

Annual report of the Medical Officer of Health / City Council of Pretoria.

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Town Council of Pretoria.

TWENTY-FIFTH
ANNUAL REPORT

of the
Medical Officer of Health,
for the
Year 1928-1929.

PRETORIA,
CAXTON PRINTING WORKS (PROP.), LTD.,

—
1929.



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Municipal Council of Pretoria.

From the MEDICAL OFFICER OF HEALTH.

TELEPHONE 1221

P.O. Box 234.

Pretoria,.....192

WITH THE COMPLIMENTS
OF THE
MEDICAL OFFICER OF HEALTH.

Municipal Council of Hygiene

From the MEDICAL OFFICER OF HEALTH

10th March 1914

1914

Private.....1914

WITH THE COMPLIMENTS
OF THE
MEDICAL OFFICER OF HEALTH.



City Council of Pretoria.

TWENTY-FIFTH
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of the

Medical Officer of Health,

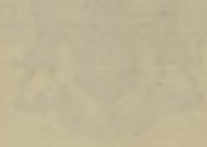
for the

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1929.

WELLS



Council of Physicians

TWENTY-FIFTH

ANNUAL REPORT

of the

Medical Officer of Health

for the

Year 1928-1929

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Introductory Letter.

TO HIS WORSHIP THE MAYOR
AND MEMBERS OF THE TOWN COUNCIL.

Ladies and Gentlemen.

I have the honour to present the Twenty-fifth Annual Report on the state of Health and Sanitary Conditions in the City of Pretoria for the year 1st. July, 1928, to 30th. June, 1929, together with an appendix briefly reviewing what has been accomplished during the Twenty-Five Years 1904—1929.

The Vital Statistics of the European population for the year are again satisfactory.

During the twenty-five years we have to congratulate ourselves on a very great improvement in the sanitary condition of the town, which is definitely reflected in the great diminution in the death rates, particularly those of infants and children aged 1—5 years. The change in the Age and Sex constitution of the population has been very striking.

As regards the Coloured population; although much has been done on their behalf in respect of improved housing and child welfare work, there appears to have been no appreciable reduction in death rates. As stated in last year's Report the reasons for this lack of response appear to be ignorance on the one hand and inadequate financial resources on the other, resulting in a low standard of living, inadequate nutrition, unsuitable clothing and over-crowding. Exclusive of those employed in domestic service who are housed and fed by their employers, a large proportion of the male adults are not in receipt of a living wage, i.e., a wage which can maintain wife and family in decency under urban conditions.

This, the twenty-fifth, is the last report which I shall make to your Council as I retire from the Service in October. In again recording my appreciation of the good work done by the staffs of the Health Department and Isolation Hospital during the year, I desire to express my regret at parting from them and in giving up my work as Health Officer for Pretoria. I would also take this opportunity of thanking the members of the Council, both present and past, for the support and encouragement which they have given me in my efforts on behalf of the public weal. To me this work has been a very great pleasure and of the most absorbing interest.

I am,

Ladies and Gentlemen,

Your obedient servant.

I. J. BOYD,
Medical Officer of Health.

HEALTH DEPARTMENT.

STAFF AS AT 30th. JUNE, 1929.

I. J. BOYD, M.D., D.P.H.	Medical Officer of Health.
W. N. PATON	Chief Sanitary Inspector.
H. W. GREGORY	Sanitary Inspector.
G. E. PARTRIDGE	" "
W. G. GRAHAM	" "
L. DRYSDALE	" "
F. T. E. NICHOLSON	" "
N. L. LLOYD	" "
K. C. J. LUCOUW	Infectious Diseases Inspector.
J. B. FISHER	Dairy Inspector.
L. E. THOMAS	Disinfecting Officer.
S. HEATHER	Health Visitor.
H. E. FICK	District Midwife.
W. WELCH	Chief Clerk.
F. L. THORNLEY	Typist and Record Clerk.
W. G. FUNSTON	Clerk.
L. QUAYLE	Junior.
A. W. THOM	Caretaker: Wash-houses.
C. J. MYBURG	Fly and Mosquito Eradication Work.
J. H. DU BRUYN	Rodent Eradication Work.
R. HERMANUS	Coloured Nurse-Midwife.
J. PAUL	Coloured Nurse.
Six European attendants at Public Conveniences.	

ISOLATION HOSPITAL.

A. F. BREMNER	Matron.
G. M. HUTCHINSON	Nursing Sister.
A. LAWRIE	Nursing Sister.
A. DE KLERCK	Probationer Nurse.
S. SCHOOMBIE	Probationer Nurse.
D. TEN NAPEL	Probationer Nurse.
M. TAYLOR	Cook, etc.

ABATTOIRS.

G. PILDITCH	Superintendent Meat Inspector.
J. L. COETZEE	Assistant Meat Inspector.

ANTI-VENEREAL CLINIC.

A. PIJPER, M.D.	Medical Officer.
----------------------	------------------

Assisted by a trained European Nurse, a trained Coloured Nurse, and a Native Male Orderly.

Town Council of Pretoria.

Twenty-Fifth Annual Report

OF THE

Medical Officer of Health,

YEAR 1st. JULY, 1928 to 30th. JUNE, 1929.

Latitude of Pretoria : 25 degrees, 44 minutes, 30 seconds, South.

Longitude of Pretoria : 1 hour, 52 minutes, 48 seconds, East.

Mean Altitude of Pretoria : 4,480 feet.

Temperature of Pretoria : (From statistics kindly supplied by the Chief Meteorologist, Pretoria).

1928.	Mean Max.	Mean Min.	Highest reading.	Lowest reading.	Rainfall. Inches. Days.
July	70.95	34.7	80.0 on the 16th.	30.4 on the 29th.	— —
Aug.	70.5	39.4	81.7 .. 27th.	31.4 .. 5th.	1.31 on 3 days
Sep.	73.9	48.6	87.7 .. 23rd.	40.1 .. 25th.	0.42 .. 5 ..
Oct.	86.1	54.5	95.8 .. 13th.	40.3 .. 2nd.	2.26 .. 4 ..
Nov.	84.0	58.9	96.0 .. 20th.	48.7 .. 11th.	4.01 .. 13 ..
Dec.	86.2	61.6	97.0 .. 17th.	53.8 .. 2nd.	3.17 .. 9 ..
1929.					
Jan.	83.3	61.5	96.3 .. 4th.	57.3 .. 20th.	6.20 .. 14 ..
Feb.	84.3	59.8	92.2 .. 17th.	49.9 .. 7th.	2.73 .. 8 ..
March	74.3	55.6	86.3 .. 16th.	47.2 .. 26th.	7.39 .. 14 ..
April ..	77.7	48.1	85.0 .. 29th.	40.6 .. 19th.	0.74 .. 4 ..
May	74.8	44.0	84.6 .. 8th.	30.8 .. 30th.	0.48 .. 2 ..
June	68.5	39.9	77.8 .. 14th.	28.3 .. 27th.	0.61 .. 5 ..

29.32 on 81 days.

Area of Municipality :

Exclusive of Town Lands : 16½ square miles.

Inclusive of Town Lands : 40 square miles.

The town is built on and between parallel ranges of quartzite hills running east and west; the soil in the valley being largely shale.

Population.

The European population at the time of the Census in May 1926 numbered 40,995, comprising 20,825 males and 20,170 females.

The population at 31st. December 1928 is estimated to be :

Europeans	43,500
Coloured Persons	23,000

The European population is estimated to be increasing at the rate of approximately 1,000 per annum.

The principal Vital Statistics for the year are:—

	European.	Native.	Other S.A. Coloured.	Asiatics.	All Coloured.	Total.
Population	43,500	19,500	1,825	1,675	23,000	66,500
Birth rate: Corrected for out-ward transfers	22.25	13.64	42.19	63.88	19.56	21.32
Death rate: Corrected for out-ward transfers	7.517	15.487	19.178	22.09	16.26	10.55
Infantile Mortality per 1,000 births	57.85	451.12	168.83	140.19	328.88	143.86
Percentage of illegitimate to total births	3.72	39.1	48.0	4.67	32.44	12.83
Death rate: Tuberculosis (all forms)	0.437	1.436	1.644	1.194	1.435	0.793

Births:

Europeans. There were 1,167 European births reported as having occurred within the Municipal area, but 199 of these infants were born of mothers not resident in the town.

The Pretoria births therefore number 968.

This is a decrease from the previous years' figures of 27. The **European Birth-rate** calculated on the estimated population is 22.25 per 1,000, as compared with 23.24 for the preceding twelve months. Of the total European births 467 occurred in hospitals, 297 of these being children of residents.

The **Coloured** births numbered 464, of which 14 were born to non-resident parents. The Pretoria births therefore numbered 450, being 5 less than in the previous year. They comprise 266 Natives, 77 Eurafricans, and 107 Asiatics. The Coloured birth-rates are: Natives, 13.64 per 1,000; Eurafricans, 42.19; and Asiatics, 63.88 per 1,000.

Rates of **Natural Increase**, being the excess of births over deaths in proportion to population were as follows: European, 14.7 per 1,000; Eurafricans, 23 per 1,000; and Asiatics, 41.7 per 1,000. As regards Natives there were 36 more deaths than births registered. Taking the Coloured population as a whole the rate of natural increase is 3.3 per 1,000, being less than a quarter of the European rate.

Illegitimacy. Thirty-six of the European births were illegitimate, being 3.7 per cent. of the total births. The average rate for the previous five years is 4.5 per cent.

Deaths: There were 1,064 deaths certified during the year. Of these 206 Europeans and 157 Coloured Persons were inmates of hospitals and other institutions and had not been resident in the Municipality prior to admission to such institutions. These include deaths of 116 Europeans and 84 Coloured Persons in General and Private Hospitals, and of 76 European and 46 Coloured Persons in the Mental Hospital.

There remain 701 deaths, giving a death rate on the total population of 10.55 per 1,000, as compared with 12.31 for the preceding twelve months.

The deaths in the various races were European 327, Native 302, Eurafrican 35, and Asiatic 37. In all races the figures are considerably lower than in the previous year.

The **European Death Rate** is 7.517 per 1,000, as compared with 8.6 per 1,000 in the previous year. When corrected for age and sex by the factor supplied by the Census Department the rate becomes 8.1 per 1,000.

The **Coloured Death Rates** are: Native, 15.487 per 1,000; Eurafrican, 19.178 per 1,000; Asiatic, 22.09 per 1,000; and All Coloured 16.26 per 1,000, as compared with 19.17 in the previous year.

The subjoined table gives a comparison with England and Wales:—

ENGLAND AND WALES.

Birth Rate, Death Rate, and Infantile Mortality during the Year 1928. (Provisional figures.)

	Live Births per 1,000 Population	Deaths per 1,000 Population. (Crude Rate.)	Deaths under one year per 1,000 Live Births.
England and Wales (on 1928 estimated population)	16.7	11.7	65
107 County boroughs and great towns, including London (on 1927 estimated population)	16.9	11.6	70
156 Smaller towns (populations from 20,000 to 50,000 in 1921)—(on 1927 estimated population)	16.7	10.6	59
London (on 1927 estimated population)	15.9	11.6	67

The death rate for England and Wales relates to the whole population, but that for London and the two groups of towns to the civil population only.

The birth rate for England and Wales is 0.1 per 1,000 above that of 1927. The death rate is 0.6 per 1,000 below that of 1927, and only 0.1 per 1,000 above the lowest recorded (1923 and 1926). The infant mortality rate is the lowest on record, 4 per 1,000 births below that of 1923.

INFANTILE MORTALITY.

The total number of infants who died before the end of their first year of life was 222. Of these 71 were Europeans and 151 were Coloured infants.

Fifteen of the European and three of the Coloured infants either belonged to mothers from the country who had come to town for confinement and died from congenital causes, or were brought to Pretoria already suffering from the disease which caused death. There were therefore 56 European and 148 Coloured infantile deaths belonging to Pretoria, and on these figures the rates are based.

Europeans.—The European Infantile Mortality Rate for the year is 57.85 per 1,000 births. This is slightly below the rate for the previous year which was 61.3 per 1,000, but is not such a good rate as has been recorded. For the year 1926-1927 the rate was 48.48 per 1,000.

Of the 56 deaths no less than 25 were due to congenital causes; 15 were due to diarrhoeal disease; 10 to broncho-pneumonia; 4 to infectious diseases; and 2 to other causes.

Congenital Causes give a mortality rate of 25.8 per 1,000. With one exception these deaths occurred under the age of one month. 14 of the deaths were due to premature birth; 8 to congenital defect and 3 to injury at birth. In a large proportion of the cases the health of the mother was poor.

Diarrhoeal Disease gives a rate of 15.4 per 1,000. Four of the deaths occurred under 3 months of age; seven between 3 and 6 months; and four over 6 months.

Three of these infants were wholly breast-fed, the others were partly or wholly artificially fed. In five instances the child had not been seen by the Health Visitor—two of these having been born outside.

Seven of these deaths were in the Central area, four being in Good Hope. There were 4 in Pretoria West and three in Railway Reserve. Only one death occurred in the Eastern suburbs.

Broncho-Pneumonia. Five of the deaths were in the Central Area. Three were infants under 6 weeks, with some degree of congenital defect.

Infectious Diseases. Three of the deaths were due to whooping cough and one to diphtheria.

European Stillbirths numbered 26, as contrasted with 22 in the previous year.

District Infantile Mortality (vide Table No. 3). Rates over 100 were recorded in Good Hope and Railway Reserve, the latter being largely accounted for by congenital deaths. The rates in the Central Area (other than Good Hope) are low, particularly in North-West Central. Pretoria West also shows a good rate (51.72). In Riviera and New Muckleneuk there were no infantile deaths, and in Arcadia and Hatfield the rates are under 40 per 1,000.

Deaths at Age 1—5 Years. There were eighteen deaths at this age. This figure, though much lower than the previous year (27) is distinctly above the average of recent years. Six of these deaths were due to infectious diseases, viz.: typhoid fever (1); scarlet fever (2); diphtheria (2); influenza (1). Five were due to broncho-pneumonia. Three were due to diarrhoeal disease, two to accident, and two to other causes.

Report of Health Visitor (Miss S. Heather).

The following visits were made:—

First visits to newly-born infants	629
Subsequent visits to these infants	1,891
Special visits to sick children	124
Deaths under five years investigated	83
Stillbirths investigated	26
Puerperal septicaemia cases investigated	9
Ophthalmia cases investigated	4
Erysipelas case investigated	1
Inspection of premises where protected infants are taken	2

Child Welfare Bureau: This Bureau has been open on Tuesday and Friday afternoons as usual during the year. 287 Mothers have visited it with their babies (291) for weighing and advice, paying in all 1,629 visits.

Visits to Child Welfare Bureau divided into Districts:—

District.	Mothers.	Babies.	Visits.
Town, S.W. Central	26	27	171
Town, S.E. Central	60	60	367
Town, N.W. Central	35	35	157
Town, N.E. Central	30	30	186
Good Hope	8	8	28
West End	33	33	173
Railway Reserve	9	10	32
Prison and Barracks	4	4	6
Sunnyside	28	28	219
Arcadia	18	19	99
Hatfield	7	8	71
Brooklyn	2	2	37
Riviera	9	9	23
Muckleneuk	3	3	6
Roberts Heights	1	1	1
Outside Areas	14	14	53

Three of the babies who visited the Bureau have died during the year: one had paid one visit, one had paid three visits and was ill when brought, and one had paid five visits and was also ill when brought.

During the year 93 women in poor circumstances have been supplied with milk for periods varying from one to twelve months.

1,452 Tins of dried milks (Lactogen and Glaxo) were sold at cost; 29 tins were sold at less than cost, and 73 tins were given free.

200 Lbs. of Virol were sold at cost and 70 lbs. were given free.

110 Tins of Lactagol were sold at cost and 100 tins were given free.

20 Bottles of Cod Liver Oil were given free.

A large number of mothers are using Lactagol and find it very useful in increasing the flow of milk.

District Midwife (Miss H. C. Fick) :—

Miss Fick was appointed to this new post and took up her duties on the 15th. January, 1929. In addition to the work of a midwife she assists the Health Visitor in Child Welfare Work.

Midwifery cases attended, 5. Women unable to pay full fees only are attended. Pupil midwives from the two maternity hospitals accompany the District Midwife and in this way obtain part of their training.

The number of cases attended so far is small, and it will be some time before the work is fully established. Application has been made to the S.A. Medical Council to make Pretoria Municipality a "proclaimed area," within which only registered midwives will be allowed to practice. If the application is granted, uncertificated and otherwise unsuitable women can be debarred.

Coloured Children :—

The deaths of Coloured children under 1 year of age numbered 148, comprising 120 Natives, 13 Eurafricans and 15 Asiatics.

The Native infantile mortality rate is 451.12 per 1,000. 33 of the deaths were due to diarrhoeal disease, 39 to bronchitis and pneumonia, and 36 to congenital causes.

Eurafricans: The infantile mortality rate is 168.8 per 1,000, which is just above last year's rate of 163.2. If allowance were made for the fact that the number of births this year is only 77 as compared with 98 in the preceding year, the rate would be still more favourable.

There were only two deaths due to diarrhoea, seven to bronchitis and pneumonia, and three to congenital causes.

Asiatics: The infantile mortality rate is 140.19 per 1,000. Four of the deaths were due to diarrhoea, four to bronchitis and pneumonia, and five to congenital causes. The rate is considerably better than that of the previous year (166.67 per 1,000).

Age 1—5 Years. There were 62 deaths at this age period. Of these 57 were Natives, 4 Eurafricans and one Asiatic.

Of the Native deaths, 26 were due to diarrhoeal disease and 18 to bronchitis and pneumonia.

Of the Eurafrican deaths, 2 were due to broncho-pneumonia, one to diarrhoea and one to measles.

The Coloured Nurse-Midwife (Hermanus) employed by the Council carried out the following work :—

First visits to newly-born infants	41
Subsequent visits to these infants	930
Special visits to sick children	154
Deaths under 5 years investigated	9
Confinement cases attended	89

Nurse Hermanus attends at the Child Welfare Bureau in the Locations every Wednesday afternoon.

The fact that for two successive years the Eurafrican infantile mortality has been below 170 per 1,000 and the small number of deaths at age 1—5, may I think be taken as an indication that some reward is at last being obtained for the large amount of work that has been done for the benefit of these children in recent years, both by the Municipal Health Department and by the Child Welfare Society.

Report of Coloured Nurse (Paul).

First visits to newly-born infants	75
Subsequent visits to these infants	1,402
Special visits to sick children	85
Deaths under 5 years investigated	36
Stillbirths investigated	2
Ophthalmia case investigated	1
Septicaemia cases investigated	2

This nurse also attends at the Municipal Compound Hospital every morning, where Coloured and Native children are attended by the M.O.H., and at the Venereal Clinic for women and children. She also assisted in the work of the Isolation Hospital for some weeks during a period of pressure.

Infant Welfare Bureaux Conducted by the Child Welfare Society.

There are three such bureaux in Pretoria, two for European and one for Coloured children. Those for Europeans are conducted at Bloed Street School and at the Wesleyan Church, Pretoria West, whilst that for Coloured children is held in the Cape Location. The Municipal district midwives—European and Coloured—attend these clinics regularly.

Each bureau caters for the district in which it is situated; and names of parents of all new-born infants are regularly supplied by the Health Department to the lady in charge. The mothers of these infants are visited and invited to attend the nearest bureau and to bring their babies for weighing, etc.

Attendances at the bureaux are well maintained, there being 1,047 at Bloed Street and 171 at Pretoria West during the year. The work at the West End Bureau was unfortunately interrupted by a slight outbreak of mumps at the Children's Shelter, and which incidentally led to the removal from the shelter to the new venue at the Wesleyan Church in Church Street.

When an infant fails to make its regular appearance enquiry is made into the cause of absence, and where this is found to be due to sickness the matter is at once reported to the Medical Officer of Health. A similar report is made regarding those infants who do not appear to be thriving properly.

The bureaux work also includes the sale of layettes, or the material for making them at reduced prices. In a few cases layettes are given free. The making of layettes is supervised by members of the Society at the bureau.

All this work is a most useful supplement to the Child Welfare work done by the Health Department, and the co-operation of the Society is very much appreciated.

Deaths at Ages over Five Years.

These numbered 417, being 253 Europeans, 125 Natives, 18 Eurafricans, and 21 Asiatics.

The reduction in the number of European deaths at these ages as contrasted with the previous year's figure is 28, and the reduction in Coloured deaths amounted to 20.

The principal causes of death were:—

	EUROPEAN.		COLOURED.	
	1928-9.	Yearly average for 5 years. 1925-1929.	1928-9.	Yearly average for 5 years. 1925-1929.
Cancer	24	27.6	3	3.2
Heart disease	42	37.6	14	17.6
Pneumonia	9	12.0	26	25.4
Bronchitis and Bronchopneumonia	17	12.4	15	18.4
Influenza	3	9.0	3	7.8
Typhoid fever	4	3.4	10	8.8
Tuberculosis	19	11.2	30	25.0
Cerebral haemorrhage	12	10.2	3	3.0
Kidney disease	13	13.6	3	4.6
Appendicitis	6	4.4	1	1.2
Diseases of arteries	7	7.8	—	1.2
" " liver	6	4.8	1	1.6
" " parturition	4	4.4	3	4.4
Old age	6	7.4	8	6.2
Suicide	7	7.2	1	2.4
Accident	11	14.6	6	5.4

Cancer.—Of the 24 European deaths 21 were at ages over 45 years.

The death rate per 1,000 of the European population is 0.55.

Seven of the deaths were due to cancer of the stomach, in three the disease was in other portions of the alimentary canal, in two it was in the breast, and in two it was in the uterus.

In Coloured persons two of the deaths were in Natives, and one in a Eurafican.

Heart Disease.—The European death rate is 0.96 per 1,000, which is just about the average of the preceding six years. Thirty-five of the deaths were in persons over 45 years of age.

The number of deaths in Coloured persons is below the average.

Influenza.—The number of deaths is considerably below the number recorded in recent years.

Pneumonia and Bronchitis.—The number of deaths in Europeans is the same as last year. Twenty-one of the twenty-six deaths were in persons over 45 years of age. In Pretoria pneumonia is no longer the scourge of the young adult that it used to be. The number of deaths in Coloured persons is about the average. In Natives very few of the deaths were in persons over 45 years of age.

Apoplexy (Cerebral Haemorrhage).—The number of deaths was above the average. In Europeans, with one exception, all were over 45 years of age.

Diseases of Parturition.—In Europeans the number of deaths is rather above the average, and gives a rate on the total number of births of 4.13 per 1,000. The average rate for the six years 1923-1929 is 3.12. Two of the deaths were due to puerperal sepsis, and two to other puerperal causes.

Puerperal Septicaemia.—Thirteen cases were notified, but three of these had been brought into town after the onset of the illness. Of the ten local cases nine were Europeans, and two of them proved fatal.

In two instances septicaemia followed miscarriage, in six it followed delivery at full time, and in one instance no particulars could be obtained. One of the fatal cases followed miscarriage. No instruments were used in any of these cases. In one case there had been adherent after-birth.

Most of the cases occurred in poor quarters of the town.

The two other maternal deaths were due to extra-uterine pregnancy and to difficult labour due to contracted pelvis respectively.

Coloured Persons.—There were three deaths, giving a rate of 6.2 per 1,000 births. All these deaths were in Natives. Two were due to puerperal septicaemia and one to other causes.

The average Coloured maternal mortality for the five years 1923-1928 is 10.3 per 1,000. These deaths were confined to Natives and Indians. There were none in Europeans.

Tuberculosis.—The number of deaths, viz. 19, in Europeans is considerably above the average of the previous five years which is approximately 9.5. The number of deaths in Coloured persons is about 25 per cent above the average.

Notification of Cases.—During the year 45 notifications were received, but nine of these had been brought into town for treatment. Of the 36 local cases 15 were Europeans and 21 were Coloured persons.

Europeans.—Only nine of the cases were pulmonary tuberculosis, the other six being tuberculosis of bones, glands or joints. Of the pulmonary cases seven, including one very doubtful case appeared to have contracted the disease in Pretoria.

Coloured Persons.—With one exception these were all cases of pulmonary tuberculosis. Fifteen of the cases had apparently contracted the disease in Pretoria.

Deaths. Europeans.—Ten of the cases had been notified some time before death,—in eight instances from one to three years before. Three of the cases had been treated at Nelspoort Sanatorium. Of nine deaths in persons not previously notified, four were cases of miners' phthisis, one was a case of meningitis in a child, and in one of the other cases infection had been contracted outside Pretoria.

Deaths. Coloured Persons.—Nine of the cases had been notified prior to death, but only a few days or weeks before the fatal issue. These have been dealt with under notifications.

As regards the twenty-one deaths in persons not previously notified, nineteen were Natives and two were Indians. Six of these were persons not belonging to Pretoria.

There were also eight deaths of persons previously notified which occurred outside of Pretoria.

Action Taken.—When a case is notified the premises are inspected and advice is given regarding precautions to be adopted, unless the medical practitioner in charge considers a visit undesirable and is himself prepared to give the necessary advice.

Of the European cases eleven were admitted to Pretoria Hospital, three were sent to Nelspoort Sanatorium and one to Springkell Sanatorium.

As regards Coloured persons, notifications are usually received so late that no useful action can be taken. Thirteen of these cases were admitted to Pretoria Hospital.

Accident and Suicide.—The number of European deaths from these causes was eighteen. This is about the average number in recent years, but is much below last year's figure of thirty-three. Of these deaths seven were due to suicide and eleven to accident. There were also two deaths due to accident in children under five years of age, making a total of thirteen. Of these thirteen deaths four were due to motor cycle accidents, four to motor car accidents, three to railway accidents, whilst the other two were due to drowning and poisoning respectively.

In Coloured persons there were eight such deaths, but only one of them was due to a motor accident. Three of the deaths in children were due to burns.

INFECTIOUS DISEASES.

Typhoid Fever.—The total number of cases notified during the year was 165. Of these, however, 78 had been imported into the Municipal area after the onset of illness for the purpose of treatment, 73 being admitted to the Pretoria Hospital. These cases came

from the following districts, viz.: Innesdale 18, Daspoort 20, Pretoria North 2, Brits 12, from the country 24, and from the Cape Province 2. Of the other 87 cases, being 44 Europeans and 43 Coloured persons, ten Europeans and four Coloured persons had been infected outside the Municipality.

There remain 73 cases, comprising 34 Europeans and 39 Coloured persons in which infection may have occurred locally.

As regards Europeans this figure—34 locally infected cases—compares favourably with the corresponding figures for the two preceding years which are 44 and 62 respectively.

On the other hand the figure for Coloured Persons is much higher than it was in the two preceding years which showed 14 and 23 respectively.

The number of deaths in residents of the town was 15, comprising 5 Europeans and 10 Coloured persons.

The attack and death rates are as follows:—

	Europeans.	Coloured Persons.
Attack rate (local cases)	1.01 per 1,000	1.87 per 1,000
Death rate do.	0.114 per 1,000	0.43 per 1,000

Seasonal Distribution of Local Cases.—(Vide Table 14.)

Of the 87 cases 43 occurred during the three months December-February, which is the warm, rainy season. This is the usual thing, the spread of the disease being apparently favoured by these meteorological conditions.

Europeans.—As regards the Age and Sex of Europeans (v. Table No. 11) 26 were males and 18 were females. Fifteen were under 10 years of age, twenty were under 15 years, twenty were aged 15 to 45 years, whilst four were over 45 years.

The reduction in the number of cases as compared with the preceding year was in persons under 15 years and over 45. There has been an increase of 5 at age 15 to 45 years.

DISTRICT DISTRIBUTION.

Seven of the locally infected cases were secondary to previous cases in the same houses, and there were 27 primary cases. Of these one was an inmate of the Mental Hospital; 11 cases occurred in Central Area; 6 in West End; 3 in Arcadia; 2 in Sunnyside; and 1 case in each of the following districts, viz.: Hatfield, Riviera, Prison Reserve and Good Hope.

Central Area.—Of the cases here, one was really a sequela of Typhoid Fever. Two cases had probably been infected outside. Six of the cases were children under 14 years. The houses in this area are practically all on the water-carriage drainage system.

West End.—One of the cases had possibly been infected outside. One case was infected from a carrier in the family. In one other instance there had been a previous case in the house (different family) within the last six months.

As regards the 10 cases in other localities, one had probably been infected outside, and two were due to infection from Native servants who were proved to be carriers, the bacillus typhosus being found present in stools or urine.

Coloured Cases.—Of the 39 locally infected cases 9 were secondary to previous cases in the same houses. The cases were distributed as follows, viz.: Asiatic Bazaar, 9 primary and 6 secondary; Marabastad, 7 primary; Cape Location, 3 primary and 3 secondary; New Muckleneuk Compounds, 3 primary; Schoolplaats, 2; Bantule, 1; Municipal Compound, 1.

There were only 2 Coloured cases in the European area of the town, both probably infected outside. One case occurred at Pretoria Hospital and one was not traced.

The sanitary conditions of the affected premises in the Locations were in most instances unsatisfactory. In the Locations only four cases occurred on sewered premises. The crowding on areas which prevails in the Indian Location, where there are often six or more families using a common yard and common latrine is calculated to promote the spread of infection. This matter is dealt with more fully under "Locations" (page 29).

Action taken comprised: (a) Anti-typhoid inoculation; (b) removal of 58 cases—26 Europeans and 32 Coloured persons—to hospital; and isolation of the others at their own homes; (c) tracing missed cases and carriers and dealing with these; (d) disinfection of premises and bedding; (e) attention to sanitary defects.

(A) **Anti-typhoid Inoculation** by the Besredka method in which the dead typhoid bacilli are administered by the mouth was carried out on a fairly large scale.

Prior to the onset of the typhoid fever season, in September 1928, the Besredka pills were supplied to all houses in the extreme Western area of the town, this being one of the areas in which typhoid fever is specially prevalent. About 1,700 Europeans and 200 Natives were thus dealt with. Pills were also given to about 600 persons resident in houses or on stands in the Locations where a case had been notified. 278 Pills were given to Hospitals for the use of their staffs.

A certain number of failures have to be recorded. Four house contacts who had received pills developed the disease in spite of the inoculation.

(B) **Removal of Cases to Hospital.**—Apart from imported cases, which with three exceptions were all admitted to hospital, 58 of the 87 local cases were removed to hospital. The others were isolated at home and kept under observation. In houses not on the sewerage system a special infectious sterco pail was provided.

(C) Ten persons were examined as being suspected "carriers," and three were found to be so. The Native carriers were removed to the Isolation Hospital for treatment, and after discharge were returned to their kraals. The European carrier was treated at home.

The large number of cases which occurred in the Locations is noteworthy. In my opinion the existing drainage arrangements in the Locations are the most important factor in the spread of the disease. I would most strongly urge that the whole of the Asiatic Bazaar and the Cape Location be provided with water-carriage drainage in the immediate future.

Scarlet Fever.—252 Cases of this disease were notified during the year. The epidemic prevalence began in the last quarter of the year 1927-1928, 108 cases being notified in the months April-June 1928. In the first half of the year under review 165 cases were reported, and 85 in the second half. All cases were Europeans.

Five of the cases were imported, and in five other instances infection had occurred outside the Municipal area. Of the 242 cases infected locally 201 were primary and 41 were secondary to previous cases in the same houses. These latter include a nurse infected at the Isolation Hospital. A few of the primary cases were of a doubtful character and probably were cases of German measles which was prevalent from July to September.

The primary cases were distributed as follows: Central Areas 56, West End 36, Arcadia 34, Sunnyside 21, Railway Reserve 17. Certain schools were particularly affected, viz.: Arcadia 17 cases, Gymnasium 10 cases, Pretoria West Afrikaans 6 cases, and Hamilton 7 cases. For a more detailed distribution of the local cases see Table No. 13.

Secondary Cases.—Of 144 susceptibles under 16 years where the primary case was kept at home 27 developed the disease, whilst of 141 susceptibles where case was removed to Hospital 14 developed the disease.

There were five deaths from the disease.

Age Distribution (vide Table No. 11.)—221 of the cases were children under 15 years of age, the period 5—10 years being most heavily affected with 126 cases. There were only 27 cases aged 15 years or over.

Action taken was on the usual lines. 130 of the cases were removed to the Isolation Hospital. The other cases were quarantined in their own homes, printed instructions being issued to parents and frequent visits made by the Inspector to see that regulations were carried out. Disinfectants were supplied during the course of the illness, and terminal disinfection of rooms, bedding and clothing was carried out on removal of the case to hospital or on its release from quarantine at home.

Diphtheria.—There were 33 cases notified, but ten of these had been imported into the town after the onset of illness. There were therefore 23 local cases, being 22 Europeans and one Coloured person. This is about the average number per annum.

Two of the cases had been infected outside the town. Two other cases proved not to be diphtheria. Of the remaining 19 cases 7 occurred in the Central area (including Good Hope), 5 in the West End—four of these being closely associated with each other—, 2 in the Railway Reserve, and one in the Asiatic Bazaar.

In several instances the sanitary conditions of the affected premises were not satisfactory.

There were five deaths from the disease in residents of the town, four being Europeans and one a Native.

Action taken.—Twenty cases, inclusive of all imported cases, were removed to the Isolation Hospital. The other cases were kept in quarantine in their own homes. Several swabs were taken from the throats of persons associated with cases, but all proved negative. All children in one class at the Burger-right School—where two cases occurred—were examined by the Medical Officer of Health with negative results.

60,000 Units of anti-toxin were issued to medical practitioners for use in notified cases.

Cerebro Spinal Meningitis.—Eleven cases were notified. Four of these, being three Europeans and one Coloured person were imported. The seven local cases comprise three Europeans and four Coloured persons.

Europeans.—Two of these had probably been infected outside the Municipal area. The third was a child in the West End.

Coloured Persons.—Three Natives and one Indian. None of the cases were associated with each other.

Eight of the cases were admitted to the Isolation Hospital, and one (a hospital nurse) was treated at the Pretoria Hospital.

There were three deaths from the disease in local residents, being one European and two Coloured persons.

Malaria.—Fifty cases were notified, of which thirty-three were imported or had been infected outside the Municipal area. This leaves only seventeen cases in which infection may have been contracted locally, and in several of these it is possible that infection was contracted outside. Sixteen of the local cases were Europeans and one was an Indian. A large proportion of the local cases were near spruits and/or railway lines.

Measles.—79 Cases were notified during the year, as contrasted with 564 in the previous year. Eleven of the cases were imported or had been infected outside the Municipal area. Of the 68 locally infected cases 13 proved to be German measles which was very prevalent in the town during August and September. Eight other cases were very doubtful in character. Of the 47 genuine cases 32 were Europeans and 15 were Coloured persons.

In the houses in which the European cases occurred there were 38 susceptible children. Of these 23 developed the disease constituting secondary cases.

Most of the European cases occurred in the first quarter of the year, viz.: July—September, whilst the Coloured cases were chiefly in the period April—June 1929.

There was only one death from the disease, this being a Eurafrican child.

Whooping Cough.—287 Cases were notified. Of these eight had been infected outside the Municipal area.

Of the 279 locally infected cases 266 were Europeans and 13 were Coloured persons. The disease was particularly prevalent from July to November during which period 234 cases were notified. In the seven months December 1928—June 1929 only 53 cases were notified.

Europeans.—137 of the notified cases were children under school age, whilst 114 were children attending schools. There was comparatively little extension of the disease in the schools on the whole. The exceptions were Burger-right school 21 cases, Arcadia 15 cases, Hamilton 12 cases, Brooklyn 12 cases, and East Central 10 cases.

The districts chiefly affected were Arcadia 40 cases, Hatfield 39 cases, Pretoria West 38 cases, Sunnyside 28 cases, whilst in the Central area, including Good Hope, there were 81 cases.

In the houses where European cases occurred there were 312 susceptible children of whom 250 developed the disease.

During the height of the outbreak the "Grades" at Eendracht, Hamilton, Hatfield, and Burger-right schools were closed for three weeks, namely from the 18th September to the 8th October.

Coloured Persons.—All of the cases were children under school age: nine of them were in the Locations.

There were seven deaths from the disease, three in Europeans and four in Natives.

Malta Fever.—Only one case was notified and that was imported.

Anterior Poliomyelitis.—Two cases were notified, viz.: One European child in Hatfield and one Native in Marabastad.

ANTI-VENEREAL CLINICS: REPORT OF MEDICAL OFFICER, Dr. A. PIJPER.

(a) **European Clinic.**—The number of new patients seen during the year was 151, of whom 92 were males and 59 were females. Of the males 40 had gonorrhoea and 52 had syphilis, whilst for the females these figures were 7 and 52 respectively.

The total number of attendances was 1,290, of which 873 were by males and 417 by females. Most of the patients were adults, children with congenital syphilis comprising only about ten percent of the total number.

During the year 211 blood tests were performed, and 133 microscopic examinations. The number of persons visiting the clinic just for the purpose of having venereal disease excluded in their case is still increasing. Local doctors also make use of this clinic by sending their patients for this purpose.

The total number of salvarsan injections given was 651, of which 314 were given to males and 337 to females.

On the whole the patients attended quite regularly, and during the year 25 patients with syphilis and 17 with gonorrhoea could be discharged as definitely cured. In about an equal number of cases clinical cures were obtained.

(b) **Natives and Coloured Persons.**—Altogether 989 new patients were seen, being 341 males and 648 females. A large proportion of these were children mostly with congenital, but also often with early acquired syphilis.

Gonorrhoea was seen in 42 new male cases and in 3 females. All the other cases were syphilitic, sometimes combined with soft sores.

The total number of attendances was 4,181, of which 1,336 were by males and 2,845 by females. A fair number of patients attend very regularly and can be cured, but there are many who do not realise the advantages of regular attendance. It must be remembered, however, that the facilities of these people for attending the clinic cannot be compared with those of Europeans.

Bloodtests during the year numbered 833 and microscopic examinations 29.

The male patients received 1,000 injections of salvarsan, and females received 2,389, making a total of 3,389.

Many persons also come to this clinic to be examined in order to exclude venereal disease in their case.

DENTAL CLINIC.

The following work was carried out at this clinic, which is housed in the Health Department offices, during the year:—

	Patients.	Extractions.	Fillings.	Dentures.
Adults	1,454	2,840	73	32
Children	1,923	1,914	2,122	3
	—	—	—	—
Total	3,377	4,754	2,197	35

For some time past both the Municipal and Provincial Authorities have been considering the advisability of extending the usefulness of this Clinic. Thus at the beginning of 1929 a full time Dental Surgeon and full time qualified Nurse-Secretary were appointed. This step of course necessitated an increase in expenditure which has been met by the Town Council increasing their grant from £150 to £435, and by a grant from the Provincial Government of £600.

The duties of the Dental Surgeon include regular visits to all primary schools in the Pretoria area for the purpose of examining all scholars for dental defects. There are 31 such schools with a total of 9,500 pupils, and all have been examined for dental caries and other dental defects. Of these children 62 per cent. required dental attention.

The Receipts and Expenditure for the year are as follows:—

Receipts.		Expenditure.	
Fees	£142 4 0	Mechanical charges and Dental supplies	£94 5 0
Grant-in-aid, Town Council	250 0 0	Salary: Nurse-Secretary	196 0 0
Provincial Council	300 0 0	" Dental Surgeon	420 0 0
		Bonus: Late Secretary	2 10 0
	<hr/>		<hr/>
	£692 4 0		£712 15 0

ISOLATION HOSPITALS.

These hospitals are situated on the Western Town Lands, and provide accommodation for twenty-six European and twenty-two Coloured patients. The hospital proper is a modern building of brick construction, whilst the buildings set apart as a lazaretto are of older construction. There are also the usual outbuildings.

During the year a number of improvements were effected, including the provision of a fully equipped operating theatre.

The staff at 30th. June 1929 consisted of a matron, two trained and three probationer nurses, and two European and five Coloured servants.

There were 199 cases treated during the year, being:—

Remaining at 30th. June 1928:	European.	Coloured.
Scarlet fever	21	—
Admitted during the year:		
Scarlet fever	130	—
Cerebro spinal fever	6	3
Diphtheria	19	1
Encephalitis	1	—
Typhoid fever carriers	—	4
German measles	2	—
Whooping cough	1	—
Measles	2	5
Tuberculosis	—	1
Enteritis	1	—
Quinsy	1	—
Chickenpox	—	1
Remaining at 30th. June 1929:		
Scarlet fever	9	—
Chickenpox	—	1

Twenty-four of the cases were admitted from outside districts, namely five cases of scarlet fever from Pretoria district, two from Daspoort, one from Innesdale, one from the East Rand, and one from Erasmus. One case of cerebro spinal fever was admitted from Daspoort, one from Erasmus, one from Pienaar's River, and one suspected case from Germiston district. Six cases of diphtheria were admitted from Brits area, one from Erasmus, one from Rustenburg district, and one from Wakkerstroom. A young child who had arrived from the Free State the previous day was admitted with measles.

Of the local admissions two were cases of German measles admitted from the Creche, that of whooping cough was an infant whose mother was a patient in the hospital suffering from scarlet fever. The quinsy case was admitted as suspected diphtheria.

Deaths.—There were fourteen deaths in the hospital during the year, being thirteen Europeans and one Coloured child. Of the Europeans seven were local cases whilst six were non-residents.

Local Cases.—Four were due to diphtheria, three dying within twenty-four hours of admission, and one within forty-eight hours. In one of these tracheotomy was performed. Two were due to post-scarlatinal mastoiditis; both were operated on. These cases were

admitted to the hospital on account of the mastoid condition, having been kept at home during the early part of their illness. The other death was of an infant of thirteen months transferred from the General Hospital as suspected cerebro spinal meningitis, but proving to be infantile diarrhoea.

Imported Cases.—Of these deaths one was due to malignant scarlet fever, four to diphtheria—in three of which tracheotomy had been performed—, and one was a case of septic abortion transferred from a nursing home.

Operations.—During the year there were performed four tracheotomies and three mastoid operations. Of these two recovered and five died.

As the Pretoria Hospital Board now refuses to admit any case of diphtheria, all tracheotomies required in this disease will in future be carried out at the Isolation Hospital. This involves a great deal of extra work and may necessitate an increase in the nursing staff. Mastoid operations are, in my experience very rarely necessary in scarlet fever cases. Of the three dealt with this year, two were members of one family infected in Natal.

Staff.—Dr. E. Grunberger has been appointed Surgeon to the Hospital. There have been several changes in the nursing staff during the year. I desire here to place on record my warm appreciation of the work of the Matron and Sisters often carried out under very trying and difficult circumstances.

REMOVAL OF CASES OF INFECTIOUS DISEASE, DISINFECTION OF PREMISES.

At the beginning of July 1928 a new ambulance, built on a six cylinder "Nash" chassis was placed in commission. The old Ambulance which it replaced is still being utilised in the removal of coloured cases, disinfection of premises, etc. The new vehicle covered a distance of 2,288 miles during the year whilst the old one did 1 230 miles.

The motor van, which is used principally in disinfecting work and the carrying out of an infectious sterco removal service, covered a distance of 5,663 miles at a petrol consumption of approximately 14.6 miles per gallon.

Manufacture of Disinfectant by Clox Plant.—Some 3,800 gallons of sodium hypochlorite were manufactured during the year, the whole of which was used by Municipal departments. A small quantity is used at the Public Conveniences, but most of it is used in the cleansing and disinfecting of pails by the Sanitary Removal Department.

Disinfestation of Natives.—The deverminising of Natives entering Municipal employment is being continued. During the year 282 Natives were given a disinfectant bath, whilst their clothing and other personal effects were disinfested by steam. The decrease in the number of Natives from last year is due to the Health Department having discontinued the deverminising of Natives during the greater portion of the year.

WATER SUPPLY.

The water supply of Pretoria is derived from springs in the dolomite about three miles south of the town and within the Municipality. There are three intakes, described as Main Intake, New Intake and New Spring. From these the water passes by a three foot aqueduct to the Findlay Reservoir built on the hill south of the Railway Station, and by a branch pipe to a pumping station in the Fountains Valley from which the water is pumped up to a reservoir on Muckleneuk Hill.

From the service reservoirs the water gravitates to all parts of the town.

The Intakes are all protected by chambers built round them and roofed over: the aqueduct is constructed of reinforced concrete pipes: the reservoirs are also constructed of reinforced concrete. The Findlay reservoirs are roofed over whilst the Muckleneuk Reservoir is open.

The capacity of the service reservoirs is as follows: Findlay, six million gallons; Muckleneuk, three million gallons.

Water Meters.—The number of premises on the meter at 30th June was 8,688. The charge for water is two shillings per 1,000 gallons with a minimum charge of seven shillings for any occupied premises.

The stands in the various locations are the only consumers not separately metered and here a flat rate of 1/- per stand per month is made (exclusive of business premises). Location supplies are controlled by district meters. The metering of the Town which has

been carried out during the last two years has effected a very marked improvement in securing an equitable distribution of the water, particularly noticeable during the dry months of the year.

Quantity of Water.—The daily flow from the Springs averaged 5,150,000 gallons of which 4,600,000 is available for the supply of the civil population, the balance being earmarked for Roberts Heights (550,000 gallons). This provides over 60 gallons per head of the total population—a fairly ample supply for present requirements.

An additional supply was considered necessary, however, in view of the establishment in Pretoria of the Steel and Iron Works, and also because of the rapid increase in population which has taken place in recent years and which is likely to continue at a considerably accelerated rate.

The Town Engineer advises me that the Council has recently obtained sanction from the Administrator to proceed with the Rietvlei Scheme. The preparation of contract drawings is now in hand.

The proposed scheme embraces the collection of various springs situated on Rietvlei and Grootfontein, the erection of a conservation dam on Rietvlei of 3 000 million gallons capacity, filtration plant, main supply pipe to Muckleneuk Reservoir, and an additional service reservoir of 5 million gallons capacity.

The supply is entirely a gravity one and capable of supplying an average of 5 million gallons daily, of which an average of two million gallons will be from spring water equal to that obtained from Fountains Valley.

Quality of Water.—The water contains a large quantity of magnesium salts, which give it a high degree of temporary hardness. Bacteriologically it is of very good quality and there has never been the slightest indication of dangerous impurity. The bacilli coli which are sometimes detected in samples are no doubt derived from animal and not from human sources.

Analyses.—During the year 164 samples were bacteriologically examined with the following results:—

Main Intake: 31 Samples of which 30 were quite satisfactory and one contained *B. coli* in 5 c.c.

New Intake: 34 Samples of which 22 were quite satisfactory; 10 contained *B. coli* in 5 c.c., and 2 contained *B. coli* in 1 c.c. or less.

New Spring: 30 Samples of which 27 were quite satisfactory, whilst 2 contained *B. coli* in 5 c.c., and 1 contained *B. coli* in 1 c.c.

Military Intake: 10 Samples, all satisfactory.

Findlay Reservoir: 7 Samples of which 6 were quite satisfactory and one contained *B. coli* in 5 c.c.

Muckleneuk Reservoir: 10 Samples, all satisfactory.

Beckett Street Reservoir: 3 Samples of which one was quite satisfactory and two contained *B. coli* in 5 c.c.

Taps in Town: 39 Samples of which 31 were quite satisfactory, whilst four contained *B. coli* in 5 c.c., and four contained *B. coli* in 1 c.c. With one exception (in Arcadia) all the unsatisfactory samples were from taps in a particular area in Hatfield. This appeared to be due to want of adequate scouring of pipes. Since February all samples from taps have proved satisfactory.

MILK SUPPLY.

During the year 73 licensed purveyors of milk carried on business in the Town. The dairy premises from which supplies were obtained numbered 117. Of these 45 were situated within the Municipality and 72 were outside the Municipal boundary. Of the latter 7 were in Innesdale and Despoort; 52 others were within 20 miles radius of Church Square, and 13 were over 20 miles from the town. Comparing these figures with those in last year's report, whilst there is an increase of 6 in the total dairies, there is a decrease of 7 in those situated within the Municipal Area, Innesdale and Despoort. It is estimated that there are approximately 3,075 milch cows in these dairies.

Control of Dairies.—Routine inspection of all licensed dairies both within and without the Municipality is carried out by the Dairy Inspector. General supervision is exercised by the Medical Officer of Health and the Chief Sanitary Inspector.

During the year the Dairy Inspector made 2,216 visits to dairy premises. The new Dairy By-laws brought into use during 1927 by the Council have considerably raised the standard of the premises where milk is produced or retailed as well as assisting in producing a better article of food.

Following on reports of unsatisfactory conditions found on inspection, or on unsatisfactory bacteriological or chemical analyses, 331 letters and notices were addressed to dairymen; 40 prosecutions were instituted and fines amounting to £101 10/- were imposed. Further particulars of these prosecutions are given in the report of the Chief Sanitary Inspector.

Bacteriological Examination of Milk.—The municipal standard allows not more than 200,000 organisms per c.c. and no bacilli coli in 0.01 c.c. 97 Samples were examined with the following results:—

Sixty samples were satisfactory in regard to both total number of organisms and number of B. coli; eight samples were satisfactory as regards total number of organisms but showed an excess of B. coli; fourteen samples were satisfactory as regards B. coli, but contained an excessive number of organisms. In fifteen samples both standards were infringed. These figures show a marked improvement on last year's records.

Of eighteen samples which can be classed as very bad, ten were taken at town depots, i.e. places which receive milk from outside and retail it in town; six were samples of country milk as delivered in town and only two were from town or suburban cowsheds. At the other extreme where twenty-five samples contained less than 12,000 organisms per c.c., thirteen were country milks, eight were town milks, and only four were obtained at depots. In nine samples B coli was not found in less than 5 c.c. These samples came from five town dairies, three country dairies, and one depot.

Chemical Analyses.—134 Samples were analysed. Of these 105 were satisfactory, although 68 of them hardly reached the standard laid down for non-fatty solids. The standard prescribes 8.5 per cent, whereas these samples contained between 8 and 8.5 per cent. In twelve samples there was a deficiency of butter-fat, the deficiency in most of these being small. In seventeen samples there was a deficiency of non-fatty solids the percentage being less than 8.

Ice Cream.—A great improvement has occurred during the year. The larger premises are now fitted with up-to-date American machinery, including pasteurisers and cooling plant. The smaller tea-rooms which still continue to sell this commodity thoroughly understand the necessity of boiling the article before freezing. Owing to the scarcity of fresh cream at times, butter and tinned cream is used to make up the necessary fat content as required by the Government Regulations. These regulations were enforced during the year, resulting in several prosecutions. In only one case was it found necessary to prosecute for the sale of impure ice-cream under Section 113 of the Public Health Act.

The number of makers of ice-cream registered during the year was fifteen. Their premises and vehicles are regularly inspected and are maintained in good condition.

Bacteriological analysis of 44 samples of ice-cream was carried out. 24 of these contained not more than 10,000 organisms per c.c. and no B. coli in 0.01 c.c. These are regarded as quite satisfactory. 12 Samples contained not more than 200,000 organisms per c.c. and no B. coli in 0.001 c.c. These are fairly satisfactory. In the remaining 8 samples organisms ranged from 240,000 to 40,000,000 or more per c.c. In only three samples was B. coli present in 0.001 c.c. or less. These results show a marked improvement on those of the previous year. As showing what can be done in the direction of producing a pure article there were 13 samples which contained not more than 1,000 organisms per c.c. and B. coli not found in less than 5 c.c.

Chemical Analysis.—Six samples submitted. The standard requires not less than 10 per cent. milk fat. Five of the samples were satisfactory, fat ranging from 12.6 to 19 per cent. One sample was deficient in fat, containing only 5.8 per cent.

OTHER FOODSTUFFS.

Butter.—One sample was submitted to chemical analysis and found satisfactory.

Coffee.—Two samples examined: both contained 30 per cent. of chicory.

Fruit Syrups.—Four samples examined. All showed presence of salicylic acid varying in quantity from 1.4 to 10.5 per cent. The sellers were warned and the use of this preservative has been discontinued.

Flour and Wheat.—One investigation was carried out regarding the cause of spongy bread. In this connection a sample of flour examined bacteriologically showed the presence of the bacillus mesentericus panis viscosi. Examination of two samples of wheat from which this flour had been made showed the presence of the same bacillus. Two samples of wheat examined some time afterwards from the same mills and from another source both proved free from rope organisms.

Brawn.—Eight samples were submitted to bacteriological examination. None of the samples were sterile, but none contained organisms of the Coli or Food-poisoning groups. The organisms present included streptococci, staphylococci, B. Subtilis, B. Proteus, etc., but these organisms were only present in small numbers.

Pepper.—One sample chemically analysed proved satisfactory.

Kipperd Herring, suspected to be the cause of a small outbreak of food poisoning, was found on bacteriological examination to contain Bacillus enteritidis Gaertner, the food-poisoning organism.

Potted Meat.—One sample examined was found to be in a state of decomposition.

MEAT SUPPLIES.

The Superintendent Inspector at the Abattoirs reports as follows:—

Animals Slaughtered:—

	Oxen.	Cows.	Bulls.	Calves.	Sheep.	Goats.	Pigs.	Total.
1928-29	16,906	5,112	278	2,126	71,801	2,152	6,808	105,183
1927-28	17,282	4,540	212	1,996	73,658	2,047	6,641	106,376
					1928-1929.	1927-1928.		
					Total number of cattle slaughtered	22,296	22,034	
					Total number of sheep and goats slaughtered	73,953	75,705	

For the year it will be seen that there has been a slight increase in the number of cattle and pigs slaughtered, but a decrease in the number of sheep and goats.

Carcasses, Organs, etc., Condemned:—

	Car- casses.	Quarters.	Plucks.	Livers.	Lungs.	Heads.	Other Organs.
Cattle	156	5	373	730	417	407	539
Sheep and Goats	20	25	761	6,725	3,870	—	4
Pigs	519	—	8	—	16	46	56
Calves	4	—	—	—	—	—	—

Imported Meat Examined:—

Beef.	Mutton.	Pork.	Calves.
2 Carcasses.		536 Carcasses.	
12 Quarters.	10 Sheep.	5,319 lbs. Pork loins.	4 carcasses.
		1,361 lbs. Pork fillets.	

Imported Meat Condemned:—

- 3 Pigs and 4 pork fillets: Measles.
- 4 Pigs heads and tongues: Localised tuberculosis.

Diseases.

The percentage of animals condemned for all diseases is as follows:—

	Cattle.	Sheep and Goats.	Pigs.
1928-1929	0.700	0.027	7.612
1927-1928	0.835	0.001	6.399

Tuberculosis.—Amongst Cattle there were 43 cases. In 26 instances the disease was generalised and the carcasses were condemned. In 17 instances the disease was slight and localised. The percentage of cattle showing tubercular lesions was 0.193.

Amongst pigs there were 44 cases. In only two instances was the disease generalised, and carcasses condemned. In 42 instances the disease was slight and localised. The percentage showing the presence of tuberculosis was 0.645.

Measles.—Amongst cattle there were 411 cases of which 70 were condemned and 341 detained for freezing. The percentage of cattle showing measles was 1.852.

Amongst pigs there were 507 cases, all of which were condemned. The percentage of pigs showing measles was 7.436.

The following is a return of animals, etc., condemned for reasons given:—

Extensively Bruised: 2 Carcasses and 4 quarters of beef, and 4 quarters of mutton.

Moribund: 2 Carcasses of beef and four of mutton.

Jaundice: 2 Calves and 13 sheep.

Lymphadenitis: 3 Sheep and 17 quarters of mutton.

Septicaemia: 6 Carcasses of beef and 2 calves.

Abscesses: 1 Quarter of beef.

Peritonitis: 2 Carcasses of beef.

Emaciation: 21 Carcasses of beef.

Gift Blaar Poison: 2 Sheep.

Melanosis: 2 Pigs.

Pyæmia: 1 Carcase of beef.

Antinomycosis: There were 16 localised cases, the portions showing lesions only being condemned.

Butchers' shops were visited at regular intervals to detect and prevent the sale of unstamped meat. In this connection one prosecution was instituted, and a fine of £3 was imposed by the Magistrate.

Bakers and Confectioners:—

Licensed premises of this nature number twenty-six in Town and three in the Asiatic Bazaar.

No new bakery premises have been opened during the year, and the existing concerns are all of fairly good and fly-proof structure. All are fitted with mechanical dough mixers, dressing room and lavatory accommodation, and employees on the premises provided with overalls. One further bakery has fitted up machinery for kneading and moulding bread dough, making now two premises in Town where hand labour in this respect is dispensed with.

The distribution of bread in Town is mainly carried out in well constructed covered motor vehicles, the bread being taken therefrom in covered baskets to the consumers' premises. Early morning inspections are made by the District Sanitary Inspectors and several warnings were given where unsatisfactory methods were observed.

Butcheries:—

The number of butchery businesses licensed during the year remains practically the same as during the previous year, namely: fifty premises in Town and fifteen in the Locations. The buildings are all constructed in accordance with the Municipal regulations, the old open shops being done away with and fly and dust-proof glass fronts provided. Suitable washing facilities and overalls are provided for employees. The distribution of meat is carried out in properly wrapped parcels for individual customers in clean, well-constructed vehicles or carriers, and supervised by early morning inspection. No unstamped meat, i.e. meat which has not been inspected at the Municipal Abattoir was found exposed for sale. Only in one or two instances was it found necessary to prosecute for dirty conditions and these are detailed later under court proceedings.

Restaurants, etc.:—

In Town there are twelve licensed hotels, 37 restaurants, 65 tea-rooms, 5 kaffir eating houses and 3 bioscope tea-rooms.

In the Asiatic Bazaar and Native Location there are three native eating houses, 20 tea-rooms, 45 grocers, 35 fruiterers and 289 hawkers and pedlars.

The hotels are all of fairly modern construction, provided with sufficient bathroom accommodation, sewered and well maintained. They are inspected regularly together with all restaurants and tea-rooms. Special attention is given in the latter businesses to the proper storage and clean handling of foodstuffs, and the cleanliness and use of overalls by employees.

The native eating houses are all of satisfactory construction, with the exception of the Municipal eating house adjoining the Compound. This however will shortly be done away with and a more satisfactory building provided.

The unsatisfactory nature of the storage accommodation for fruit and vegetables provided by Indian hawkers has engaged considerable attention, and although it has not been possible to provide a suitable communal hall outside the Asiatic Bazaar suitably constructed storerooms have now been provided in the majority of cases on the stands of the hawkers.

Boarding and Lodging Houses :—

A slight increase in the number of these premises has to be noted for the year, namely: 211 as against 204 for last year. These figures include blocks of flats which fall under the municipal definition of lodging-house, as also a single room in a dwelling house which may be let to a lodger. All these premises are inspected before licence is granted or on renewal of licence, and at other times. They are all maintained generally in good sanitary condition and no overcrowding was found to exist.

Laundries :—

One large European laundry discontinued business during the year, leaving now in Town five premises conducted by Europeans and three by Chinamen. In the Asiatic Bazaar ten laundries are carried on by Indians, and all washing in connection therewith is still done in the Municipal wash-houses. The premises are maintained in fairly clean condition but require constant supervision. The Town European laundries are all of good construction, fitted with up-to-date washing, drying and ironing machinery and are maintained satisfactorily.

Washing licences to the number of fifty were issued to native women in the Locations to carry on washing businesses. Most of this washing is done at the Municipal wash-houses or public washing areas.

Sewerage and Drainage :—

3.3 Miles of sewer and 1.35 miles of storm water drains have been laid during the year.

The water-carriage system of house drainage has been installed in a further 156 dwelling houses and 28 business premises. The total number of premises on the water-carriage system at 30th. June 1929 was 5,923.

Conservancy System :—

At the 30th. June 1929, 6,256 stercus removal services were being carried out, 205 of these being daily services and 6,051 alternate day services. The total number of services shows an increase of 539 on the previous year's total. The number of premises concerned is 4,232, of which 2,906 are in the European suburbs and 1,326 in the Locations. The number in the Locations is 40 less than last year, owing to conversion of premises to water-carriage drainage system. The installation of water-carriage drainage throughout the Indian and Cape Locations is urgently required.

Closets are for the most part built of brick or concrete, and must be in conformity with a standard of construction adopted by the Council. This standard includes the provision of an impermeable floor, guide rails, etc., and also gives directions regarding the height of seat and other details of construction. The service is carried out as follows: the full pail is removed and a clean pail substituted. The contents of pails are emptied into tank wagons which convey the stercus to a specially constructed site where it is discharged into the sewer, together with an adequate quantity of water. The soiled buckets are conveyed in specially constructed waggons to the cleansing station and are there thoroughly washed and disinfected. The pails in use are of steel, and jointless.

Refuse Removal Service :—

The service is compulsory and is carried out either daily or bi-weekly. Householders are obliged to supply covered bins of a type approved by the Council. 180 Tons are collected daily. Of this about 165 tons are dumped at various places on the Town Lands and outskirts of the town. These dumps are well maintained: anti-fly and anti-rat measures are systematically carried out. About 15 tons are treated at the Municipal pulveriser, where the refuse is ground up with a proportion of manure, the product being sold as a fertiliser. The cost of collection of the refuse is 2/8d. per ton.

Manure Removal Service :—

This service is at present carried out from 84 premises. No charge is made for collection, which costs the Council £1,800 per annum. Of this sum £500 is recovered by sale of manure. It would appear reasonable that this service should be made more nearly self-supporting by instituting a charge for collection.

SEWAGE DISPOSAL WORKS.

The Manager (Mr. M. Lundie) reports as follows :—

Volume of Water over Daspoort Weir.—The following table gives the total volume of water flowing over the Daspoort Weir. This comprises water from the Aapies, Steenhoven and Skinner Spruits, together with the effluent from the sewage works. From the table it will be seen that the total volume for the year registered at the weir was 2,218,089,192 gallons and the total volume of sewage was 512,108,000 gallons, corresponding to daily averages over the year of 6,076,959 gallons and 1,403,035 gallons respectively.

The maximum monthly flow in both cases it will be observed was in March and the minimum monthly flow, also in both cases, in July.

Month.	TOTAL.		DAILY AVERAGE.		Rainfall Inches.
	Daspoort Weir.	Sewage.	Daspoort Weir.	Sewage.	
1928.					
July	71,657,460	24,501,000	2,388,582	790,322	Nil.
August	125,240,000	29,839,000	4,040,000	962,550	1.26
September	100,230,732	28,790,000	3,341,024	959,666	0.34
October	155,734,800	32,252,000	5,023,700	1,040,400	2.30
November	186,551,600	35,679,000	6,218,387	1,189,300	3.96
December	168,468,200	37,562,000	5,114,877	1,211,677	2.86
1929.					
January	359,091,400	43,059,000	11,261,013	1,389,000	5.86
February ..	171,645,800	42,631,000	6,130,207	1,522,535	2.69
March	434,869,400	69,531,000	14,028,000	2,242,935	6.44
April	146,015,000	58,533,000	4,867,166	1,951,100	0.97
May	141,208,600	58,192,000	4,554,866	1,879,097	0.23
June	157,376,200	51,539,000	5,245,855	1,717,966	0.54
Total	2,218,089,192	512,108,000	—	—	27.45
Daily Average	—	—	6,076,959	1,403,035	

The maximum daily flow of Sewage was 3,505,000 gallons on the 11th. March, 1929.

The minimum daily flow of Sewage was 635,000 gallons on the 29th. July, 1928.

The maximum daily flow at Daspoort Weir was 72,153,000 gallons on the 3rd. March, 1929.

The minimum daily flow at Daspoort Weir was 1,866,800 gallons on the 4th. July, 1928.

Ratio of Effluent to Stream Water at Daspoort Weir :—

The maximum monthly ratio of dilution of effluent to stream water was 1 to 7.3 in January.

The minimum monthly ratio was 1 to 1.9 in July.

The mean ratio of dilution for the year was 1 to 3.3.

Ratio of Filtration :—

Mean.	A.				B.
	GALLONS PER				
	Sq. Yard.	Cu. Yard.	Sq. Yard.	Cu. Yard.	
Yearly	156.7	78.3	204.2	102.1	
Max. Monthly	250.6	125.3	334.1	167.0	
Min. Monthly	88.3	44.1	117.1	58.8	

Figures under column A. = Total Filter Area.

Figures under column B. = Under normal working conditions; viz. : taking into consideration filters at rest.

ANALYTICAL RESULTS.

The following table gives the maximum, minimum and mean of analytical determinations made during the year :—

Parts per 100,000.	Sewage before Sedimentation.			Sewage after Sedimentation			Final Effluent.			Purification per cent.
	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	
Suspended solids	95.6	67.7	79.5	16.4	8.9	12.9	6.8	1.6	3.7	95.3
Free and Saline Ammonia as Nitrogen	16.0	11.0	13.0	4.8	3.2	4.0	0.8	0.2	0.49	96.2
Albumenoid Ammonia as Nitrogen	4.4	2.8	3.5	1.35	0.7	0.89	0.35	0.14	0.26	92.6
Nitrous Nitrogen	nil	nil	nil	nil	nil	nil	0.055	0.045	0.05	—
Nitric Nitrogen	nil	nil	nil	nil	nil	nil	3.15	1.5	2.25	—
Chlorine	14.6	12.0	13.5	9.0	7.2	8.1	9.0	7.2	8.0	—
Oxygen consumed from Permanganate—										
In 3 minutes	9.9	4.2	6.7	3.2	1.5	2.2	0.76	0.42	0.59	91.2
In 4 hours	22.0	13.8	17.6	6.2	4.0	4.9	1.7	0.93	1.4	92.0
Dissolved Oxygen absorbed in 5 days at 18.3° C.....	156.0	72.0	91.0	28.1	13.6	18.5	4.6	1.78	2.6	97.1
Incubator Test		FAILS			FAILS			PASSES		

The last three analytical determinations in the above table for final effluent free of suspended solids gave the following mean figures : 0.36, 0.90 and 1.4 respectively, corresponding to a percentage purification of 94.6, 94.3 and 98.4. Stability tests with methylene blue carried out on final effluent gave a stability figure exceeding in each case 100 days.

The analytical figures show that a well oxidised and stable effluent is being produced from a concentrated domestic sewage. The figures for final effluent show an improvement over the previous year, this being due to the cleaning of fine filter media on the surface of the filters which has eliminated ponding with its deleterious effects on the quality of effluent.

Filters.—Considerable trouble was experienced in the late winter and early spring with the filters ponding, sometimes seriously. This was due to (a) the abnormal drop in the flow of sewage probably attributable to the installation of water meters which led to a rigid economy in the use of water; (b) concentrated nature of sewage from pail system. The position was relieved somewhat by the introduction of more water into the sewers. However, it was not until the surface media of all the filters had been washed that a satisfactory effluent was produced.

A rapid and efficient method of washing had to be devised as the position was then serious. This was accomplished by a special type of sprinkler utilising a large volume of sedimentation tank effluent for washing purposes. The cost worked out at £8 per filter as against £250 per filter under the old method of emptying and rescreening media. Over the total filter area a saving of £3,872 was thus effected, apart from any question of disorganisation caused by the old method when filters were out of commission for lengthy periods.

Plant.—Daily routine attention was given to all working parts of the plant to ensure efficiency and smooth running.

Sludge and Sludge Tanks.—As a result of considerable experimentation it has been possible to produce a well digested sludge free from odour. By rigid adjustment of the reaction value, especially in the initial stages of the digestion process, this desirable result has been effected. Unfortunately however the design of the sludge tanks is such that the control of the reaction value is a matter of great difficulty. With properly designed sludge digestion tanks these difficulties are non-existent.

Farm.—Labour has been expended on the manifold operations associated with the efficient control of a sewage disposal works, and in the intensive system of farming operations in vogue.

Expenditure and Revenue :—

Expenditure on Sewage Works and Farm	£4,012 17 5
Revenue from sale of Produce	1,833 8 8
Nett expenditure on Sewage Works and Farm	£2,179 8 9

Cost of Disposal.—The nett cost of disposal works out to 8.01 pence per capita per annum.

Analyses.—The number of samples analysed for Municipal Departments, chiefly the Health Department, amounted to 164. These comprise waters, milks, butters, fruit drinks, coffees, pepper, ice-creams.

In connection with sewage purification problems a very large number of analyses of sewages, effluents, sludge, activated sludge, activated sludge process effluents, etc., were carried out.

RODENT ERADICATION.

Work carried out for the Year ended 30th. June, 1929.

New impervious floors laid in grain, flour, forage and other stores	42
Floors repaired or walls or roofs made ratproof in flour, grain or forage stores	41
Non-ratproof grain, forage or other stores disused	15
Non-ratproof grain, forage or other stores demolished	14
Accumulations of rubbish or lumber likely to harbour rats cleaned up or removed	153
European dwelling houses : Foundations repaired, floor gratings replaced or rat holes stopped	72
Native rooms : Floors relaid or repaired	63
Ratproof animal food bins provided at private stables, etc.	15
Premises inspected or re-inspected and advice given where necessary	2,311
Notices or intimations to owners or occupiers of premises to use traps or poison	163
Approximate number of rats destroyed on private premises (excluding Government properties)	1,750
Number of rats trapped or killed on Municipal properties and Town Lands	3,874
Poison baits set on Town Lands	3,874

Number of baits taken	1,504
Rat holes on Town Lands, etc., gassed	441
Number of animals found under suspicious circumstances and examined by bacteriologist	—
Number of prosecutions for failure to comply with Regulations	1

HOUSING.

In accordance with Section 131 of the Public Health Act, 1919, the following special report on "overcrowding and bad or insufficient housing" is submitted.

European Housing :—

No case of overcrowding as legally defined was discovered during the year. The number of European dwellings in Pretoria is now approximately 7,070. This is 1,670 more than existed at the time of the 1921 Census. The average number of Europeans per house is now 6.15 as compared with 6.4 at the time of the 1921 Census. It is estimated that there are at present between 400 and 500 empty houses in the town; and a large number of houses are in process of construction. In spite of this there is still a shortage of small houses available at a rental of £3 to £4 per month, within the reach of persons whose incomes do not exceed £15 per month. The house that is wanted for this class of the European community is something of a type similar to the cottages erected in the Cape Location a few years ago, with certain small improvements. These cottages are built of concrete, contain two rooms and kitchen, are provided with water-carriage drainage and are let at rentals of £2 10/- per month.

A special enquiry was made regarding housing conditions of poor-class European families in the central area of the Town, and a report presented to the Health Committee of the Council in September 1928. The following extracts from this report may be of interest :—

Two classes were dealt with, viz.: those in which the wage earner was in receipt of £15—£20 per month and those in which he or she was in receipt of less than £15 per month. Of 157 dwellings inspected 73 consisted of one room; 68 of two rooms; 14 of three rooms; and two of more than three rooms. In 74 instances the dwellings also included a kitchen of a kind.

Rents paid for one room vary from £1 12s. 6d. to £2 15s. per month; for two rooms £2 10s. to £3 5s. per month; for 3 rooms £5 or more per month.

Number of Occupants.—The number of persons living in the 157 dwellings was 612 including approximately 313 adults and 299 children. The number of persons per room was 2.36. I made the following recommendations :—

- (1) That a certain number of cottages should be erected at such a cost as to enable them to be let at a rental not exceeding £3 10s. per month.
- (2) That the size of the cottages should be three rooms and kitchen.
- (3) That the cottages should be placed on a number of sites in groups of six or eight, as a terrace or semi-detached.
- (4) That the sites should be fairly accessible from the business area of the town, and so situated as to be capable of permitting water-carriage drainage.

So far no action has been taken on the lines indicated.

Houses closed by Magistrate's Order :—

Five houses were closed by Magistrate's Order during the year. These houses contained 21 rooms and 2 kitchens. Four rooms and one kitchen have been demolished. Seven rooms have been put into good repair, and the others have been vacated.

Erection of new Dwelling Houses :—

279 Dwelling houses were completed during the year. These comprise :—

Houses of 3 rooms or less (exclusive of kitchen)	80	} 213
" " 4 rooms " "	133	
" " 5 rooms " "	27	} 66
" " 6 rooms " "	20	
" " 7 rooms " "	2	
" " 8 rooms or more " "	17	

The number of small houses erected is only two-thirds of the figure for the previous year, whilst the number of houses of 8 or more rooms has doubled. This is partly accounted for by the erection of several blocks of flats. In addition to dwelling houses 479 other premises were erected. The crowding of buildings on area continues, and the title of Pretoria to the name of "Garden City" is seriously threatened. In several instances blocks of "flats" have been erected in what are virtually back yards. From a hygienic point of view the drift of the population into boarding houses and flats is to be deprecated.

Locations and Housing of Coloured Persons:—

Natives are housed in Locations, Hostels, Compounds and on private premises.

Municipal Hostel.—This building has accommodation for 480 male natives, but so far only about 50 per cent. of that number are in residence. The natives appear to be well satisfied with the accommodation provided. It is hoped that the introduction of further facilities for recreation may increase the popularity of this hostel.

Accommodation for approximately 150 female native servants is provided at the Hostel controlled by the Civic Society and subsidised by the Town Council, and at the Good Shepherd Home controlled by the Anglican Church.

Compounds.—Some 2,200 male natives are housed at the Municipal Compound, Railway Compound and at Messrs. Kirkness' Compound at Groenkloof. These compounds are all thoroughly satisfactory from a hygienic point of view.

There are three native locations, viz.: Marabastad, Schoolplaats and Bantule.

Marabastad has a population of approximately 4,000 persons, half of these being children under 16 years of age. The houses in this location are owned by the natives, and usually occupied by the owner. They are mostly built of wood and iron, and as a result of a large number of demolitions and reconstructions in recent years, the majority of the houses are now in fair condition, but owing to scarcity of accommodation there is serious overcrowding, viz.: an average of 10 persons per house.

Schoolplaats.—This area will cease to be a native location at the end of 1929. According to the Location Superintendent, however, there are still nearly 1,000 people resident here in 130 houses. The houses are old, usually constructed of green brick and dagga.

Bantule.—This location has a population of 3,219 persons, nearly 2,000 being children under 16 years of age. It contains 50 brick and 246 concrete cottages erected by and belonging to the Town Council. These are let to Natives at a monthly rental of £1 5s. for two rooms and kitchen and £1 15s. for three rooms and kitchen. They are maintained in good condition, but here also there is a tendency to overcrowding. There are also 140 houses belonging to Natives, mostly constructed of wood and iron. Here, according to figures supplied by the Location Superintendent, there are 6.5 persons per house.

During the year there have been closed by Magistrate's Order at the instance of the Town Council: 74 rooms and 4 kitchens in Marabastad. Of these rooms 59 have been demolished or are in process of being demolished.

In this Location 30 new houses have been erected and 20 houses have been reconstructed.

In Bantule one new house has been erected, and additions or alterations carried out on five.

Eurafricans live chiefly in the Cape Location, but there are also a small number living in the North-East Central District of the Town.

In the Cape Location there are 168 houses, together with 20 concrete cottages belonging to the Town Council and rented to the occupiers at £2 10s. per month. These houses are in good condition and have water-carriage drainage. Most of the other houses in this Location are constructed of wood and iron. The sanitary conditions are fairly good on the whole, except in respect of drainage. I have repeatedly recommended the extension of water-carriage drainage throughout this Location. The population of this Location is given by the Superintendent of Locations as 1,166, of whom about 500 are children.

During the year only two new houses have been erected. The number of persons per house is 6.9. There is a definite tendency to overcrowding.

Asiatic Bazaar.—Most Asiatics are resident here, but there are a few living in the European quarters of the Town. In the Bazaar the Location Superintendent estimates that there are 1,046 Asiatics resident. In spite of this there is serious overcrowding of

buildings on area. The worst types of building are in the form of terraces or courts with common yards and sanitary conveniences. During the year there have been closed by Magistrate's Order in this Location 70 rooms, 40 kitchens, 2 shops and 1 hall. Most of these buildings have been or are being demolished and replaced by new buildings of thoroughly good construction. Altogether 30 new buildings have been erected.

In this Location the extension of the water-carriage drainage is urgently required. Whilst the Town Council has assisted in providing dwellings for Europeans, Euraficans and Natives, it has so far done nothing in this way for the Indians. It does appear that this section of the community should be assisted by the granting of housing and drainage loans.

A general policy with respect to the allocation of areas for the various Coloured races should in my opinion be adopted without delay.

At present the increase in the population—particularly of the Native locations—is not being by any means adequately provided for by the erection of new houses. The principal reason for this is that there are so few vacant stands available for building on. The closing of Schoolplaats will accentuate the difficulty. The extension of Bantule to the West is, I think, the most convenient arrangement.

The same remarks apply in some degree to the Indian Location. Here security of tenure of stands should be given either in the present Asiatic Bazaar or on another approved site. Indian housing outside the Bazaar is also unsatisfactory owing to insecurity of tenure and inadequate area of land available. Although Indians are found in other areas of the town they are chiefly located in the North-East Central Area, and it is to this area that these remarks apply.

WORK DONE BY SANITARY INSPECTORS FOR YEAR ENDED 30th. JUNE, 1929.

The work carried out by the Sanitary Inspectors is detailed in the following figures :—

Total inspections made	48,841
House to house inspections	16,204
Early morning inspections	803
Night inspections	234
Infectious disease visits	3,157
Inspections of special businesses and trades	14,608
Complaints received	1,193
Nuisances dealt with	8,133
Nuisances abated	8,006
Written notices issued for abatement of nuisances	3,312
Verbal intimations given for abatement of nuisances	5,298
Notices served for removal of noxious weeds	780
Samples of foodstuffs taken for analyses	296
Samples of water taken for analyses	161

Special Inspections :—

Morning Market	Daily.
Butchers' shops	1,250
Fishmongers' shops	143
Hotels, restaurants, etc.	1,824
Bakehouses	402
Dairies and Milk Depots	2,223
Cow and other stables	2,641
Fruit and other food stores	2,467
Laundries and washing places	355
Mineral water and ice-cream factories	114
Kaffir eating houses	132
Hairdressers' saloons	218
Miscellaneous	2,839
Applications for licences approved—new	453
Applications for licences approved—renewals	1,329
Applications for licences refused	28

Disinfections, etc. :—

Patients removed to Hospital	152
Houses disinfected	437
Steam disinfections	327
Natives disinfested	282

Articles disinfected by steam :—

Mattresses	601
Pillows	1,138
Blankets	1,136
Sheets	395
Miscellaneous	1,468

Matters referred to other Departments :—

A. Town Engineer—

Absence of water supply to W.C. cisterns	2
Buildings erected or altered without permission	115
Buildings occupied before completion and without approval	8
Buildings unsatisfactorily completed	2
Broken W.C. basins	8
Broken dishing round gullies	4
Broken or missing gratings on U.Ts.	22
Broken or leaky water pipes	25
Broken or leaky stand pipes	5
Broken or leaky water taps	83
Choked W.Cs.	12
Choked sewerage drains	70
Dangerous condition of buildings	14
Dangerous holes in streets and footpaths	5
Dead animals found on streets, etc.	48
Defective construction of W.Cs.	2
Defective W.C. and urinal flush cisterns	191
Defective and dirty street furrows and drains	23
Defective drainage fittings	87
Defective water storage tanks	2
Defective supply pipes to W.C. cisterns	5
Deposit of rubbish on streets and Municipal ground	8
Dilapidated condition of galvanised iron fences	3
Flies breeding in refuse dump for street sweepings	1
Foul condition of municipal latrines	2
Growth of noxious weeds on streets	25
Leaky stopcocks on streets	19
Leaky sanitary buckets	4
Leaky connections of W.C. basins to soil pipes	4
Mosquitoes breeding in Muckleneuk Reservoir	1
Removal services not satisfactorily carried out	9
Unsuitable buildings converted into dwellings	4
Water stagnating on streets	15

B. Controller of Estates—

Dirty condition of interior of Municipal Kaffir Eating House	2
Absence of latrine accommodation for Municipal Natives	2
Unauthorised erections on outspan on Town Lands	5
Europeans and Natives squatting on Town Lands	3
Foul condition of Municipal ground	2
Nuisance caused by cows grazing on vacant Municipal ground	3
Disrepair and dirty condition of latrines on Municipal property	30
Growth of noxious weeds on Municipal ground	3
Dirty condition of ground at Municipal Outspans	3

C. Chief Inspector of Licences—

Unlicensed cowkeepers	25
Unlicensed milksellers	5
Unlicensed boarding houses	3
Unlicensed lodging houses	7
Unlicensed second-hand dealers	1
Unlicensed bakeries	3
Unlicensed kaffir eating houses	3
Unlicensed goatkeepers	12
Unlicensed clothing factory	1

Unlicensed butchery	1
Unlicensed dogs	6
Unlicensed flour dealer	1
Unlicensed general dealers	2
Unlicensed fruit dealer	1
Unlicensed fish frying business	1
Unlicensed sweet manufacturer	1
Unlicensed fishmonger	1
Unlicensed washing business	1
Kaffir eating house businesses conducted in kitchens of European tea-rooms	2

D. Location Superintendent—

Rooms erected without permission	4
Overcrowding of stands in Locations	1
Unlicensed washing businesses	6

E. Chief Officer: Fire Brigade—

Dangerous accumulations of inflammable material	2
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Foodsstuffs Condemned :—

14 Hares.	29 Pockets Lemons.
8½ Buck.	8 .. Sweet Potatoes.
280 Guinea Fowls.	13 .. Beans.
20 Pheasants.	4 .. Lettuce.
30 Dressed Fowls.	12 Cases Apples.
6 Cheeses.	3 .. Pines.
7 Eels.	137½ .. Tomatoes.
7 Watermelons.	2 .. Bananas.
35 Pawpaws.	97 Trays Strawberries.
102 lbs. Biltong.	26 Boxes Pawpaws.
80 .. Cheese.	52 .. Peaches.
3,090 .. Fish.	1 Box Apricots.
4 Bags Onions.	9 Boxes Mangoes.
15 .. Cucumbers.	39 .. Oranges.
21 .. Cabbages.	11 .. Avocado Pears.
6 .. Marrows.	10 .. Kippers.
8 .. Potatoes.	15 Bunches Bananas.
9 .. Peaches.	1 Barrel Bananas.
39 Baskets Plums.	6 Tins Jam.
3 .. Peaches.	2 .. Sausages.
6 Jars Anchovy Paste.	882 .. Fish.
14½ Jars Bottled Fruit.	

PROSECUTIONS.

The following cases were taken before the Magistrate :—

Offences.	No. of Cases.	No. of convictions.	Number dis-charged.	Total Fines Imposed.
Contraventions of Dairy By-laws :				
Sale of milk not up to bacterial standard	9	9	—	£35 0 0
Sale of milk not up to chemical standard	3	3	—	5 0 0
Sale of milk in Town without licence	2	2	—	1 0 0
Sale of milk containing visible dirt	2	2	—	4 0 0
Natives delivering or handling milk whilst wearing dirty clothing and without overalls	4	4	—	6 10 0
Absence of name and address of dairy on vehicle	1	1	—	0 10 0
Refilling dirty milk bottles in yard of premises or on street	5	5	—	8 0 0
Natives not wearing overalls provided by employers	7	7	—	3 0 0
Dirty condition of dairy premises and utensils	3	3	—	23 0 0
Allowing native to sleep in milk-bottling room	1	1	—	10 0 0
Use of old newspapers as milk can stoppers	1	—	1	—
Absence of European supervision during milking, and milkers not washing hands previous to milking	2	2	—	2 0 0
Cows not properly cleaned previous to milking	1	1	—	1 10 0
Contraventions of Butchery By-laws :				
Dirty condition of butcher's shop and fittings therein	1	1	—	2 0 0
Committing nuisance in yard of butcher's shop	1	1	—	0 10 0
Conveying meat insufficiently covered through streets	2	2	—	2 0 0
Hawking meat without licence	1	1	—	0 10 0
General :				
Failure to carry out certain repairs and improvements after notice	2	2	—	4 0 0
Permitting waste water to flow over street	1	—	1	—
Housing unexempted Natives (Urban Areas Act)	24	22	2	31 10 0
Unexempted Natives residing in Town	5	4	1	1 10 0
Sale of raspberry cordial containing salicylic acid without denoting by label on bottle the use of such preservative	1	1	—	—
Sale of dirty and adulterated tapioca	1	1	—	15 0 0
Sale of unsound fruit and vegetables on Morning Market	1	1	—	1 0 0
Sale of impure ice-cream	1	1	—	16 11 6
Exposing for sale unsound fish and meats	4	4	—	12 0 0
Fruit and vegetables carried in hawkers' carts in such a manner as to permit contamination	4	3	1	1 10 0

Offences.	No. of Cases.	No. of convictions.	Number discharged.	Total Fines Imposed.
Dirty condition of premises—latrines, yards, etc.	5	5	—	11 10 0
Foul condition of builders' latrines	1	1	—	2 0 0
Defective structure of temporary builders' latrines	2	2	—	4 0 0
Carrying on bakery business without licence and in defective premises	2	2	—	5 0 0
Continued occupation of house closed by Magistrate's Order	1	1	—	0 10 0
Defective drainage, etc.	1	1	—	2 0 0
Permitting breeding of mosquitoes on premises	4	3	1	1 10 0
Using room connected with foodstore as sleeping room	1	1	—	1 0 0
Failure to provide regulation rubbish bin	1	1	—	1 0 0
The depositing of builder's rubbish on vacant ground	1	1	—	—
Failure to provide temporary builders' latrines for employees	2	2	—	1 0 0
Absence of protection from contamination of foodstuffs in tea-room	1	1	—	—
Storage of vegetables intended for sale on dirty yard	1	1	—	4 0 0
Dirty condition of bakery premises	1	1	—	1 0 0
	114	107	7	£222 1 6

BIRTHS: ALL RACES: in the Municipality for the Year ended 30th. June, 1929.

	EUROPEAN.		NATIVE.		EURAFRICAN.		ASIATIC.	
	Legitimate. Males	Illegitimate. Females	Legitimate. Males	Illegitimate. Females	Legitimate. Males	Illegitimate. Females	Legitimate. Males	Illegitimate. Females
1928 July	31	1	6	5	2	4	2	4
August	47	4	9	12	2	1	2	5
September	50	4	10	6	2	2	1	7
October	31	3	3	6	2	1	5	2
November	46	2	12	7	2	4	2	4
December	35	4	2	5	1	1	1	5
1929 January	45	1	10	8	2	5	1	7
February	49	1	9	9	1	1	1	2
March	40	1	4	2	1	1	2	4
April	32	1	4	7	1	2	2	8
May	48	2	5	12	1	1	4	7
June	38	2	3	6	3	7	1	4
	492	440	21	15	77	85	61	43
			19	21	15	22	64	38
			2	2	2	2	2	3

STILLBIRTHS, and BIRTHS to Non-Residents: All Races: for the Year ended 30th. June, 1929.

	STILLBIRTHS.		BIRTHS TO NON-RESIDENTS.	
	European. Males	All Coloured. Females	European. Males	All Coloured. Females
1928 July	—	1	10	7
August	1	3	10	13
September	2	1	5	7
October	1	1	11	4
November	2	1	15	9
December	2	3	8	6
1929 January	1	3	14	8
February	—	1	10	5
March	3	—	9	4
April	1	1	5	11
May	1	1	9	8
June	—	3	3	8
	14	12	109	90
			6	8

Table No. 2.
DEATHS of EUROPEAN CHILDREN under 5 years of age within the Municipality for the Year ended 30th. June, 1929.

	0—1		—2		—3		—4		—5		—6		—7		—8		—9		—10		—11		—12		Total					
	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.	under 1 year.	5 years.		
Typhoid fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Scarlet fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Whooping cough	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Diphtheria	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Influenza	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Meningitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Bronchitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Broncho-pneumonia	1	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Pneumonia	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Diarrhoea and Enteritis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Pyelitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Gangrene of legs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Disease of bones	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Congenital malformation	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Congenital debility	3	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Premature birth	7	9	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Other diseases of infancy ..	1	2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
Accident	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
	13	14	1	2	1	4	—	1	3	—	2	2	—	3	2	1	—	1	1	—	1	1	—	1	24	32	10	8	34	40

Table No. 3.
INFANTILE MORTALITY : EUROPEANS : CAUSATION AND INCIDENCE IN DISTRICTS FOR THE YEAR ENDED JUNE 30th, 1929.

	Zymotic Diseases												Other diseases		Total deaths		Total births		Mortality rate per 1,000 births		Total					
	Diarrhoeal diseases			Bronchitis			Pneumonia			Congenital causes			Meningitis		Convulsions		Marasmus		M.	F.						
	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total	M.	F.	Total								
North West Central	—	—	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	46	43	89	21.74	46.51	33.71	
South West Central	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39	36	75	25.64	55.55	40.00	
North East Central	—	—	2	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	—	59	58	117	50.85	51.72	51.28	
South East Central	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	35	25	60	85.55	—	50.00	
Good Hope	—	2	1	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	32	23	55	93.75	173.91	127.27	
Pretoria West	—	2	3	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	91	83	174	43.95	60.24	51.72	
Defence and Prison Reserves	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10	10	—	—	300.00	150.00
Railway Reserve	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25	26	51	40.00	192.30	117.65	
Sunnyside	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	51	47	98	78.43	63.83	71.43	
Arcadia	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	55	40	95	18.18	50.00	31.16	
Riviera and Rietendale	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	10	25	—	—	—	
Hatfield	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	17	28	—	58.82	35.71	
Brooklyn and Hillcrest	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15	12	27	66.66	83.33	74.07	
New M'neuk and Groenkloof	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	8	14	—	—	—	
Roberts Heights	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	23	17	40	86.95	58.82	75.00	
Total	1	3	6	9	5	5	11	14	1	—	—	—	—	—	—	—	—	—	24	32	513	455	46.78	70.33	57.85	

Table No. 4.

DEATHS OF EUROPEANS WITHIN THE MUNICIPALITY FOR THE YEAR ENDED JUNE 30th, 1929.

Age Incidence.

	5-10 years.		15 years.		20 years.		25 years.		35 years.		45 years.		55 years.		65 years.		75 years.		Over 75 years.		Total		
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Males.	Females.	
Typhoid fever																							
Malaria																							
Scarlet fever		2		1																			
Diphtheria				1																			
Influenza																							
Dysentery																							
Erysipelas																							
Meningococcal meningitis																							
Tuberculosis						1	1																
Tubercular meningitis		1																					
Cancer										1													
Rheumatism, chronic																							
Diabetes																							
Anaemia																							
Exophthalmic goitre																							
Alcoholism																							
Encephalitis																							
Meningitis										2													
Tabes dorsalis																							
Disease of spinal cord																							
Cerebral haemorrhage																							
Paralysis of the insane																							
Epilepsy																							
Disease of nervous system																							
Disease of ear																							
Angina pectoris																							

Table No. 5.

DEATHS OF NATIVES WITHIN THE MUNICIPALITY FOR THE YEAR ENDED JUNE 30th, 1929.

	0-1		-5		-10		-15		-20		-25		-35		-45		-55		-65		-75		Over 75		Total	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	Males.	Females.
Typhoid fever					1	1					1	3													6	3
Malaria												1	1												1	1
Whooping cough	2		1	1																					3	1
Diphtheria			1								1									1					2	2
Influenza	1		1																						1	
Dysentery																									1	
Meningococcal meningitis					1																				1	1
Trismus neonatorum	1	1																							2	4
Tuberculosis			2	1	1						5	4	1	4			7			1	1				24	4
Syphilis	1	2										1													3	2
Purulent infection											1	1													1	1
Cancer											1				1										1	1
Rheumatic fever, acute					1	1																			1	1
Tumour of spleen											1						1								1	1
Encephalitis																									2	2
Meningitis											1														1	1
Cerebral haemorrhage																									1	1
Paralysis of the insane																									1	1
Mental alienation																									2	2
Epilepsy																									1	1
Convulsions	1																								1	3
Diseases of the heart										1	2														1	1
Empyema of frontal sinus																									1	1
Disease of larynx	1																								1	10
Bronchitis	1	8	1	2																					3	

Table No. 6.

DEATHS OF COLOURED PERSONS other than Natives and Asiatics for the Year ended June 30, 1929.
Age Incidence.

	Age Incidence.														Total												
	0-1		-5		-10		-15		-20		-25		-35		-45		-55		-65		-75		Over 75		Total		
	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.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	Males.	Females.		
Typhoid fever																											
Malaria																											
Measles																											
Dysentery	1																										
Tuberculosis																											
Syphilis																											
Cancer of stomach																											
Apoplexy																											
Otitis Media	1																										
Heart disease																											
Bronchitis																											
Broncho-pneumonia	4	3	1	1	1																						
Pneumonia																											
Diarrhoea																											
Pyelo nephritis																											
Congenital debility																											
Premature birth	1																										
Septic infection, cord																											
Old age																											
Cause unknown																											
	7	6	3	1	2	1					2	1	2	1	1	1	2	1	1	2	1	1	1	20	15		

Table No. 8.

INFANTILE MORTALITY: All Coloured Races: District Incidence for the year ended June 30th, 1929.

	Zymotic diseases.												Total deaths.		Total births.		Mortality rate per 1,000 births.		Total.					
	Diarrhoeal diseases.		Bronchitis.		Congenital pneumonia.		Meningitis.		Convulsions.		Marasmus.		Other causes.		M.	F.	M.	F.		Males.	Females.			
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		Males.	Females.			
Natives:																								
Marabas	2	—	5	5	9	15	12	9	—	—	—	—	—	—	—	—	—	29	30	72	60	402.77	500.00	447.00
Schoolplaats	—	—	4	—	—	3	2	2	—	—	—	—	—	—	—	—	—	7	5	19	18	368.42	277.77	324.32
Bantule	1	—	7	10	1	5	1	1	—	—	—	—	—	—	—	—	—	12	17	41	40	292.68	425.00	358.02
Town	—	—	1	1	4	2	2	7	—	—	—	—	—	—	—	—	—	8	12	6	10	—	—	—
Total Natives	3	—	17	16	14	25	17	19	—	—	—	—	—	—	—	—	—	56	64	138	128	405.79	500.00	451.12
S.A. Coloured:																								
Locations	—	—	1	1	3	2	1	2	—	—	—	—	—	—	—	—	—	6	5	26	35	230.77	142.86	180.33
Town	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	—	1	1	8	8	125.00	125.00	125.00
Total S.A. Coloured	—	—	1	1	4	3	1	2	—	—	—	—	—	—	—	—	—	7	6	34	43	205.88	139.53	168.83
Asiatics:																								
Locations	1	—	—	—	4	2	—	2	—	—	—	—	—	—	—	—	—	6	4	46	25	130.43	160.00	140.84
Town	—	—	—	—	—	2	—	2	1	—	—	—	—	—	—	—	—	4	1	20	16	200.00	62.50	138.88
Total Asiatics	1	—	—	—	4	4	—	4	1	—	—	—	—	—	—	—	—	10	5	66	41	151.15	121.95	140.19
All Coloured:																								
Locations	4	—	17	20	15	25	18	14	—	—	—	—	—	—	—	—	—	60	61	204	178	294.11	342.70	316.75
Town	—	—	1	1	7	3	4	8	—	—	—	—	—	—	—	—	—	13	14	34	34	382.35	411.76	397.06
Total All Coloured	4	—	18	21	22	28	22	22	—	—	—	—	—	—	—	—	—	73	75	238	212	306.72	353.77	328.88

NOTIFICATIONS OF INFECTIOUS DISEASES—EUROPEANS—for the Year ended June 30th, 1929.
Age Incidence.

	0-1 years.		-5 years.		-10 years.		-15 years.		-20 years.		-25 years.		-35 years.		-45 years.		-55 years.		-75 years.		Over 75 years.		Total	
	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.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.	M. F.		Males.
Typhoid fever	—	—	1	2	8	4	3	2	2	1	5	3	3	3	2	1	1	2	1	—	—	—	26	18
Malaria	—	—	—	—	—	1	1	3	1	3	2	2	8	3	2	2	—	1	5	—	—	—	19	13
Scarlet fever	—	—	31	24	60	66	12	27	3	9	2	3	2	5	1	2	—	—	—	—	—	—	111	136
Diphtheria	1	—	2	2	7	3	2	2	—	—	—	—	1	—	2	—	—	—	—	—	—	—	12	10
Measles	1	—	8	12	8	11	3	3	2	4	1	2	3	2	2	2	—	1	—	—	—	—	28	37
Whooping cough	9	16	50	46	64	65	7	7	—	1	—	2	—	1	—	—	—	—	—	—	—	—	130	138
Tuberculosis	1	—	—	—	—	1	—	—	3	—	1	—	1	3	—	1	—	—	1	—	—	—	6	6
Poliomyelitis	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Meningococcal meningitis	—	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	3
Puerperal fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3
Erysipelas	1	—	1	1	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	9
Ophthalmia neonatorum	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	3	1	—	—	—	—	—	—	4
	16	17	93	88	147	153	28	44	11	18	12	15	17	21	10	13	1	4	7	3	2	—	344	376
Imported cases.																								
Typhoid fever	—	—	—	4	—	4	5	9	8	4	7	2	4	7	2	—	—	—	—	—	—	—	26	30
Malaria	—	—	—	—	—	—	—	—	—	—	2	—	2	—	2	—	2	—	1	—	—	—	8	1
Scarlet fever	—	—	1	—	1	1	1	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	4	1
Measles	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Whooping cough	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tuberculosis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Meningococcal meningitis	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	—	1	1	6	2	8	6	9	10	5	9	2	8	8	6	1	2	—	1	—	—	—	44	41

SEASONAL INCIDENCE OF INFECTIOUS DISEASES
for the Year ended June 30th, 1929.

			Typhoid fever.	Malaria.	Scarlet fever.	Diphtheria.	Measles.	Whooping cough.	Tuberculosis.	Poliomyelitis.	Meningococcal Meningitis.	Puerperal fever.	Erysipelas.	Ophthalmia Neonatorum.	Malta fever.
1928.															
July.	European	Residents	—	—	24	4	12	23	—	—	1	—	1	—	—
		Imported	2	—	1	—	—	1	—	—	1	—	—	—	—
	Coloured	Residents	—	—	—	—	—	4	—	—	—	—	—	—	—
		Imported	—	—	—	—	—	—	—	—	—	—	—	—	—
August.	European	Residents	2	—	20	3	16	41	—	—	1	3	3	—	—
		Imported	—	—	1	—	1	2	—	—	—	—	—	—	—
	Coloured	Residents	1	—	—	—	—	4	1	—	2	1	—	—	—
		Imported	1	—	—	—	—	—	—	—	—	—	—	—	—
September.	European	Residents	2	2	16	—	14	72	—	—	—	—	1	1	—
		Imported	3	—	—	—	—	—	—	—	1	—	—	—	—
	Coloured	Residents	1	—	—	—	—	1	1	—	1	—	2	—	—
		Imported	1	—	—	—	—	—	1	—	1	—	—	—	—
October.	European	Residents	5	5	25	—	6	59	1	—	—	—	—	1	—
		Imported	10	—	—	—	—	—	1	—	—	—	—	—	—
	Coloured	Residents	5	—	—	—	1	—	3	—	1	—	—	1	—
		Imported	1	—	—	—	—	—	2	—	—	—	—	—	1
November.	European	Residents	3	—	41	—	6	27	1	—	1	3	2	—	—
		Imported	5	1	1	—	—	—	—	—	1	—	—	—	—
	Coloured	Residents	3	—	—	—	—	—	4	—	—	1	—	—	—
		Imported	2	—	—	—	—	—	—	—	—	—	—	—	—
December.	European	Residents	3	—	36	3	5	8	—	—	—	—	—	—	—
		Imported	6	—	—	—	—	—	—	—	—	—	—	—	—
	Coloured	Residents	9	1	—	—	1	—	3	—	—	—	—	—	—
		Imported	1	—	—	—	—	—	—	—	—	—	1	—	—
1929.															
January.	European	Residents	8	4	10	1	—	8	1	—	—	—	1	1	—
		Imported	9	—	—	—	—	—	1	—	—	—	—	—	—
	Coloured	Residents	5	—	—	—	—	—	2	—	—	—	—	—	—
		Imported	4	—	—	—	—	—	—	—	—	—	—	—	—
February.	European	Residents	7	5	8	—	—	7	1	—	—	1	1	—	—
		Imported	9	3	—	—	—	1	1	—	—	—	—	—	—
	Coloured	Residents	11	—	—	—	—	—	4	—	—	—	—	—	—
		Imported	3	—	—	—	—	—	1	—	—	—	—	—	—
March.	European	Residents	4	2	12	1	—	11	—	1	—	—	—	—	—
		Imported	5	2	1	—	—	—	1	—	—	1	—	—	—
	Coloured	Residents	1	—	—	—	1	—	—	—	—	—	—	—	—
		Imported	4	2	—	—	—	—	—	—	—	—	—	—	—
April.	European	Residents	3	11	21	2	2	5	1	—	—	1	1	1	—
		Imported	4	2	1	—	—	—	—	—	—	—	—	—	—
	Coloured	Residents	—	1	—	—	3	1	1	—	—	—	—	—	—
		Imported	—	4	—	—	—	—	2	—	—	—	—	—	—
May.	European	Residents	5	3	19	7	2	2	2	—	—	—	2	—	—
		Imported	—	—	—	—	—	1	—	—	—	—	—	—	—
	Coloured	Residents	2	—	—	1	1	3	1	1	—	—	—	—	—
		Imported	2	2	—	—	—	—	1	—	—	1	—	—	—
June.	European	Residents	2	—	15	1	2	5	5	—	—	1	1	—	—
		Imported	3	1	—	—	—	—	1	—	—	—	—	—	—
	Coloured	Residents	5	—	—	1	7	—	1	—	—	—	—	—	—
		Imported	3	—	—	—	—	—	1	—	—	—	—	—	—

Review of Twenty-Five Years Progress in Hygiene and Health Work in Pretoria.

1904-1929.

Increase of Population.

During this period the European population has increased from 21,114 (Census, April 1904) to 43,500 (estimate, December 1928), amounting to an increase of 22,386 in twenty-five years. The rate of increase in recent years has been approximately 1,000 per annum.

There has also been a great change in the Age and Sex Constitution of the Population.

In 1904 males constituted sixty per cent. of the European population. At the 1926 Census the numbers of the sexes were practically equal. In 1904 the discrepancy in the numbers of the sexes was greatest at the age period 25 to 35 years, there being more than twice as many men as women at that age. At ages 20 to 25 and 35 to 45 the disproportion was very little less. The total number of males aged 20 to 45 in 1904 was 7,983 and of females 3,916. At the same age period in 1926 there were 8,686 males and 8,431 females, the sexes being nearly equal. Whilst the increase of males at this age period had been only 703, that of females had been 4,515.

So much for sex, and what of the age constitution of the population?

The greatest alteration is in the proportion of persons aged 25 to 45 years and at ages over 45 years. In 1904 persons aged between 25 and 45, i.e., in the prime of life, formed forty-three per cent of the total population. In 1926 they formed only twenty-six per cent. On the other hand in 1904 persons over 45 years formed only 8.5 per cent of the population whilst in 1926 they formed 20.7 per cent. There has been only a small increase in the proportion of children under 5 years of age, viz.: from 9.3 per cent to 9.7 per cent; a more marked increase in the proportion at age 5 to 15 years, viz.: from 16.5 per cent to 19.1 per cent, and in those aged 15 to 25 years, from 20.7 per cent to 23.5 per cent.

Whilst the increase in the proportion of those aged 5 to 25 tends to reduce the death-rate, the decrease in those aged 25 to 45 and the increase at higher ages than 45 tend to increase the death-rate apart altogether from the effect on the rates of sanitary conditions and public health activities.

One may briefly allude to the **Birth Rate (European)**: In the quinquennium 1904—1909 this rate averaged 35.3 per 1,000 of the total population. In 1924—1929 it averaged 22.62 per 1,000. More striking, however, is the fact that in the year 1904-1905 there were 816 European births and in 1926-1927 there were 887 such births whilst the number of women aged 20 to 45 years had risen from 3,916 in 1904 to 8,431 in 1926.

European Death-Rates: The crude death-rate has fallen from an average of 10 per 1,000 in 1904—1909 to an average of 7.65 in 1924—1929.

When these rates have been corrected for differences of age and sex we find average rate 1904—1909 = 13.4 per 1,000 and average rate 1924—1929 = 8.2, showing a reduction of 38.8 per cent.

Infantile Mortality: Amongst the most important factors which contributed to the death-rate in 1904—1909 was the large number of deaths of infants under 1 year of age. During the period 1904—1909 there were 457 such deaths giving an average Infantile Mortality Rate per annum of 116 per 1,000 births. Very much higher rates were recorded in Pretoria in the three previous years, 1901—1904—the average for that period being 258 per 1,000. For the last five years, viz.: 1924—1929 the rate has averaged 55.7 per 1,000.

The greater part of this reduction is accounted for by the fall in the number of deaths due to **Infantile Diarrhoea**, which in the last decade of the nineteenth century and in the first decade of this century was an absolute scourge in Pretoria.

The average mortality from this disease in the period 1904—1909 was 51.7 per 1,000, and in the period 1924—1929 it had fallen to 14.95 per 1,000, a reduction of over 71 per cent.

Marasmus, or Infantile Wasting, and Convulsions have fallen from 9.88 per 1,000 to 1.3 per 1,000, and Broncho-pneumonia from 17.3 per 1,000 to 6 per 1,000.

This great improvement I attribute to several different causes, viz.: (1) the enormous change in the sanitary state of the town to which I shall refer later; (2) the special work in regard to child welfare (a) by the Municipal Health Visitors, the first of whom was appointed in May 1911; (b) by the child welfare bureaux conducted by the Health Visitor and by the Child Welfare Society. The first of these bureaux was opened in July 1918. (3) The improvement in the methods of treatment of such infantile diseases. (4) The reduction in the prevalence and virulence of infectious diseases.

One important factor in Infantile Mortality has so far baffled us and that is deaths due to Congenital Causes. The rate for this group has hardly changed, viz.: from 27.7 per 1,000 in 1904—1909 to 25.9 per 1,000 in 1924—1929.

Reduction here will only be effected by ante-natal supervision and treatment and by improved midwifery. Here progress has also to be registered. A highly qualified municipal district midwife was appointed at the beginning of 1929, and application has been made to the Medical Council for South Africa to proclaim the area of Pretoria as one in which only registered midwives will be allowed to practice. I believe that a further reduction in the Infantile Mortality rate within the next few years is assured.

Deaths of Children aged 1—5 years: At this age also a great improvement has been effected. The average annual death-rate for the period 1905—1910 was 13.5 per 1,000, whilst for the period 1924—1929 it was 4.6 per 1,000, a reduction of about 60 per cent. This reduction is due to the same causes as have acted on the infant population.

Deaths at Older Ages: A comparison between the death-rates on the population over 5 years of age in the quinquennii 1904—1909 and 1924—1929 is attended by certain difficulties owing to the great change which has taken place in the age and sex constitution of the population. When these alterations are ignored we get crude rates which are entirely misleading. In the period 1904—1909, the yearly average number of deaths at this age was 105 giving a crude death-rate on an average population of 19,640 of 5.34 per 1,000. In 1924—1929 the average annual number of deaths was 244, giving a crude rate on the population of 37,460 of 6.5 per 1,000.

The Director of Census has very kindly supplied me with a standardising factor, by means of which an accurate comparison can be made of the two periods. In order to eliminate the effect of the differences of age and sex at these two periods, the crude death-rate of 1904—1909 must be multiplied by 1.49. The corrected rates are then: for 1904—1909, 7.79 per 1,000 and for 1924—1929, 6.26 per 1,000. There has therefore been a fall of over 21 per cent in the death-rate for persons over 5 years of age.

The most striking changes in the causes of death at this age period are the reduction in the number of deaths from Typhoid Fever, Dysentery, and certain other Infectious Diseases. On the other hand the death-rates from Heart Disease, Cancer, Kidney Disease, Apoplexy, Influenza and Old Age have increased considerably. This is largely—probably altogether—due to the greater number of persons over 45 years of age in the population.

Infectious Diseases: The most important of these diseases with which we have had to deal in Pretoria has been Typhoid, (Enteric) Fever. Like Infantile Diarrhoea this disease constituted a regular scourge in Pretoria in the last decade of the nineteenth and the first few years of the twentieth century. In the twenty-five years under review both the attack rate and the death-rate have been greatly reduced. Thus in 1904—1909 the average attack rate was 56 per 10,000 of the European population, and the death-rate was 4.39 per 10,000. In 1924—1929 the attack rate had fallen to 13.5 per 10,000 and the death-rate to 0.85 per 10,000, only one-fifth of the earlier rates.

This result is due (a) to improvement in the water supply to certain areas of the town; (b) to sanitary improvements, particularly to the introduction of water-carriage drainage, but also to the high standard of cleanliness in private premises secured by the work of the sanitary inspectors, to the improved scavenging of the town by the Town Engineer's Department; (c) to great improvements in the milk supply, in respect of structure and maintenance of dairy premises, and to the improvements effected in all places where food is sold, particularly hotels, restaurants and boarding houses; (d) in latter years to the introduction of anti-typhoid inoculation.

A good deal still remains to be done, particularly as regards the Coloured Population and the Locations before this disease is reduced, as it should be, to a vanishing point.

Scarlet Fever, although not attended by a high mortality, is a disease which sometimes does great damage to its victims and may leave a legacy of chronic ill-health. The disease

is one which rarely affects adults and rates are therefore best calculated on the population under 15 years of age. As epidemics—at least in a small town—occur only at longish intervals one has to take a fairly long period for comparative purposes. During the period under review there have been five epidemics. In the period 1904—1919 the average attack rate was 14.8 per 1,000 children under 15 years, and the death-rate 0.287 per 1,000. In the decade 1919—1929 the attack rate was 9 per 1,000 and the death-rate 0.087 per 1,000, a very marked reduction both as regards incidence and mortality.

Diphtheria: This disease is comparatively rare in Pretoria. The average annual number of cases reported during the whole twenty-five years' period has been 20 Europeans and 16 Coloured persons, and the average annual number of deaths has been Europeans 2.24 and Coloured persons 0.52.

The first quinquennium—1904—1909—was characterised by a particularly low incidence of this disease, the attack rate per 1,000 of population under 15 years being only 1.35 (European) and the death-rate 0.124. In the following four quinquennii the rates have been somewhat higher. In 1924—1929 the average annual attack rate was 1.6 per 1,000 and the death-rate 0.2 per 1,000. The small proportion of children in the population during 1904-09 and the fact that the proportion attending school was less may account for the lower incidence of the disease in these years.

Measles: This disease has been notifiable in respect of the first case in a household since 1906. Prior to the period now under review, in the years July 1900 to June 1902, there had been a terrible epidemic of measles in many parts of South Africa, and Pretoria had suffered badly, there being no less than 238 deaths of Europeans.

During the 22 years 1907—1929 there have been only four epidemics which occurred in 1910, 1916, 1924 and 1928 respectively.

Whilst the incidence of the disease has varied very much from year to year we find that when five-yearly periods are taken there has been comparatively little reduction in the average annual attack rate. This is shown in the table below:—

Period.	Average European Population under 15 years.	Primary Cases.	Average Annual Attack Rate per 1,000.
1907—1912	8,819	1,384	6.28
1912—1917	10,374	1,727	6.64
1917—1922	10,950	1,100	4.0
1922—1927	11,558	1,828	6.3
			6.46
			5.15

But whilst the incidence of the disease has diminished but little it is quite otherwise as regards the death-rate which has been greatly reduced as shown below.

Period.	Number of Deaths.	Rate per 1,000 under 5 years.
1907—1912	20	1.38
1912—1917	37	2.25
1917—1922	5	0.29
1922—1927	5	0.26

Deaths at other ages in these quinquennii were 10, 7, 1 and 1 respectively. In the two years 1927—1929 there have been four deaths, but this includes an epidemic period.

As I have stated in a paper contributed to the Journal of the Medical Association of South Africa, the adoption of notification, and the preventive measures which we have been able to adopt consequent thereon appear to have been successful in markedly lowering the death-rate from this disease.

Whooping cough has also been notifiable in respect of the first case in a household since 1906. And here also there has been a well marked fall in the death-rates though not to the same extent as in the case of Measles.

The following are the average annual rates for the periods specified.

Period.	Total Deaths.	Average Annual Deaths.	Death-rate under 5 years (European).
1907—1909 (3 years)	10	3.3	1.18 per 1,000
1909—1914	16	3.2	0.99 ..
1914—1919	17	3.4	0.95 ..
1919—1924	14	2.8	0.76 ..
1924—1929	10	2.0	0.5 ..

As in the case of Measles there has only been a slight fall in the attack rate which averaged 18.3 in the period 1909—1914, and 17.2 in the period 1924—1929.

The fall in the death-rate in both these diseases may be partly due to improved sanitary conditions, but is also I believe the result of earlier and more careful treatment of cases consequent on the publicity and attention given by the Health Authority to what used to be regarded as trivial complaints by the public and not worthy of serious attention.

Tuberculosis: The death-rate for Europeans has fallen from 0.53 per 1,000 in 1904—1911 to 0.287 per 1,000 in 1920—1929, and for Coloured persons from 1.62 per 1,000 in 1904—1911 to 1.05 per 1,000 in 1920—1929; a reduction of about fifty per cent.

Sanitary Conditions: Citizens of Pretoria to-day will hardly recognise their city as described in the local newspapers of the eighties and nineties of last century when there were "dirty water-sluts and accumulations of rubbish on every hand"; when "our streets were used for depositing kitchen refuse, slops, empty tins and broken glass"; when "carcasses, rubbish and filth are deposited on the outskirts of the town"; when "the water supply is putrid, wells are in close proximity to cesspools, and cesspools are overflowing into furrows"; when "Church Square is used as a cattle kraal and soil, chiefly animal excreta, has risen to a depth of two feet"; when "nameless abominations are to be met with in the streets and disease is rife in every quarter of the town." But these conditions are vouched for also by Government reports of the day and they underwent very little improvement until 1902 when the Town Council was established and properly qualified Health and Engineering officials were appointed. This was two years before the period which I am reviewing, and during these two years very great improvements had been effected.

During the following quarter of a century a great deal of work has been carried out in the improvement of Sanitary Conditions, in respect to Housing, and with regard to the purity of Milk and other Foodstuffs offered for sale.

In 1904 there was no Isolation Hospital, other than a few old wood and iron buildings belonging to the Transvaal Government. The present Hospital (thirty beds) was erected in 1911 and about 1,500 cases have been treated therein.

Water-carriage Drainage: In 1904, except for two small installations at Bryntirion and the Artillery Barracks, the Conservancy System prevailed throughout the town, and household waste water was disposed of in the most primitive manner by being discharged into open furrows on the streets. The system was attended by constant offence and frequent nuisance.

To-day the whole central area, the greater portion of the Eastern suburbs as well as part of the West are provided with water-carriage drainage. The Sewage Disposal Works were opened in 1913, and have been a complete success, and a model for other places in South Africa.

An enormous improvement has been effected in the town by the provision of a complete system of **Storm Water Drainage**, and the proper construction of roads, many of which are now tar-macadamised, and there is an excellent scavenging system under which the streets of Pretoria are maintained at a high pitch of cleanliness.

Housing: Great improvements have been effected in the housing conditions both of the poorer class of Europeans and in the case of Coloured persons.

Some 1,900 rooms occupied by Europeans and 1,500 occupied by Coloured persons and which were unfit for human habitation have been closed by Magistrate's Order.

The Council has erected 38 houses for European occupation besides assisting large numbers of people with building loans.

As regards Coloured persons, about 300 Municipal houses have been erected in Bantule Location; Marabastad has been greatly improved, and twenty houses have been

erected for Eurafrians. Housing conditions generally in the Cape and Indian Locations have been much improved.

A well built and equipped Municipal Compound has replaced the miserable wood and iron buildings which existed in 1904 and for many years thereafter. And a Municipal Hostel on the most modern lines has been built for the accommodation of natives employed by business firms. The Urban Areas Act has been vigorously enforced, and a large proportion of the natives previously resident in town have been removed. The housing of natives employed as domestic servants has been improved out of all recognition.

Food Supplies: During the period under review special by-laws dealing with Milk, Meat, etc., have been brought into force, and by systematic inspection a high sanitary standard has been secured, both as regards the structure of buildings and the method of conducting the businesses.

In 1904 the slaughtering of cattle, sheep, etc., was carried on in miserable shanties on the Western Town Lands, each individual butcher having a place of his own. Adequate inspection was scarcely possible and it was hard to maintain decent sanitary conditions owing to the entire absence of drainage, etc.

The present Abattoir—one of the finest in South Africa—was opened in 1914. Since then 1,465,401 animals have been slaughtered there. For several years now revenue has equalled expenditure. It is equipped with chillrooms and bye-product plant.

The Fly nuisance has been vigorously tackled, and has now been reduced to very minor proportions. Mosquitos which were looked upon as a necessary evil in 1904 have been almost eradicated and the mosquito-net is out of date.

In spite of all that has been accomplished, much still remains to be done, particularly as regards the housing of the unskilled European labourer and the Coloured people. Further improvements in the control of the purity of milk and other foodstuffs are necessary. And in Pretoria as elsewhere, Preventive Medicine must extend its field of action attacking diseases which are not classified as infectious and teaching the people how to maintain a higher pitch of personal health than has been generally secured hitherto.

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