number of our groups is to be increased by two at least, the ethnological purity of the group will not be damaged by the addition of Germans. The practical alternative is, therefore, to group the inhabitants of this Empire with the Germans, or to class them in the group, "Others." It should be remembered that many Austrians are Teutons, speak German, and have much in common with the great Teutonic race. By omitting them from the group "Others," this latter group is then mainly composed of the inhabitants from the South-east corner of Europe, and has a significance it fails to have, if used merely as a dumping ground for all races whose numerical strength in the district does not entitle them to separate classification.

Much the same reasons apply to the inclusion of the Belgians with the French. If it had not been for special and obvious reasons which apply in South Africa, Belgians would have probably been classed with the Dutch under the heading Netherlands. Here again from an ethnological point of view both classifications are open to criticism. While the Flemish resemble the Dutch more than the French, both in language and origin, the inhabitants of the southern and eastern portions of Belgium, approximate more to the French. At the present day few nations of Europe can boast of ethnological purity, and all classifications are compromises. The purposes for which the classification is required must in the main therefore settle the best method of grouping.

In the same way it seems preferable to group the Mediterranean Celtic races like Italy and Spain and with Spain, Portugal, into one group, rather than include them in the group "Others." This is true also of Scandinavia, which includes the peoples of Norway, Sweden and Denmark, who have clearly nothing in common with those of South-eastern Europe.

The group "Others" therefore consists mainly of the inhabitants of South-eastern Europe. It is of course a heterogeneous group and includes Europeans born in Asia and other places not included in the preceding groups.

Table III.

This table gives the percentage of persons in the group living at each age and sex division. It will be noted that the only approximately normal distribution is that of the "South African-born." This group, however, shows an excess of children and young people as would be expected. Only in this group and that of France and Belgium do the females outnumber the males. The ratio of males to females in the other groups is roughly 2 to 1.

The percentage of people who did not state their age is low and on the whole satisfactory.

Table IV.

This table gives the percentage strength of each race to the total European population for the group and for each sex. Thus 24.464 per cent. of the European population were born in England and Wales, whilst just under 9 per cent. of the total European population are females born in the same countries.

It will be noted that only 0.33 per cent. of the European population did not return a statement of the Country of Birth.

Table V.

This table gives the age and sex and also the percentage distribution for the Asiatic population.

Table VI.

This group headed Syrians, is recorded separately, as there was some difference of opinion as to whether these people should be included amongst the Europeans or Asiatics. The Minister of the Interior ruled that the Christian subjects of the Turkish Empire should be classified as Europeans, and therefore Syrians occur in the group "Others" in the European tables. The actual numbers are given here, so that if desired they can be subtracted from the European table, or added to the Asiatic group. The total number is not great. The figures appearing in brackets give the number born in South Africa. Thus out of 50 male Syrian children from 0-4 years, 35 were returned as born in South Africa.

Table VII.

This table gives the age, sex and percentage distributions for the Eurafrian population.

Table VIII.

This is the Johannesburg Life-table. A life-table gives a better idea of the sanitary conditions prevailing in a district, as represented by the death-rate at each age and sex group, than any other method.

Although the conditions were not ideal for the forming of life-tables, yet it seemed desirable to calculate one; for even if not perfect, it would serve better than any thing else to express the present health conditions, and would also serve as a useful comparison for a subsequent life-table when conditions are such that one can be constructed.

EUROPEAN POPULATION.

TABLE III.—Shewing number per cent. of each Country of Birth, for sex and age group.

AGE.	TOTAL.		South Africa.		England and Wales.		Scotland.		Ireland.		Australia and New Zealand.		United States of America.		Germany and Austria-Hungary.		Holland.		Scandinavia.		France and Belgium.		Spain, Italy and Portugal.		Russia and Poland.		Others.		Not Stated.		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	
0—4	6192	6105	11760	11533	1060	1045	6714	6865	6484	6691	6686	6842	1671	6836	6601	6759	6991	6867	6955	6318	6264	1583	6746	6933	6544	6443	1748	1548	3209	267	
5—9	4801	4603	8243	7831	1608	1623	1249	1496	6768	1348	1497	1216	2786	6836	6917	1675	2334	1859	6796	6318	1583	1583	6746	6560	1670	1682	1797	1298	3209	5080	
10—14	4016	3759	5988	5629	2098	1977	1688	1482	1486	1521	2301	3118	3064	1254	1943	1296	6991	2231	6478	1115	6328	6792	6933	6746	3137	2631	1747	1648	9991	4278	
15—19	3986	3838	5054	5063	2408	2295	2072	1606	1956	1452	2769	6330	5014	3900	2371	1865	3842	3098	6955	6159	6328	2639	2052	2052	4794	4276	4693	2346	4011	5348	
20—24	4638	4323	4839	5079	3903	3512	2663	2621	3067	3180	7016	5987	4039	5014	3193	2719	5329	3470	2070	2548	2111	6860	8769	1679	7552	4137	5691	4244	5348	3743	
25—29	6209	4589	4015	4310	8288	5036	8531	4886	8849	5773	6922	5394	7403	3482	4711	4774	5709	4461	5373	3503	6386	7652	16978	3731	9222	4288	12631	3295	2615	4813	
30—34	7362	4436	2313	2964	12224	6344	14562	6547	15831	6187	10165	5363	10028	4457	9380	6355	6672	5081	11625	5444	7124	9762	18284	3358	9551	4162	14279	3595	4278	4278	
35—39	6776	3744	2009	2315	11658	5204	12723	5531	12928	5358	10321	4499	12535	3850	9380	5975	8303	5329	15605	4906	6860	7652	11008	2799	9741	4415	11383	3994	6685	5348	
40—44	4886	2756	1817	1896	7908	3698	8770	3321	7950	3526	6425	4218	9332	2507	8220	5817	8303	3842	13535	3381	5805	5277	8209	6746	6312	2694	8587	2346	4813	4011	
45—49	3344	1853	1418	1385	5032	2335	5408	1990	4874	1555	3991	2463	4178	6975	7082	3225	7683	4461	6370	3026	5805	3958	5037	1119	5376	2416	4493	1348	1872	1872	
50—54	2184	1194	6811	6896	3340	1476	3829	1414	2765	1432	2058	6998	2786	1254	6102	2454	3842	1735	6370	6796	5013	2902	1679	6373	3428	1394	3395	6849	2674	1337	
55—59	1223	6721	6476	6518	1761	6921	2169	6988	1694	6953	6686	6374	2228	6557	3509	1549	2354	6991	3503	1911	2111	1385	2985	6373	2163	6911	1448	6250	1337	6802	
60—64	6696	6497	6363	6408	6998	6296	6837	6371	6968	6830	6156	6156	1671	6418	1739	1675	1983	6867	1592	6796	1847	6528	1306	6187	1101	6468	6849	6250	6335	6335	
65—69	6372	6280	6211	6245	6323	6344	6178	6247	6082	6069	6311	6518	6062	6000	6836	6139	6443	6279	6620	1115	6159	6478	6264	6264	6746	6000	6215	6139	6399	6156	6335
70—74	6185	6177	6088	6119	6281	6216	6082	6069	6311	6518	6062	6000	6836	6139	6443	6279	6620	1115	6159	6478	6264	6264	6746	6000	6215	6139	6399	6156	6335	6267	
75—79	6039	6072	6049	6057	6058	6080	6041	6027	6138	6277	6000	6000	6000	6000	6180	6190	6124	6248	6159	6159	6000	6000	6373	6000	6025	6051	6050	6100	6000	6000	
80—84	6028	6021	6026	6018	6033	6022	6000	6014	6000	6035	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
85—89	6007	6008	6004	6004	6007	6007	6000	6000	6005	6009	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
90—94	6000	6001	6000	6002	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
95—	6001	6002	6002	6002	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000
?	6038	6016	6016	6007	6051	6029	6014	6000	6035	6000	6052	6031	6139	6000	6063	6032	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000	1070
Total	57002	42998	49701	50299	63240	36769	65907	34093	64742	35258	58931	41066	68385	31615	60007	39993	59728	46272	70224	29776	46702	53298	81344	18656	65477	34323	72341	27459	54278	45723	
Grand Total	100000		100000		100000		100000		100000		100000		100000		100000		100000		100000		100000		100000		100000		100000		100000		

TABLE IV.—Shewing number per cent. of Total European Population, by sex and country of birth.

	57002	42998	49701	50299	63240	36769	65907	34093	64742	35258	58931	41066	68385	31615	60007	39993	59728	46272	70224	29776	46702	53298	81344	18656	65477	34323	72341	27459	54278	45723
	100000		48807		21464		6514		2586		2867		6642		2828		6722		6561		6339		6479		7067		1791		6334	

TABLE V.

AGE.	ASIATICS.				AGE.	ASIATICS.			
	POPULATION.		PERCENTAGES.			POPULATION.		PERCENTAGE.	
	M.	F.	M.	F.		M.	F.	M.	F.
0-4 ...	250	236	4'830	4'560	75-79 ...	1	1	0'019	0'019
5-9 ...	201	181	3'883	3'497	80-84 ...	2	1	0'039	0'019
10-14 ...	215	111	4'154	2'145	85-89 ...	1	0	0'019	0'000
15-19 ...	252	92	4'869	1'777	90-94 ...	0	0	0'000	0'000
20-24 ...	350	124	6'762	2'396	95- ...	0	1	0'000	0'019
25-29 ...	581	119	11'225	2'299	?	155	1	2'995	0'019
30-34 ...	635	82	12'268	1'584					
35-39 ...	555	83	10'723	1'604					
40-44 ...	374	73	7'226	1'410	Total ...	3,987	1,189	77'029	22'971
45-49 ...	197	34	3'806	0'657					
50-54 ...	110	22	2'125	0'425					
55-59 ...	53	13	1'024	0'251	Grand Total	5,176		100'000	
60-64 ...	33	11	0'638	0'213					
65-69 ...	15	2	0'290	0'039					
70-74 ...	7	2	0'135	0'039					

TABLE VI.

AGE.	SYRIANS.		AGE.	SYRIANS.	
	POPULATION.			POPULATION.	
	M	F.		M.	F.
0- 4 ...	50 (35) [*]	57 (37)	75-79 ...	0	0
5- 9 ...	36 (18)	30 (14)	80-84 ...	0	0
10-14 ...	15 (4)	18 (3)	85-89 ...	0	0
15-19 ...	13	17	90-94 ...	0	0
20-24 ...	22	35	95- ...	0	0
25-29 ...	29	21			
30-34 ...	37	15			
35-39 ...	17	19	?	0	0
40-44 ...	16	8			
45-49 ...	12	7			
50-54 ...	1	3	Total ...	252	234
55-59 ...	2	1			
60-64 ...	2	1			
65-69 ...	0	2			
70-74 ...	0	0	Grand Total	486	

* Figures in brackets give number of Syrian children born in South Africa.

TABLE VII.

AGE.	EURAFRICANS.				AGE.	EURAFRICANS.			
	POPULATION.		PERCENTAGES.			POPULATION.		PERCENTAGES.	
	M.	F.	M.	F.		M.	F.	M.	F.
0- 4 ...	482	554	6'220	7'149	75-79 ...	6	5	0'077	0'065
5- 9 ...	381	395	4'917	5'097	80-84 ...	3	2	0'039	0'026
10-14 ...	315	360	4'065	4'646	85-89 ...	1	2	0'013	0'026
15-19 ...	302	388	3'897	5'007	90-94 ...	0	0	0'000	0'000
20-24 ...	445	549	5'743	7'085	95- ...	1	0	0'013	0'000
25-29 ...	497	478	6'414	6'169	?	194	58	2'504	0'748
30-34 ...	338	363	4'362	4'685					
35-39 ...	277	283	3'575	3'652					
40-44 ...	193	211	2'490	2'723	Total ...	3,757	3,992	48'484	51'516
45-49 ...	143	144	1'845	1'858					
50-54 ...	95	87	1'226	1'123					
55-59 ...	36	53	0'465	0'684	Grand Total	7,749		100'000	
60-64 ...	24	28	0'310	0'361					
65-69 ...	15	18	0'194	0'232					
70-74 ...	9	14	0'116	0'181					

TABLE VIII.

LIFE TABLE.—Johannesburg European Population.

Age.	DEATH-RATES *				Px.		Lx.		Ex.			
	M.	F.	M.	F.	M.	F.	M.	F.	Johannesb'g England and Wales, 1891—1900	Difference, England and Wales— Johannesburg.	F. Health of District, England and Wales, 1891—1900	Difference, England and Wales— Johannesburg.
0	1544	11714	87465	88934	100,000	100,000	5033	5287	- 254	5507	5571	- 064
1	3124	2505	96743	97526	87465	88934	5647	5913	- 266	6086	6053	+ 033
2	1446	941	98585	99063	84616	86734	5735	5983	- 248	6139	6113	+ 026
3	909	684	99095	99318	83419	85921	5717	5948	- 231	6097	6076	+ 021
4	556	556	99445	99446	82664	85335	5669	5892	- 223	6038	6019	+ 019
5	380	377	99621	99624	82205	84862	5600	5826	- 226	5972	5953	+ 019
10	223	238	99777	99762	80659	83279	5202	5416	- 214	5579	5546	+ 033
15	269	233	99731	99767	79764	82293	4757	4967	- 210	5143	5106	+ 037
20	443	352	99558	99649	78697	81338	4318	4537	- 219	4700	4693	+ 007
25	619	467	99383	99534	76973	79921	3907	4132	- 225	4278	4286	- 008
30	741	544	99262	99457	74627	78076	3521	3732	- 211	3872	3882	- 010
35	950	621	99054	99381	71914	75979	3142	3332	- 190	3476	3476	- 006
40	1281	778	98727	99225	68576	73656	2781	2937	- 156	3070	3081	- 011
45	1577	1061	98435	98945	64321	70846	2445	2549	- 104	2680	2684	- 004
50	2006	1497	98014	98514	59443	67187	2121	2174	- 053	2510	2592	+ 018
55	2485	2107	97545	97915	53770	62341	1813	1812	+ 001	1966	1912	+ 054
60	3213	2698	96838	97338	47486	56108	1513	1472	+ 041	1651	1559	+ 092
65	4337	3833	95755	96239	40439	49027	1224	1161	+ 063	1346	1236	+ 110
70	5797	5050	94366	95074	32554	40475	949	884	+ 065	1067	948	+ 119
75	10671	7407	89924	92858	24360	31441	688	656	+ 032	805	710	+ 095
80	12970	16667	87882	86441	14324	21706	509	478	+ 031	560	524	+ 036
85	33373	—	71431	[75610]	7509	9415	268	345	- 077	508	383	+ 125
90	—	—	[42903]†	[58059]	1396	4543	125	250	- 125	316	280	+ 036
95	—	—	—	—	20	1122	—	—	—	183	207	- 024
100	—	—	—	—	0	74	—	—	—	105	155	- 050

It is usual when constructing a life-table to take the mean death-rates as found from 10 years' figures, and to use the mid-decennial census if one is available, or in default to calculate the population for the mid-decennial period. This was, however, impossible in the present case, so that the death-rates had to be calculated from two years' figures only.

The methods adopted for smoothing the somewhat irregular death-rates will be found described in Appendix I.

The population was hardly large enough, nor was the yearly death-rate at age periods sufficiently accurate to justify the construction of a life-table in yearly periods, so that after the first five years of life the table has been calculated in five-yearly periods.

Turning now to the table it will be seen that the first two columns give the age and sex death-rates as calculated from the deaths in the years 1908-09 and 1909-10.

The third and fourth or Px columns give the chance of living through one complete year of life, between the age given against it and that appearing below it. Thus against the age 25 in the male column will be found the number .99383, *i.e.*, the chance of surviving for one complete year at the ages 25 to 29 is .99383; the chance of dying is, therefore, .00617; which gives the chance of surviving as 161 to 1.

The fifth and sixth or Lx columns give the number of survivors at the beginning of each year indicated out of an imaginary 100,000 starting life.* Thus for the same group we find that out of 100,000 males who enter life 76,973 have survived to the age of 25.

The first and fourth of the remaining six or Ex columns, give the complete expectation of life at each stated age. In the adjacent columns the figures for the "Healthy Districts" English life table are found, and in the third and sixth columns the difference of the two preceding columns. Thus taking the same age and sex group as before, the complete expectation of life for males aged 25 in Johannesburg is found to be 39.07 years, that of the "Healthy Districts" (England) 41.32; showing a local decrease of 2.25 years. How far this difference is due to the influence of the Mining Industry, it is impossible to say without further information.

While the male life-table for Johannesburg is not so good as the "Healthy Districts" table, it is considerably better than the whole English table; on the other hand the female expectation of life is on the whole slightly better than that shown in the "Healthy Districts" table for this sex.

TABLE IX.

Giving Correction Factors calculated by Registrar-General's Method for Total European death-rate and for five special diseases, also Correction Factor for total death-rate obtained from Standardised death-rate.

CORRECTION FACTORS.

	TOTAL.		Phthisis.	Enteric Fever.	Pneumonia.	Cancer.	Heart Disease.
	Standardised.	R. G. Cor. F.					
M.	1.1806	1.2098	0.8272	0.9217	1.0809	1.4670	1.4724
F.	1.1552	1.1780	0.9447	0.9615	1.0101	1.6685	1.7913
T.	1.1502	1.1842	0.8477	0.9110	0.9250	1.6231	1.6027

This table contains the age and sex correction factors for the general death-rate. Two sets of figures are given. In column (2) the factors have been calculated by the method usually known as the Registrar-General's method; and in column (1) by dividing what I have called the Standardised death-rate by the Crude death-rate.

From a public health point of view, one of the most important uses of the age and sex distribution as given by the census, is to enable correction factors to be calculated. Unless the death-rates of towns or countries can be standardised so as to eliminate the difference due to variations in age and sex, no useful comparisons can be made; and what is of almost equal importance in a town like Johannesburg—with rapidly altering age and sex constitutions—comparisons of rates from year to year are likely, without such a correction, to be misleading.

The use of the Registrar-General's factor for correction is based on an assumption which, particularly in towns such as this, is frequently incorrect. The error introduced by the use of this factor may, in actual practice, exceed 10 per cent. of the value of the death-rate.

* Assuming that the conditions that now prevail remained unaltered throughout their lives.

The only entirely satisfactory way of reducing crude death-rates to a common basis as regards age and sex constitution of the population, is to find first the actual death-rates for the age and sex groups of the local population and then proceed to find the number of deaths, and thus the death-rate that would have occurred in the Standard population had these local group death-rates been operative in it. It is convenient to have some term for such a death-rate, which avoids confusion with the corrected death-rate as obtained by the Registrar-General's method. I propose to call it the "Standardised death-rate."

A fuller discussion of this important question will be found in Appendix II.

In this table is given also a list of correction factors for certain diseases, which are of importance, either because of their prevalence or because they are diseases of particular age periods. It is specially desirable, therefore, to correct for age in these diseases before drawing conclusions from observed alterations in death-rate from year to year; or from the difference of rates between towns.

TABLE IXa

Giving Johannesburg Crude, Standardised and Corrected, European death-rates for 1908-9 to 1909-10.

DEATH-RATES.

	Crude.	Standardised.	Corrected by R. G.'s F.
M.	13.51	15.95	16.34
F.	11.21	12.95	13.21
T.	12.52	14.40	14.83

This table gives the crude death-rate, based on two years' figures, for Johannesburg, and the corrected rates by the two methods discussed above. The error introduced by use of the Registrar-Generals method in this particular instance is not very great; this is, however, little or no guide to what it might be in subsequent years.

TABLE X.

Giving Crude European Birth-rate per 1,000 total population and rate per 1,000 Women at ages 15-45. For comparison, similar rates for England and Wales for 1900-2 are given.

BIRTH-RATES.

	Per 1,000 Total Population.	Per 1,000 Women 15-45.
Johannesburg...	34.64	146.3
England & Wales	28.60	114.8

In this table, the European birth-rate is expressed in two ways: (1) as a rate per 1,000 of the total population, and (2) as a rate per 1,000 women at child-bearing age.

The common way of expressing a birth-rate, viz., as the number of births per 1,000 of total population is clearly open to much the same objections as have been shown to arise from the use of a crude death-rate. Clearly the birth-rate must be dependent on the number of women at child-bearing age in the population.

There are several methods of dealing with this matter which to a greater or less extent meet the difficulty. If we adopt the usual age period, i.e., 15-45, as the potential child-bearing age, it will be recognised that each 5 year period is not of equal importance, for we know that women of 20-25 become mothers much more commonly than those at the extreme limits of this range. The birth-rate per 1,000 women at each of the 5 yearly groups as occurring in France are given in Vol. XXXIV. of the "Statistique Annuelle du Mouvement de la Population, Année 1904," and are as follows:—

Age.	Rate per 1,000 Women at each age.
15 - 19	28
20 - 24	141
25 - 29	172
30 - 34	126
35 - 39	84
40 - 44	36

An age-correction factor is, therefore, necessary for the birth-rate as well as for the death-rate. If, however, absolute accuracy is required it is necessary to know, not only the age grouping of all women at the child-bearing ages, but to know the number who are married.* The birth-rate at age periods for "married women," differs widely from that of "all women." The following

* For the purposes of illustration the influence of illegitimate births may be disregarded.

table extracted from the same source gives for comparison the births per 1,000 married women at similar age periods :—

Age.	Rate per 1,000 Married Women at each age.
15 - 19	298
20 - 24	298
25 - 29	237
30 - 34	157
35 - 39	102
40 - 44	45

It will be seen, therefore, that before birth-rates can be usefully compared, these factors must be understood and allowed for. Clearly an increase in the group "married women" at 20-24 will produce a big increase in the birth-rate. Before attempting, therefore, to draw deductions from changes in the crude birth-rate, it is necessary first to discover what alteration, if any, has taken place in the relative sizes of these groups; and secondly, whether the ratio of women at child-bearing age to total population has been changed.

With the statistics at present available, we are unable to state the exact number of married women in the Johannesburg population; nor would such figures even if available have enabled us to calculate the birth-rates at the age periods, for we do not know the ages of the Johannesburg mothers for the period under review. We are compelled, therefore, to calculate the birth-rate to the total female population between 15-45. A correction factor for age could, of course, have been calculated by assuming a birth-rate at age-groups similar to that of some standard population; but there is good reason to believe that the local rates would vary considerably from any European standard. The correction factor, therefore, as found by such a method, would be liable to the same defects as occur under similar circumstances for death-rate correction factors, as explained in Appendix II.

The birth-rate per 1,000 women at child-bearing age is much more valuable as an index of fertility than the rate expressed per 1,000 of total population. Bearing in mind its sources of error, it may if used with discretion be a useful guide to the fertility of a district.

This question has been discussed at some length because of its importance, and because many writers and speakers on this subject do not seem to appreciate the fallacies which arise from arguments based on crude birth-rates.

There is one other point that must be referred to while dealing with the Johannesburg birth-rate. The rate appearing in these tables is based on the figures as supplied to the Medical Officer of Health by the Registrar of Births and Deaths. The period used is the calendar year 1910. Now this rate is affected by three sources of error. Firstly the census was not taken at the mid-year, and owing to the large changes in population since 1904 a correct mid-year population cannot be calculated. However it is improbable that the error thus introduced will be a serious one. Secondly, it is probable, judging from previous returns, that a considerable number of children are returned to the Medical Officer of Health, as born in Johannesburg, who are only registered here but born outside the Municipality. For instance in the year 1908-09, 3,610 births were returned to the M.O.H. as born in Johannesburg; while in the Transvaal Statistical Blue-book published in 1910, the number given for the Municipality of Johannesburg, is 3,479 showing a difference of 131. Presumably these children were allocated by the Government Registrar to their proper districts before the publication of the Government returns. Thirdly, there is a source of error very difficult to avoid with the present methods of registration; viz. the inclusion of children born of mothers who come to nursing homes and private houses in the town for their confinement, but who are not really municipal residents. There must be a considerable number of births under such conditions, and at present there is no certain way of excluding such children from the Johannesburg birth-rate.

The two latter errors may, and probably do, seriously affect the recorded birth-rate, rendering it too high. The drop in the recorded birth-rate which may be expected when more accurate returns are available is very likely to give rise to alarmist views being propounded, if its reason is not understood.

There is, however, another very serious effect which results from inaccuracy in recording the birth returns. As is well known the infantile death-rate—possible the most important index to the sanitary state of a town—is calculated from the annual number of births. An excess therefore, of births from errors of registration will decrease the infantile death-rate, while the presence of extra-municipal mothers with young children, whose residence after the birth of their children may only last for 3 or 4 weeks, will increase the infantile death-rate—owing to the fact that the highest child mortality occurs in the first month of life—unless such deaths are excluded as belonging to non-residents. In any case an error will exist, and it is impossible under present circumstances to estimate its magnitude or direction.

The importance, therefore, if the vital statistics of the town are to be put on a proper basis, of obtaining correct birth returns, and with sufficient detail to enable the births amongst extra-municipal mothers to be omitted, is evident and urgent.

TABLE XI.

Average number of persons per house, excluding the Mining Area, Railway and Municipal
Compounds and Klipspruit is 6.19.

Number of persons per acre = 4.21.

Number of Europeans per acre = 2.14.

Appendix I.

The construction of a "Life-table" for Johannesburg at the present time is not without difficulty. Firstly because a population cannot be calculated for any period between the census of 1904 and the present one, on account of the impossibility of estimating the amount of immigration or emigration that has taken place in the town; and secondly because one is therefore confined to the use of death-rates for very recent years. This reduces the material available, and the calculated death-rates for age periods may be expected—where the population is small *i.e.*, at the senile end—to show considerable irregularities due to errors of sampling.

Two sources of error are to be expected in any distribution of deaths, one to errors of sampling and the other to misstatements of age. The latter error will be spread over the groups so that a defect in one group will be accompanied by an increase in another, that is to say the errors between groups are correlated.

The male figures, representing the mean for the last two years were not nearly so irregular as the female figures; this is no doubt owing to their larger number and to the fact that there is not the same tendency to misstatement of age in the former group. It must be borne in mind that in any adjustments made to smooth the distribution, the total number of deaths must not be altered, and that the tendency is to understate rather than overstate the age on the death returns.

We know from the work of Prof. Karl Pearson that the general mortality distribution can be resolved into component distributions which follow known laws.

Without entering into too much detail I may state that I found the male distribution was very well represented by a curve with the following equation.

$$y = 69 \left(1 + \frac{x}{5.09}\right)^{2.59} \left(1 - \frac{x}{29.68}\right)^{15.13}$$

The mode was found to be 38 years. The distribution used was assumed to be given by the observed figures up to this modal value, and thereafter by the values found from this formula. The differences were slight and well within the errors that might reasonably have been expected to arise from errors of sampling.

The female distribution was dealt with in the same way and the following equation was found.

$$y = 28 \left(1 + \frac{x}{2.97}\right)^{0.39} \left(1 - \frac{x}{13.46}\right)^{1.76}$$

This distribution as previously stated was more irregular owing to the smaller number of deaths. It may be stated that no knowledge of the population returns was available when the smoothing of the deaths was undertaken, and that no alterations have been subsequently made in the figures then obtained. The normal form, therefore, of the resulting death-rates, may be taken as a partial confirmation of the methods adopted, which were originally based on deductions from the "Laws of Chance."

Another point of difficulty arose in respect to the population returns for the first five or six years of life. As is well known all census returns are unreliable at the early ages. Many children who have not completed one year of life being returned as one year old, children in their second year as two years old and so on. It is usual in forming a life-table to disregard the census returns for the first few years of life, and instead, to calculate a population from the birth and death returns. This was impossible in Johannesburg owing to the errors existing in the birth returns. These have been referred to the report.

The actual census figures showed larger numbers at 2 and 3 than at 0 and 1. This could only be correct if resulting from immigration, which it did not. It was, therefore, necessary to re-distribute the census figures for the first few years of life. The method adopted was to find what the distribution would have been on the assumption that the recorded births and deaths for the last 6 years were correct, and then to redistribute the census figures in similar proportions, without of course, altering the total number from that given by the census returns.

It may be thought that, the population of the town having increased, the group death-rates, formed by taking the deaths for the two years previous to the census, would result in the rates found being too low. This does not seem likely to be the case, as the number of deaths in the latter year were less than those in the former. This indicates a falling death-rate in the town, which if maintained would mean that the death-rates as used for the life-table will be slightly too high, and therefore the expectation of life should, if anything, be better than that shown.

After a careful consideration of the facts, I think that the results as given in the "Life-tables" are a reasonable approximation to the actual conditions prevailing in Johannesburg at the present time.

Appendix II.

REGISTRAR-GENERAL'S CORRECTION FACTOR.

It has been pointed out in the Report that the death-rate of any locality corrected for age and sex by the Registrar General's Correction Factor may vary considerably from what we have agreed to call the "STANDARDISED DEATH-RATE." This question is of considerable importance to South African towns in general and to Johannesburg in particular, and merits a little closer attention than can be given it in the text of the Report.

Most of the towns within the Union have exceptional age and sex distributions as compared with a standard such as England. If, therefore, they should also have exceptional death-rates at any age-groups, the difference between the "Standardised death-rate" and the "Corrected death-rate" may be considerable. The use of the Registrar's Correction Factor in such cases may be useless and even worse than useless, while it gives an appearance of accuracy quite misleading. For example, the crude death-rate in New Orleans was 23.813, the standardised death-rate 23.624, a slightly lower rate than the crude rate; but the rate corrected by the Registrar's factor was 26.085, introducing an error of 10.42%.

As already stated, the Standardised death-rate is the death-rate that would have occurred in the local population, had the age- and sex-distribution of the local population been the same as that of the standard population, but the death-rates for the various groups those actually observed in the local population.

The STANDARDISED DEATH-RATE can be found at once if we know the local death-rates at the various age groups.

Let $N_1, N_2, \dots, N_r$ = population in each group of the standard population so that $S(N) = P$ total population;

And $n_1, n_2, \dots, n_r$ = population in similar age groups for the local population so that $S(n) = p$ and $d_1, d_2, \dots, d_r$ = annual number of deaths occurring in each group $n_1, n_2, \dots, n_r$.

Let $S(d) = \delta$

Then the crude death-rate = $1000 \frac{\delta}{p}$ (1)

and the standardised death-rate = $1000 \left[N_1 \frac{d_1}{n_1} + N_2 \frac{d_2}{n_2} + \dots + N_r \frac{d_r}{n_r} \right] / P = 1000 S \left(\frac{N d}{n} \right)$ (2)

Now let $D_1, D_2, \dots, D_r$ = deaths in groups $N_1, N_2, \dots, N_r$ of standard population and let $S(D) = \Delta$

$$S \left(\frac{N d}{n} \right) = \delta'$$

$$S \left(\frac{D}{N} \right) = \Delta'$$

Then the Registrar General's Correction Factor $R_c = \frac{\Delta}{P} \div \frac{\Delta'}{p} = \frac{\Delta}{\Delta'} \times \frac{p}{P}$

and the corrected death-rate = $1000 \frac{\delta}{p} R_c = 1000 \frac{\delta}{p} \times \frac{\Delta}{\Delta'} \dots \dots \dots$ (3)

If therefore the corrected death-rate is to equal the standardised death-rate, i.e., if

$$\frac{\delta'}{p} = \frac{\delta \Delta}{P \Delta'}$$

then $\delta' : \Delta = \delta : \Delta'$

This is the proof given by Prof. K. Pearson in a recent paper to the Royal Statistical Society. *

Now it can be shown that this relationship does not hold true under conditions which commonly occur in actual practice.

First, let us consider the case when age-groups vary, but the death-rates at age-groups are the same in both the standard and local populations, i.e., when

$$\frac{N}{P} = \frac{n}{p}$$

but $\frac{D}{N} = \frac{d}{n}$ for each group

then since $\frac{d}{n} = \frac{D}{N}$, $S \left(\frac{D}{N} \right) = S(d)$ or $\delta = \Delta'$

Similarly $S \left(\frac{d}{n} \right) = S(D)$ or $\delta' = \Delta$

$$\therefore \frac{\delta'}{p} = \frac{\delta \Delta}{P \Delta'} \dots \dots \dots (4)$$

The Standardised and Corrected death-rates are identical in value.

Again, it is easily seen that the Registrar-General's Correction Factor is equally valid if the group death-rates are dissimilar in the local and standard populations, provided the age groups are similar,

$$\text{i.e., if } \frac{N}{P} = \frac{n}{p} \text{ but } \frac{D}{N} \neq \frac{d}{n}$$

$$\text{for } \Delta' = S\left(\frac{D}{N}\right) = \frac{P}{p} S(D) = \frac{P}{p} \Delta$$

$$\text{and } \delta' = S\left(\frac{d}{n}\right) = \frac{P}{p} S(d) = \frac{P}{p} \delta$$

$$\therefore \frac{\delta'}{P} = \frac{\delta}{P} \frac{\Delta'}{\Delta} \quad \dots \quad \dots \quad \dots \quad \dots \quad (5)$$

Now let us examine what happens when both age-distribution and group death-rates are altered.

First let us keep the group death-rates unchanged as before, that is $\frac{D}{N} = \frac{d}{n}$ but $\frac{N}{P} \neq \frac{n}{p}$.

and let $C_0 = \frac{1000}{P} S\left(\frac{d}{n} N\right)$ = Standardised death-rate, and $C_1 = \frac{1000}{P} S\left(\frac{\delta}{N}\right) =$ Corrected death-rate.

Let us now alter the death-rates in the age groups by amounts a_1, a_2 , etc., so that the number of deaths corresponding to the group n_1 will now be $\left(d_1 + \frac{a_1 n_1}{1000}\right)$ instead of d_1 , and $\left(d_2 + \frac{a_2 n_2}{1000}\right)$ will be the new number at group n_2 , and so on.

Let C'_0 and C'_1 be the values of C_0 and C_1 when the death-rates are altered as above.

$$\text{Then } C'_0 = \frac{1000}{P} S\left[\left(d + \frac{an}{1000}\right) \frac{N}{n}\right] = \frac{1000}{P} S\left(\frac{dN}{n}\right) + \frac{1000}{P} S\left(\frac{aN}{1000}\right) \quad \dots \quad \dots \quad (6)$$

$$\text{and } C'_1 = \frac{1000}{P} \frac{\left[\delta + \frac{a_1 n_1 + a_2 n_2 + \dots}{1000}\right] \Delta}{S\left(\frac{D}{N}\right)} = \frac{1000}{P} \frac{\delta \Delta}{S\left(\frac{D}{N}\right)} + \frac{1000}{P} \frac{\Delta S\left(\frac{an}{1000}\right)}{\Delta'} \quad \dots \quad (7)$$

$$\therefore C'_0 - C_0 = \frac{1}{P} [a_1 N_1 + a_2 N_2 + \dots]$$

$$\text{and } C'_1 - C_1 = \frac{1}{P} \frac{\Delta}{\delta} [a_1 n_1 + a_2 n_2 + \dots] \text{ for } \Delta' = \delta \text{ by (4)}$$

$$\therefore C'_0 - C'_1 = \frac{1}{P} \left[S(aN) - \frac{\Delta}{\delta} S(an) \right] \quad \dots \quad \dots \quad \dots \quad (8)$$

Multiplying each n by Δ/δ and writing this new value n' we may now write the equation (8) thus

$$C'_0 - C'_1 = \frac{1}{P} [S(aN) - S(an')] \\ = \frac{1}{P} [a_1(N_1 - n'_1) + a_2(N_2 - n'_2) + \dots + a_r(N_r - n'_r)] \quad \dots \quad (9)$$

Thus it is easily seen that the difference between the Standardised death-rate and the Corrected death-rate will depend on the size of the terms in square brackets. If large values of a 's are associated with big difference in value between the N 's and n 's, then C_0 may be expected to vary considerably from C_1 .

A simple example may help the non-mathematical reader to follow the above.

Let	$N_1 = 10000$	$D_1 = 600$	then	$\frac{D_1}{N_1} 1000 = 60$
	$N_2 = 9000$	$D_2 = 45$		$\frac{D_2}{N_2} 1000 = 5$
	$N_3 = 8000$	$D_3 = 80$		$\frac{D_3}{N_3} 1000 = 10$
	$N_4 = 7000$	$D_4 = 140$		$\frac{D_4}{N_4} 1000 = 20$
	$N = 6000$	$D_5 = 600$		$\frac{D_5}{N_5} 1000 = 100$
	$\hline = 40000$	$\hline \Delta = 1465$		$\hline \frac{\Delta}{P} 1000 = 36.62 = \text{death-rate in Standard population}$

$$n_1 = 8000 \quad d_1 = 480 \quad \frac{d_1}{n_1} 1000 = 60$$

$$n_2 = 7000 \quad d_2 = 35 \quad \frac{d_2}{n_2} 1000 = 5$$

$$n_3 = 10000 \quad d_3 = 100 \quad \frac{d_3}{n_3} 1000 = 10$$

$$n_4 = 9000 \quad d_4 = 180 \quad \frac{d_4}{n_4} 1000 = 20$$

$$n_5 = 6000 \quad d_5 = 600 \quad \frac{d_5}{n_5} 1000 = 100$$

$$\hline p = 40000 \quad \hline \delta = 1395 \quad \hline \frac{\delta}{p} = 34.87 = \text{Crude death-rate in local population.}$$

$$\text{Now } S\left(\frac{D}{N}n\right) = \Delta' = 1395 \quad \text{and } S\left(\frac{d}{n}N\right) = \delta' = 1465$$

$$\therefore C_0 = 1000 \frac{S\left(\frac{d}{n}N\right)}{P} = 1000 \frac{1465}{40000} = 36.62 \quad \text{and } C_1 = \frac{1000 \delta \Delta'}{P \Delta} = 1000 \frac{1395}{40000} \times \frac{1465}{1395} = 36.62$$

therefore $C_0 = C_1$ as by (4) we have shown it must. Now let us change the values of the d 's by the amount $\frac{an}{1000}$ so that

$$d_1 = 480 \text{ becomes } d_1 + \frac{a_1 n_1}{1000} = 400 \quad \therefore a_1 = -10$$

$$d_2 = 35 \quad \text{,,} \quad d_2 + \frac{a_2 n_2}{1000} = 21 \quad \text{,,} \quad a_2 = -2$$

$$d_3 = 100 \quad \text{,,} \quad d_3 + \frac{a_3 n_3}{1000} = 200 \quad \text{,,} \quad a_3 = 10$$

$$d_4 = 180 \quad \text{,,} \quad d_4 + \frac{a_4 n_4}{1000} = 225 \quad \text{,,} \quad a_4 = 5$$

$$d_5 = 600 \quad \text{,,} \quad d_5 + \frac{a_5 n_5}{1000} = 900 \quad \text{,,} \quad a_5 = 50$$

So that the new death-rates have become 50, 3, 20, 25, and 150, instead of 60, 5, 10, 20, and 100.

$$\therefore C'_0 = 44.05 \quad C'_1 = 45.84$$

$$\text{and } C'_0 - C'_1 = -1.79$$

$$\text{Now from (9) we know that } C'_0 - C'_1 = \frac{1}{P}[S(aN) - S(an')]$$

$$\text{and } \frac{\Delta}{\delta} = \frac{1465}{1395} = 1.0502$$

$$\begin{array}{ll} \therefore \text{ If } n_1 = 8000 & \text{then } n'_1 = 8402 \\ n_2 = 7000 & n'_2 = 7351 \\ n_3 = 10000 & n'_3 = 10501 \\ n_4 = 9000 & n'_4 = 9452 \\ n_5 = 6000 & n'_5 = 6301 \end{array}$$

$$\begin{aligned} \text{and } C'_0 - C'_1 &= \frac{1}{40000} [(-10)(1598) + (-2)(1649) + 10(-2502) + 5(-2452) + 50(-301)] \\ &= -\frac{71608}{40000} = -1.79 \text{ as above} \end{aligned}$$

It will be seen, therefore, that without a knowledge of the group death-rates and of the ratio $\frac{N}{P}$ to $\frac{n}{P}$ it is impossible in any particular case to foretell whether C'_1 will be a reasonable approximation to C'_0 ; i.e., whether the use of the Registrar-General's Correction Factor is justifiable.

Professor Pearson, in the paper above referred to, says: "It (the Registrar-General's Correction Factor) gives results close to the value of δ/P for English districts. Whether in a country like America, where the age-distributions vary so widely from city to city, it would be equally efficient, it is impossible to say without actual trial. I think its value will be probably found, for English districts at least, within the probable errors of sampling."

For the purpose of finding out what variations actually occurred, I took 38 American cities, together with the Male and Female Johannesburg populations. From the deaths at age-groups, as given in "Mortality Statistics, U.S.A.," and the populations as given in the 1900 U.S.A. Census Report, I was able to calculate the group death-rates for 10 age-groups. From these the Standardised death-rates and the Corrected death-rates were calculated. The Standard population and death-rates employed were those of England and Wales for 1891-1900.

By subtracting the Corrected death-rate from the Standardised death-rate the percentage error is found thus: $100 \frac{C_0 - C_1}{C_0} = \% \text{ error}$. Having regard to sign, the mean error for the group of 40 cases was found to be 2.07%, with a standard deviation of 2.999%*. In the example taken the distribution is skew, the mode being at 1.26.

The constants of the distribution are as follows:—

$$\begin{array}{lll} \text{Mean } 2.07 & \mu_2 = 8.9957 & \beta_1 = .6153 \\ \text{Mode } 1.26 & \mu_2 = 21.1640 & \beta_2 = 4.7995 \\ \sigma = 2.999 & \mu_4 = 388.3865 & r = 10.8961 \end{array}$$

In two of the cities an error of over 10% was observed.

The following table will show some of the values obtained in this investigation:—

			Mean	σ
Crude death-rate	...	C_2	19.65	5.88
Standardised death-rate	...	C_0	21.52	6.10
Corrected death-rate	...	C_1	22.02	6.49
Registrar General's correction factor	...	C_1	1.273	0.0682
		C_2		
Standardised correction factor	...	C_0	1.1066	0.0729
		C_2		
Difference as % error	...	$100 \frac{C_0 - C_1}{C_0} = Ep$	2.070%	2.999

* Disregarding signs, the mean value is 2.650, and standard deviation 2.507.

Some of the relationships between these variables are of interest. If the Corrected death-rate is a suitable substitute for the Standardised death-rate, the correlation of C_0 with C_1 for constant crude death-rate would be very high. The correlation of C_0 with C_1 is certain to lead to a high value, owing to the fact that there is a big range to the crude death-rates; it is necessary, therefore, to use a partial correlation formula and correlate C_0 with C_1 for constant C_2 .

$$\text{So that } c_2 P_{c_0 c_1} = \frac{r_{c_0 c_1} - r_{c_0 c_2} r_{c_1 c_2}}{\sqrt{1 - r_{c_0 c_2}^2} \sqrt{1 - r_{c_1 c_2}^2}}$$

and we find $r_{c_0 c_1} = .9948$, $r_{c_0 c_2} = .9874$ and $r_{c_1 c_2} = .9799$

$$c_2 P_{c_0 c_1} = .8635.$$

Thus there is a fairly close relationship, but not as close as one might have expected.

Another relationship of some interest is that between the size of the death-rate and the magnitude of the error.

$$\dagger r_{c_0 E_p} = .3929 \pm .0902$$

Thus we see that there is a small correlation between high death-rates and large positive errors; and we may conclude that the magnitude of the death-rate is little if any guide to the size of the error to be expected.

We may now consider whether the error introduced by the Registrar-General's Factor is greater than the variations that might occur due to errors of sampling. The mean error due to random sampling in the above group of cases may be approximately determined as follows. The mean standardised death-rate has been shown to be 21.52. If we assume the mean population to be 100,000, the error to be expected in another sample of similar size will be given by the formula

$$1000\bar{p} \pm 67.449 \sqrt{\frac{1}{p} \frac{1}{q} \left(\frac{1}{n} + \frac{1}{m} \right)} \quad \text{i.e., } 21.52 \pm .44$$

which is equivalent to an error of $\pm 2.046\%$ of the death rate; while the mean % error of $C_0 - C_1 = 2.070$. Thus we can see that in a death-rate such as the above it is an even chance that in another sample the death-rate will lie between 21.96 and 21.08. The errors introduced by the use of the Registrar-General's Factor may be stated thus: the most probable error will be +.27, making the death-rate 21.79. The mean error is +.45, while it is an even chance the error will lie between +.71 and -.16; that is to say, the death-rate will lie between the values 22.23 and 21.36. The positive errors are greater than the negative, owing to the distribution being skew, and the range is almost identical to that found for errors of random sampling.

I think that the conclusion to be drawn from these results is that while the mean value of a series of Corrected death-rates may not differ by much more than the probable error from the mean of the Standardised death-rates, the result of using the Registrar's Factor in any individual town may be entirely misleading.

If, therefore, it is desired to correct the crude death-rate for errors due to variations in age and sex in towns where either the sex and age distributions or the group death-rates vary much from those of the Standard Population, some other method of correction must be adopted. The only method that I know of that is entirely satisfactory is that which we have called the Standardised death-rate, i.e.,

$$S \left(\frac{N^d}{n} \right) / P$$

To use this method satisfactorily a quinquennial census at least is necessary, giving age and sex distributions, and the deaths must be returned for suitable age groups.

In conclusion, I would point out that in towns, such as many South African towns, where the age and sex distributions alter considerably in a few years, such a correction is required, so that the death-rates from year to year can be compared. It is quite possible to conceive a case where the use of the Registrar's Factor might give results indicating an increase in the death-rate, when in reality a falling rate represented the true condition.

The importance, therefore, of this question will, I hope, be clear to all Medical Officers of Health and others interested in sanitary progress.

† Owing to the form of this function, a spurious correlation is introduced, but for the present purpose the value of r being small, it may, I think, be safely neglected.

APPENDIX III.

MUNICIPAL COUNCIL OF JOHANNESBURG,
PUBLIC HEALTH DEPARTMENT,

5th January, 1911.

Dr. C. Porter,

Medical Officer of Health,
Johannesburg.

REPORT RE MORTALITY AMONGST NATIVES EMPLOYED ON MINES AND WORKS IN THE LABOUR AREA OF THE TRANSVAAL.

By G. D. MAYNARD, F.R.C.S., E.

In the following report I have attempted to answer your questions in respect to death-rates among natives engaged in contract labour in the Transvaal, with special reference to natives on the Mines, viz.:—

- (1) To what extent, if any, do recently arrived natives suffer from disease in excess of the "boys" who have been at work for some period?
- (2) If new "boys" do suffer from a higher death-rate, to what disease or diseases is it mainly due?
- (3) To what causes are the large differences in the death-rates on various mines due?

The solution of these problems involved considerable difficulties, as no returns were available from which direct calculations could be made, and it was necessary to extract the required data from the original material as supplied by the local registrars to the Government Native Labour Bureau.

Through the courtesy of the Native Labour Bureau, I obtained the Native Death Returns for the Labour District from the 1st July, 1909, to the 30th June, 1910. From these sheets the following data were extracted:—

- (1) Cause of death.
- (2) Length of period at work before death; and
- (3) Territorial district from which the native came.

These details were indexed on cards. The cards were then sorted into groups according to

- (1) Length of period at work before death,
- (2) Cause of death,
- (3) Territorial Distribution, viz.:—Tropical natives, *i.e.*, those north of latitude 22° S.; East Coast natives, *i.e.*, Portuguese natives from south of latitude 22° S.; and "other" natives, which include "boys" from British Bechuana, Cape Colony, Natal and Zululand, Swaziland and the Transvaal.

From the figures thus obtained (Table I.) it will be seen that in all the Territorial Groups, the greatest number of deaths occurs during the first and second months, and gradually decreasing after that period. In all three groups the greatest number of deaths is due to Pneumonia, and, excluding the group "Other Diseases," "Phthisis" comes second, "Accidents" third, and "Enteric Fever" fourth. The importance of Pneumonia as a cause of death is well shown in these tables. It will be seen, further, that whilst the deaths from Pneumonia rapidly decrease after the first two or three months at work, the number of deaths from Phthisis tends rather to increase.

In Table II. the number of deaths in each month for each territorial group has now been converted into number per 1,000 deaths in that month, to show the relative importance of the various disease groups after varying periods at work. Thus, amongst East Coast natives who have not completed one month at work, Pneumonia accounts for 443 per 1,000 of all deaths during the first month, while only 97 per 1,000 deaths

are due to Phthisis; at the end of a year, however, Phthisis accounts for approximately 300 per 1,000 of the total deaths. It will be noticed that except for the first few months, the number of deaths in any one group is small, and, therefore, fairly big fluctuations may be expected. Only very general deductions can, therefore, be drawn from these figures, but I think it is safe to say that these tables show that Phthisis becomes relatively more prevalent as the stay on the mine increases.

Before considering these figures further, it is necessary to convert the deaths into death-rates, as otherwise it is impossible to judge how far the fall in their value is due to fewer "boys" being employed, or to a decreased mortality due to acclimatisation or some unknown factors.

No figures were obtainable giving the number of "boys" who were exposed to risk during the year in their first, second, and third month at work, so as to enable death-rates to be calculated from the tables. Through the courtesy of the Witwatersrand Native Labour Association, I was, however, able to obtain a statement showing the approximate period of contract of all Company natives at work on the 31st August, 1910.

In this return, under the heading "One Month," two sets of figures occur, namely, 30 and 18,678. There were 30 "boys" who engaged for a period of one month, while the 18,678 "boys" who appear in this column, although engaged for one month only, re-engaged for two, three, four, etc., months, and I was informed that the average period of work for these "boys" was four months. Again 75,738 represents the number of "boys" who engaged originally on a twelve-month contract, but it was stated that most of these "boys" work on a mine for an average period of eighteen months; similar remarks are true of other groups. It was, therefore, necessary to re-distribute these figures, and thus attempt to obtain the number of "boys" who *actually worked* for one, two, three, etc., months. From the figures thus obtained, one was able to calculate approximately the number of "boys" who—excluding deaths and desertions—completed one, two, three, etc., months at work on the mines. This calculation is admittedly only a first approximation, and undoubtedly underestimates the number of "boys" at work at eighteen months and over. Firstly, because the figures stated only give original periods of contract, and take no account of "boys" who have renewed their contracts; and secondly, because there is no way of ascertaining the number of "boys" who have served on the mines previously, but have returned home during the interval between their periods of work. This latter class should not properly be considered as "new" boys.

Table III. and Diagram I. show, on the above assumptions, the percentage number of boys who are at work in their first, second, etc., month during the year. It will be seen that 100 per cent. of the boys who enter the mines during the year work for one month, 96·8 for two months, and so on. The continuous curve shown in the diagram fits very closely the actual figures obtained from the table. I have used the percentages as given by the continuous curve in calculating the number of "boys" who were exposed to risk for one, two, three, etc., months during the year July, 1909, to June, 1910, starting from the known number of new "boys" who engaged during this period. As the figures given apply only to natives recruited by the Witwatersrand Native Labour Association, and as the deaths apply to all "boys" in the labour area on mines and works, it was necessary to assume that the "boys" not recruited by the Witwatersrand Native Labour Association would have shown a similar distribution, had it been possible to obtain the necessary figures. This assumption is, probably, defective as regards long contract "boys"; and the figures here found, no doubt, underestimate the number of natives who have been employed for two or more years. Assuming, however, that the distribution as shown in diagram may be fairly applied to all the natives dealt with in the death returns, the actual number of "boys" exposed to risk was calculated in the following manner:—

The total number of "boys" entering into contracts during the period dealt with is given by the Native Labour Bureau at 189,314. Excluding deaths and desertions, 100 per cent. of these "boys" complete one month's service, 96·8 per cent. will complete two months' service, and so on. With the figures thus obtained, it is a simple matter to reduce the number of deaths to death-rates. As a check on the accuracy of this assumption, I calculated from this table the total death-rate for the year, which was then found to be 32·17 per 1,000, while the total death-rate given by the Native Labour Department for the same period is 33·64 per 1,000, and for the first half of 1910, 32·04. This, I think, indicates that the method adopted is fairly correct. The total death-rate, as obtained from these figures, is shown in Table III., Col. 5, and graphically in Diagram II. The big "stars" of the diagram represent the rates over six months. It will be noticed that during the first eighteen months, the monthly death-rates lie fairly closely on the continuous curve drawn through the six-monthly rates. The rates during the last six months, namely, from the 18th to 24th month, are

based on very small figures; therefore, their deviations from the line are of comparatively small importance, and probably due in part to errors of random sampling, and in part to an underestimate of the population at risk in this portion of the distribution. It will be noticed that the death-rate during the first six months is 39 per 1,000, during the second six months 27 per 1,000, and during the third six months 21 per 1,000; and it is, I think, fair to assume that after this period a death-rate of about 20 per 1,000 might be considered normal. The comparatively low death-rate in the first month as compared with that in the second is due to the fact that an interval of some days must elapse between the onset of the disease and the date of death. Thus, the possible period over which deaths may occur, during the first month at work, is considerably less than a month.

In Table III., Col. 6, and in Diagram III., the Pneumonia death-rates are given. In this table it is shown that the death-rate during the first six months is 16 per 1,000, in the second six months 9.24 per 1,000 and in the third six months, 5.5 per 1,000. The Pneumonia death-rate, therefore, shows a very marked decline as the length of contract increases, i.e., that "boys" who have been at work for some period suffer very much less from Pneumonia than they did on first arrival. This diagram proves what had long been held to exist, namely, that new "boys" are more prone to die from Pneumonia than "boys" who have been at work for some period, and that the average Pneumonia death-rate, instead of standing at 12.4 per 1,000, would be reduced to about 4 per 1,000 after the first year of contract is completed. On the same diagram is shown the curve representing the Accident death-rate. This death-rate shows a reduction according to length of contract, but its curvature is not so marked as that of the Pneumonia curve. This is, I think, what might reasonably be expected, as "boys" who have had some experience of mine work would be less liable to expose themselves unnecessarily to accident risks, but, on the other hand, many accidents would be unavoidable, and would affect "old" and "new" "boys" indifferently.

In studying the question of the death-rate as occurring on the various mines, one is struck by the very great differences in the crude rates. It is, therefore, desirable to try and discover the reasons for such variations. For this purpose I have selected thirteen mines, five with low death-rate, four with a medium death-rate, and four with a high death-rate, namely: Main Reef, Jumpers, Wolluter, Consolidated Langlaagte, City and Suburban, Jubilee, Salisbury, Robinson Gold Mine, Village Deep, City Deep, Geldenhuis Deep West, Nourse, New Goch, and Simmer and Jack East. The deaths occurring on these mines were divided into three groups, viz.:—

- (1) "Boys" from north of latitude 22° S.
- (2) Short contract "boys" from south of latitude 22° S., i.e., those "boys" who have worked less than fifteen months.

I have since been informed that thirteen months would have made a better division than fifteen months; any hard and fast division, however, is, of course, arbitrary, and merely approximate, and the exact period chosen will not materially affect the argument.

- (3) Long contract "boys," i.e., those "boys" who have been at work over fifteen months, coming from south of latitude 22° S.

The death-rate amongst Tropical natives is higher than that of natives coming from south of latitude 22° S., and, as we have seen, short contract "boys" will have a higher death-rate than those who have been at work for some considerable period. It is clear, therefore, that mines employing a large percentage of Tropical natives must be expected to have a higher death-rate than those mines employing few Tropical "boys"; and, further, the period of contract is a factor which cannot be ignored. As an example of the differences in these respects which actually occur on various mines, one may take, for instance, the Jumpers Gold Mine (with a low death-rate), where there are no deaths amongst Tropical natives, 23.5 per cent. of deaths occurring amongst short contract "boys" and 76.5 per cent. amongst long contract "boys"; whereas on the Simmer and Jack East (with a high death-rate) 91.3 per cent. of the deaths occur amongst Tropical "boys," 8.7 per cent. amongst short contract "boys," and none amongst long contract "boys." This indicates that in the case of the Jumpers, the majority of the "boys" are long contract, and come from south of latitude 22° S., whereas, on the Simmer and Jack East, a large majority of "boys" are Tropicals, and comparatively few, if any, "boys" with a long period of service from south of latitude 22° S.

From the figures supplied by the Witwatersrand Native Labour Association, I am able to state that during the year ending June, 1910, the average number of Tropicals employed on the Jumpers was 5.29 per cent. and of East Coast "boys" (all

of whom come on a 12-month contract at least) there were 25.97 per cent., while on the Simmer and Jack East 72.44 per cent. of the "boys" were Tropical, 18.05 per cent. East Coast, and 9.5 per cent. others south of latitude 22° S. Without making some allowance for such differences, it is obviously unfair to contrast the death-rate on these mines.

It will be seen from Table IV. that, in the mines here dealt with, considerable variations occur in the percentage number of "boys" coming from north and south of latitude 22° S., although this factor will not, by itself, entirely account for the variations in the death-rate.

In Columns 4 and 5 of Table IV. are shown the total death-rates for the year on these mines, and the death-rate from disease alone. This latter column is, I think, the one on which most reliance should be placed, as the number of accidents occurring in any mine must be liable to great variations from year to year, and should not, therefore, be included in the death-rate of the mine when such questions as sanitary arrangements or territorial district from which the boys are drawn are being discussed, as these factors could have little or no influence on the accident death-rate. From the general death-rates of Tropicals, East Coast and other natives from south of latitude 22° S., I have attempted to obtain a correction-factor which might be applied to these mine death-rates. The correction-factors are given in column 6, and the corrected death-rates are shown in column 7. It will be noticed that correction for race of natives, even when only dealing with three broad groups, materially decreases the variations observed in the crude death-rates on these mines. To account satisfactorily for the remaining variations, many conditions must be considered with which it is impossible, with the data at present available, to deal statistically.

The question of diet is no doubt an important one, and is receiving careful attention from the Medical Department of the Witwatersrand Native Labour Association. Considerable variations in the diet still occur on the mines. Again, construction of compounds, as regards ventilation, draught and cold, ease of disinfection of bunks, and general sanitary conditions, vary considerably. The length of time spent underground, in reaching and returning from work, is also of importance; and in this respect the outcrop mine is better situated than the deep level mine. All these factors require careful study in relation to the death-rate from individual diseases, before a complete answer to the question regarding differences of death-rate on the mines can be given.

Another point which has been referred to above, viz.: the employment of experienced natives as against the raw Kaffir, is, I believe, of considerable importance in its relation to the death-rate. These "experienced" natives may be divided into two classes:—

- (1) Those who return home in the intervals between work, and
- (2) Natives who re-engage without leaving the Rand.

A large number of East Coast "boys" fall into the first group.

Natives who re-engage, and are free to choose on what mine they will work, drift to mines where the conditions of work are most pleasant, where the food is good and plentiful, where the compound management pleases them, and so on. The death-rate on such a mine is lowered in two ways, directly by good management, and indirectly by obtaining "boys" who have, as has been already shown, a lower death-rate due to what may, for want of a better term, be called acclimatisation. The old hands drill their complement of inches in a shorter time than new "boys," and, therefore, leave the mine sooner, and are thus enabled to spend more time in the fresh air. Experience shows, so I am informed, that the old "boy" spends more money on buying food; and so, from every point of view, renders himself less liable to disease and death. Many of these points could be dealt with statistically, if exact records were available. In the absence of such data, it is difficult and probably impossible to state with any degree of certainty what is the numerical effect on the death-rate of any of the above-mentioned conditions.

It must, of course, be borne in mind that conclusions based on one year's figures, especially when single mines are under consideration, may be misleading. A local epidemic occurring in a mine one year may completely alter the death-rate; but there is little doubt that when all these factors are allowed for, that certain mines do not occupy a very enviable position as regards their native mortality, although the crude death-rates may greatly exaggerate their unsatisfactory condition.

CONCLUSIONS.

1. The general death-rate amongst all natives, Tropical and others, employed on mines and works, is very much higher during the first three months of such employment than during the succeeding fifteen months, in which latter period the death-rate exhibits a marked progressive decrease.
2. The Pneumonia death-rate is at least three times as high during the first six months as it is in the second year at work.
3. The Accident death-rate shows less tendency to decrease with increased period at work.
4. Phthisis becomes relatively more important as the length of residence in the mining districts is increased; but, in spite of this, the general death-rate shows a marked reduction.
5. The great differences in death-rates on various mines are not entirely due to local conditions. The territorial distribution of the natives employed is an important factor for which a partial statistical correction can be applied. Other differences do not so easily admit of statistical treatment.

G. D. MAYNARD.

5th January, 1911.

TABLE I.
NATIVE DEATHS IN LABOUR AREA, 1909-1910.

CAUSES OF DEATH.		LENGTH OF TIME AT WORK BEFORE DEATH.—MONTHS.																					
			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18 and over.		
Pneumonia ..	S. of Lat. 22°	(EC O)	133	111	83	78	65	47	59	41	49	40	33	33	26	18	17	10	7	14	91	9	904
	N. of Lat. 22°		88	148	90	89	52	63	48	32	39	26	21	10	9	4	7	5	0	2	86	10	769
Phthisis ..	S. of Lat. 22°	(EC O)	56	101	64	52	43	45	25	43	17	17	13	12	6	11	3	4	0	0	15	4	531
	N. of Lat. 22°		29	45	36	28	23	38	28	36	36	26	19	24	29	21	13	6	7	1	148	9	603
Other Respiratory ..	S. of Lat. 22°	(EC O)	12	36	24	33	20	24	30	22	22	21	16	12	8	8	6	5	0	0	25	1	325
	N. of Lat. 22°		4	11	8	13	10	12	16	16	7	11	6	4	3	1	2	0	1	3	13	3	133
Enteric Fever ..	S. of Lat. 22°	(EC O)	13	13	13	9	11	17	9	6	11	12	3	1	1	5	1	0	1	2	25	3	155
	N. of Lat. 22°		6	9	7	6	5	16	7	8	10	4	8	1	2	2	1	0	0	0	6	1	99
Diarrhoeal Diseases	S. of Lat. 22°	(EC O)	8	26	11	12	10	6	7	4	4	3	3	4	2	0	0	0	0	0	1	1	102
	N. of Lat. 22°		5	6	8	7	11	2	3	5	2	0	2	2	0	1	0	0	0	1	1	0	56
Other Diseases ..	S. of Lat. 22°	(EC O)	69	40	32	38	17	21	26	23	17	25	21	21	16	14	10	12	10	4	104	9	529
	N. of Lat. 22°		29	37	45	42	27	17	19	14	19	17	20	10	7	4	3	4	4	5	34	8	372
Accidents ..	S. of Lat. 22°	(EC O)	44	25	21	20	26	17	16	13	9	7	7	5	4	10	2	3	2	2	8	1	242
	N. of Lat. 22°		21	26	26	36	18	21	19	19	14	26	12	8	10	19	3	7	4	5	74	7	357
Total ..	S. of Lat. 22°	(EC O)	40	44	29	32	31	31	22	23	16	13	19	13	11	5	5	2	2	2	22	4	365
	N. of Lat. 22°		6	20	9	1	9	6	5	7	3	5	3	2	2	2	3	1	1	1	5	0	91
Total ..	S. of Lat. 22°	(EC O)	800	260	217	202	152	165	154	141	144	134	102	94	87	83	51	37	29	28	471	37	2,893
	N. of Lat. 22°		197	329	225	237	167	179	142	120	123	89	94	53	43	27	22	20	8	9	118	29	2,291
Total ..	S. of Lat. 22°		129	177	121	104	114	97	83	91	50	39	34	27	20	35	13	10	4	7	51	8	1,214
	N. of Lat. 22°		626	766	563	543	433	441	379	352	317	202	230	174	150	145	86	67	41	44	640	74	6,333

TABLE II.

NUMBER OF DEATHS FROM EACH DISEASE PER 1,000 DEATHS FROM ALL CAUSES, FOR TERRITORIAL DISTRIBUTION AT EACH MONTHLY PERIOD AT WORK IN LABOUR AREA, 1909-1910.

CAUSES OF DEATH.		LENGTH OF TIME AT WORK BEFORE DEATH.—MONTHS.													
		0.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	
Pneumonia	S. of Lat. 22°	(E.C. (O.,	443 447 434	427 450 571	382 400 530	385 376 500	428 311 377	314 352 464	383 338 301	291 267 472	340 317 340	299 292 436	324 223 382	351 189 445	299 209 300
	N. of Lat. 22°														
Phthisis	S. of Lat. 22°	(E.C. (O.,	97 61 31	173 110 107	166 107 66	139 139 125	151 120 88	253 134 124	188 211 193	255 183 77	251 179 220	194 236 154	186 171 118	255 226 111	333 186 50
	N. of Lat. 22°														
Other Respiratory	S. of Lat. 22°	(E.C. (O.,	42 30 62	50 27 17	60 31 33	45 25 29	72 30 61	113 89 72	52 49 72	43 67 88	76 81 40	90 45 —	29 85 118	11 19 —	11 46 150
	N. of Lat. 22°														
Enteric Fever,	S. of Lat. 22°	(E.C. (O.,	70 71 47	19 88 62	65 84 57	45 97 77	92 132 70	113 67 82	78 85 145	92 117 88	76 106 120	22 90 103	88 74 29	32 57 111	57 93 200
	N. of Lat. 22°														
Diarrhoeal Diseases	S. of Lat. 22°	(E.C. (O.,	47 41 39	77 79 34	60 49 66	20 51 67	26 60 97	27 34 21	7 49 36	21 33 55	42 33 40	15 34 —	49 32 59	43 75 74	— 47 —
	N. of Lat. 22°														
Other Diseases	S. of Lat. 22°	(E.C. (O.,	230 147 341	154 112 141	147 200 114	188 177 192	112 162 228	140 151 175	169 113 193	163 142 143	118 154 180	186 157 179	200 213 206	223 189 185	185 163 200
	N. of Lat. 22°														
Accidents	S. of Lat. 22°	(E.C. (O.,	70 203 46	100 134 113	120 129 74	178 135 10	119 185 79	140 173 62	123 155 60	135 191 77	97 130 60	194 146 127	118 202 88	85 245 174	115 256 100
	N. of Lat. 22°														

TABLE III.

TABLE SHOWING PERCENTAGE NUMBER OF NATIVES WHO—EXCLUDING DEATHS AND DESERTIONS—COMPLETE ONE, TWO, ETC., MONTHS AT WORK;
ALSO NUMBER OF DEATHS AND DEATH-RATES IN NATIVES WHO HAVE WORKED FOR ONE, TWO, ETC., MONTHS.

1 Months at Work.	2. Percentage as Calculated from W.N.L.A. Figures.	3. Percentage used in Calculating Rates Obtained by smooth- ing out figures in preceding column.	4. No. of Deaths in Natives during 1st, 2nd to 24th Month at Work. 1909-1910.	5. Total Death Rate at 1st, 2nd to 24th Month at Work.	6. Pneumonia Death Rate at 1st, 2nd to 24th Month at Work.
1	100	100	626	39.48	17.5
2	96.8	97.8	787	49.62	23.3
3	94.2	94.9	563	37.42	15.8
4	91.7	91.6	543	37.57	15.1
5	86.7	88.1	433	31.15	11.5
6	85.9	83.5	441	33.47	11.8
7	78.8	78.9	379	30.44	10.6
8	72.3	73.0	352	30.58	10.1
9	67.1	67.0	317	29.98	10.0
10	55.5	61.2	262	27.12	8.6
11	53.0	55.4	230	26.30	7.7
12	52.1	49.5	174	22.28	7.1
13	43.6	42.5	150	22.37	6.1
14	35.9	35.14	145	26.16	6.0
15	29.5	29.5	106	22.81	5.8
16	24.1	24.2	67	17.58	5.0
17	19.4	19.1	41	13.62	2.3
18	15.4	15.1	44	18.36	6.7
19	12.0	11.9	29	15.48	3.7
20	9.3	9.2	29	19.92	7.0
21	7.2	7.0	30	27.00	4.6
22	1.8	5.1	39	48.00	11.0
23	.8	4.1	28	43.8	—
24	.3	3.2	27	52.8	—

TABLE IV.

PERCENTAGE TERRITORIAL DISTRIBUTION, AND DEATH-RATE OF NATIVES ON SELECTED MINES.

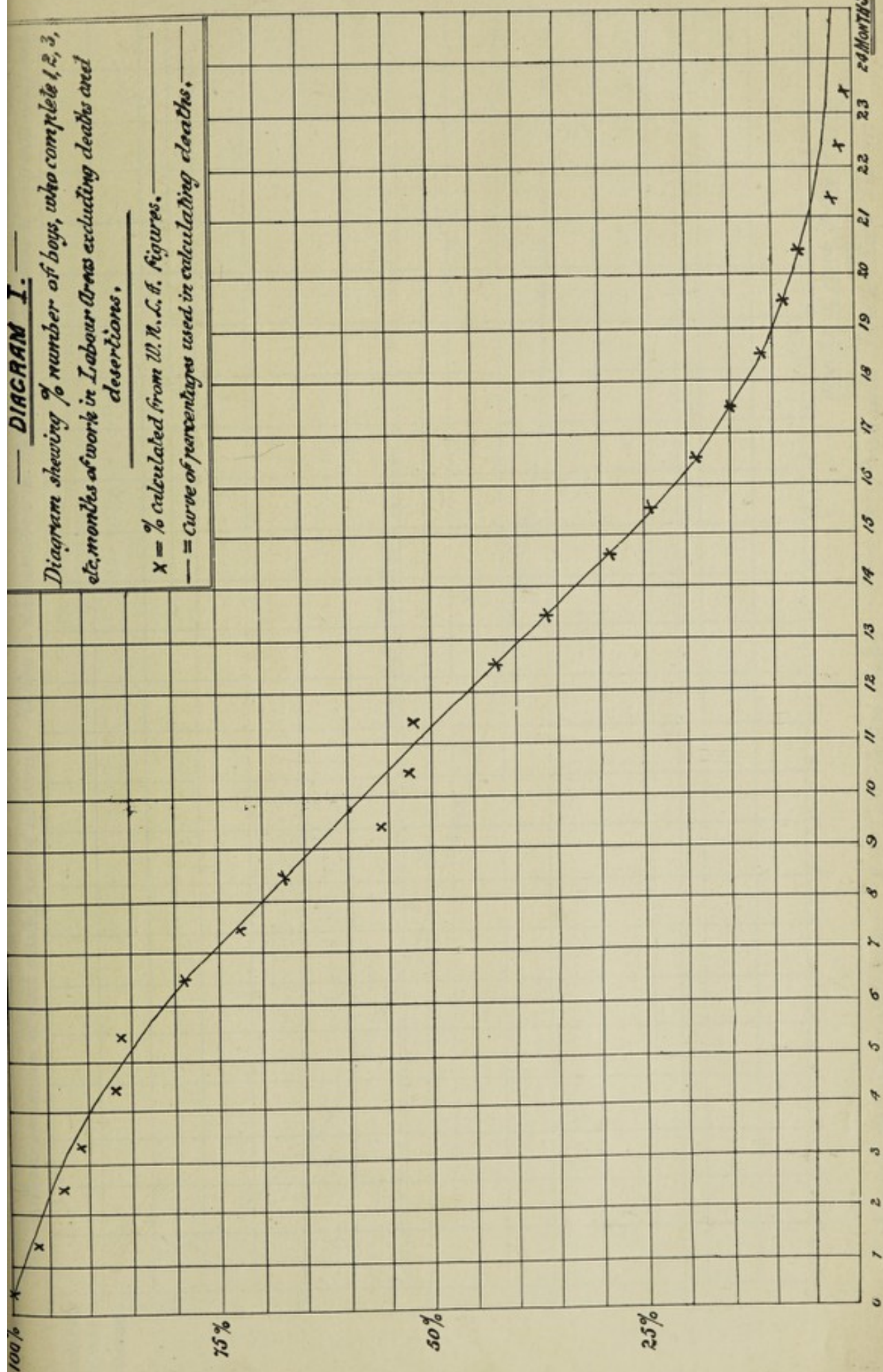
MINE.	East Coast, South of Lat. 22° S.	Others South of Lat. 22° S.	All Tropics, North of Lat. 22° S.	Crude Death Rate.	Crude Death Rate Excluding Acci- dents.	Correction Factor.	Corrected Death Rate Excluding Acci- dents.
Village Main Reef. . .	55.25	39.78	4.97	12.61	11.12	1.0542	11.72
Jumpers Co.	68.74	25.97	5.29	13.22	12.44	1.0554	13.13
Woluter Co.	45.98	50.77	3.25	14.87	13.02	1.0705	13.94
Consolidated Langlaagte	17.42	80.15	2.42	18.75	13.98	1.0692	14.95
City and Suburban . .	64.11	34.73	1.16	19.86	14.32	1.1029	15.79
Jubilee and Salisbury . .	82.01	17.12	0.87	20.31	19.34	1.1139	21.54
Robinson Co.	56.17	40.02	3.81	26.26	20.38	1.0680	21.77
Village Deep	15.03	63.52	21.45	27.66	23.56	0.8843	20.83
City Deep	39.46	56.86	3.68	29.41	23.28	1.0627	24.74
Goldenhuis Deep W. . .	19.20	64.80	16.00	41.33	33.70	0.9313	31.38
Nourse Mines	38.27	44.29	17.44	42.20	39.58	0.9250	36.61
New Goch	59.60	29.69	10.41	44.53	35.94	0.9973	35.84
Simmer & Jack East . .	18.05	9.51	72.44	86.01	81.16	0.6056	49.15

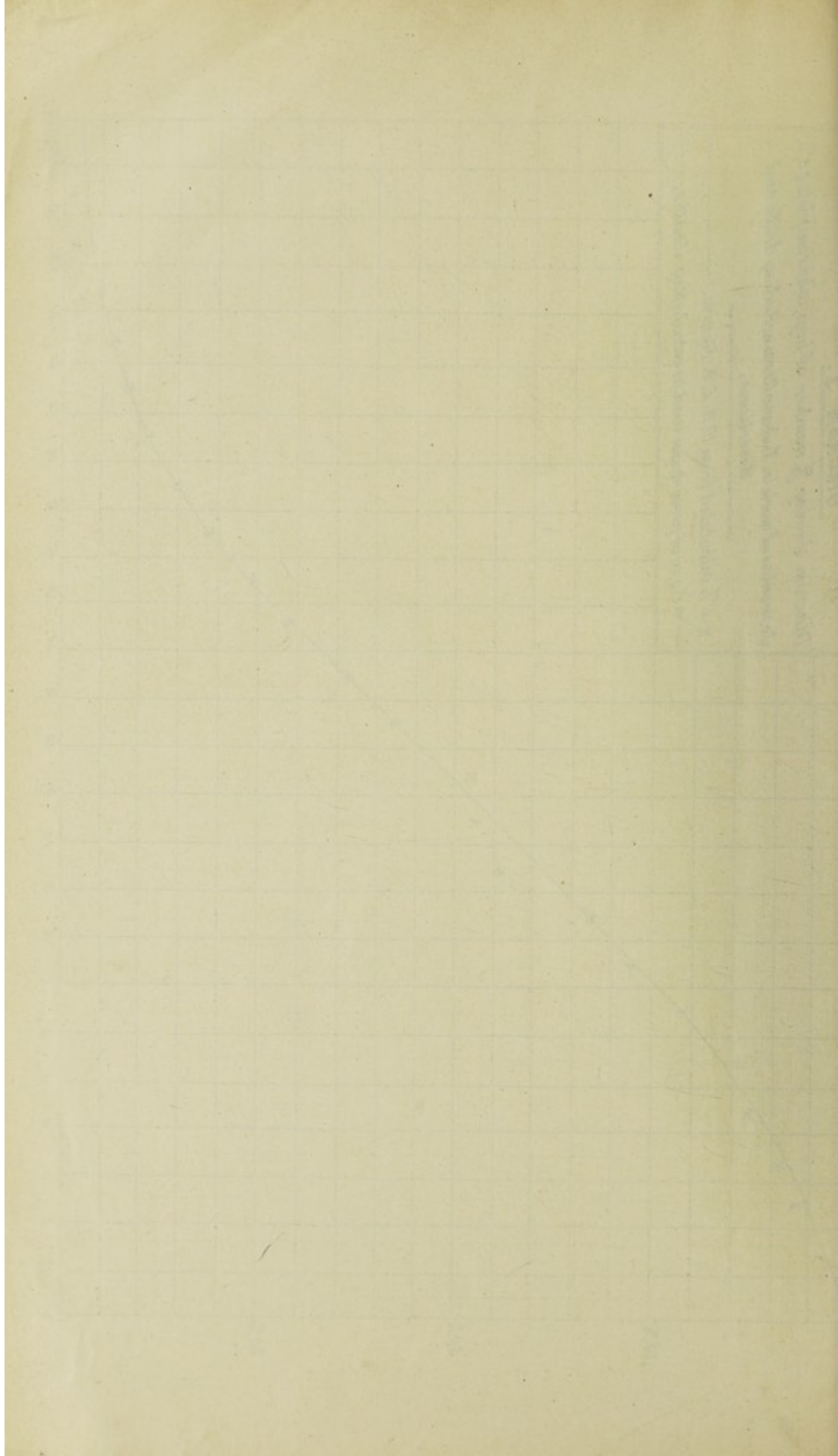
DIAGRAM I.

Diagram shewing % number of boys, who complete 1, 2, 3, etc. months of work in Labour Arms excluding deaths and desertions.

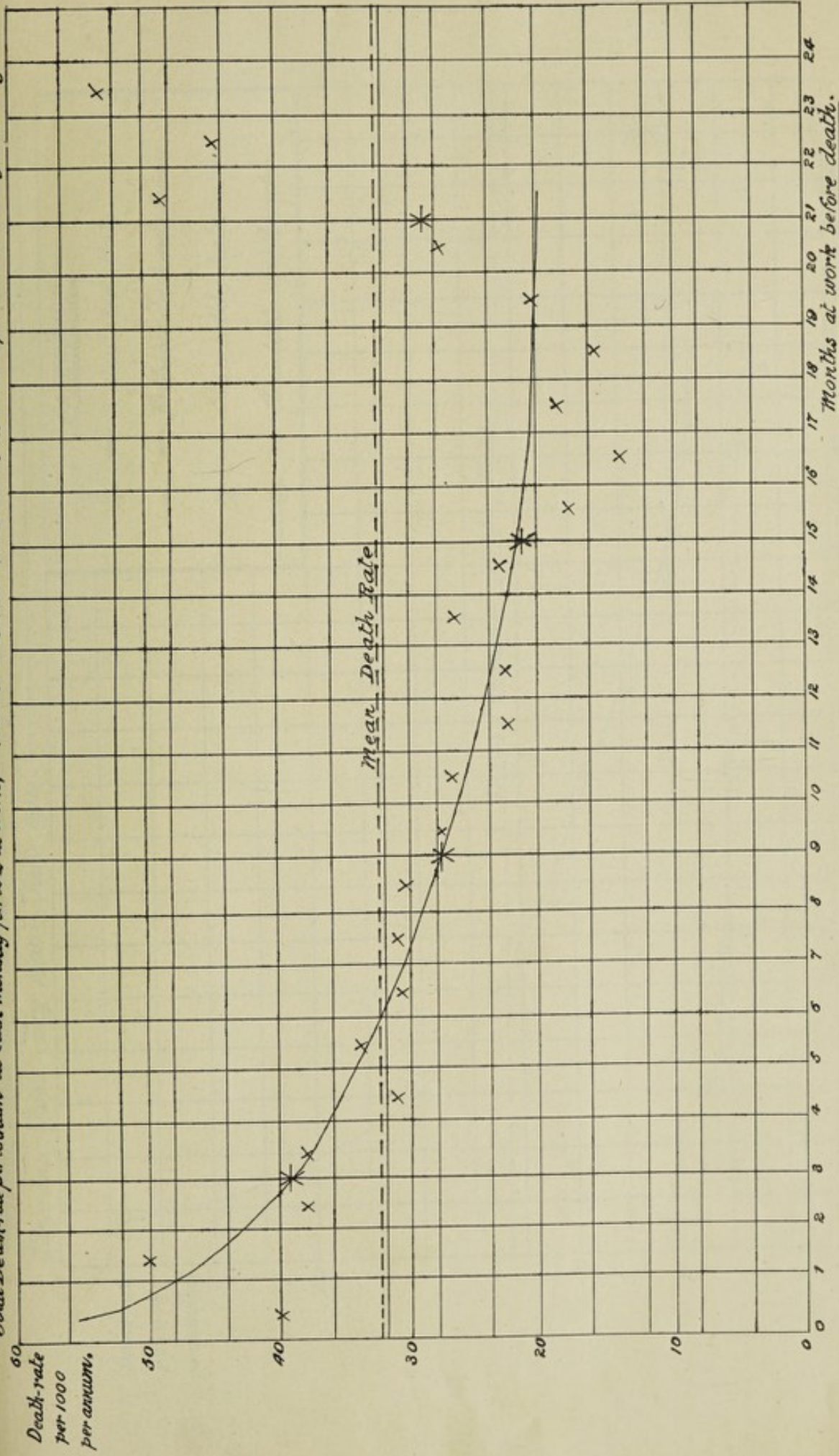
x = % calculated from W. N. L. S. figures.

— = Curve of percentages used in calculating deaths.





Total Death-rate per annum at each monthly period at work; Natives in Labour Areas on Mines & Works, Transvaal at July 1909 - July 1910.



Reference: * = Six monthly-rate. x = Calculated Rate. — = Probable Death-Rate Curve.

DIAGRAM III.

Pneumonia Death-rate per annum at each monthly period at work— Natives in Labour Areas on Mines and Works July 1909— June 1910.

