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Cheltenham.

# ANNUAL REPORT OF THE SANITARY © CONDITION

ETC., ETC., OF THE

BOROUGH OF CHELTENHAM.

FOR THE YEAR 1905,

J. H. GARRETT, M.D., D.P.H.,

MEDICAL OFFICER OF HEALTH,

Together with the Report of the Chief Sanitary Inspector,

ALSO THE

Annual Meteorological Report by Mr. A. C. Saxby.

"Salus Populi Suprema Lex."

PRINTED BY ORDER OF THE SANITARY AUTHORITY.

CHELTENHAM : G. F. POOLE, PHŒNIX PRESS, BENNINGTON STREET.

#### BOROUGH OF CHELTENHAM.

# PUBLIC HEALTH COMMITTEE.

MR. COUNCILLOR E. H. PARSONAGE, (Chairman). MR. Alderman W. N. SKILLICORNE (Mayor).

> MR. ALDERMAN G. NORMAN. MR. COUNCILLOR G. O. BENCE. MR. COUNCILLOR R. DAVIS, M.D. MR. COUNCILLOR M. DAVIS. MR. COUNCILLOR J. PILLEY. MR. COUNCILLOR H. WAGHORNE.

Town Clerk-MR. R. OWEN SEACOME.

Borough Surveyor-MR. J. S. PICKERING.

# MEDICAL OFFICER'S DEPARTMENT.

Chief Inspector of Auisances-A. E. HUDSON.

Ussistant Inspectors— E. J. MANDERS. W. T. BLAKE. E. JONES.

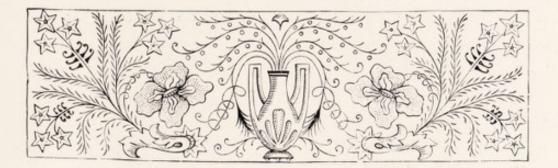
Clerk-F. HUDSON.

Medical Officer of Health-J. H. GARRETT, M.D.

# CONTENTS.

						PAGE
The Public Health Committee	• •			••	••	2
Address to the Sanitary Authority	· · ·	•• •		••		5
Vital Statistics :						
Summary of Statistics for the Yea	r					7
The Borough of Cheltenham						7
Site and Aspect						8
Altitude and Climate						8
Geology and General Topography						8
The Population						
The Houses of Cheltenham groupe	d accord	ing to Ra	teable Va	lues		10
Births and Birth-Rate						10
Table showing that the Natural	Increase	takes pl	ace entir	ely in sr	nall	
houses						12
Illegitimate Births						13
Infant Deaths						14
Deaths and the Death Rate						14
Table showing Births and Death	is in En	gland and	Wales a	as compa	red	
with Cheltenham in 1905						16
Table of Statistics for the last Ten	Years					17
Zymotic Diseases:						
Zymotic Diseases notified in each	month, 1	905 .				18
The Zymotic Death-Rate						18
An Epidemic of Measles						18
Whooping Cough						21
Scarlet Fever						22
Diphtheria						22
Enteric or Tyhoid Fever						22
Zymotic Diarrhœa						22
Influenza						23
Erysipelas						23
Small Pox.,						23
Vessination					14	24
		•• •				
Phthisis		•• •	• ••			24
The Isolation of Infectious Disease						25
List giving Number of Cases of Notified since Notification bega	f Zymot an	ic Diseas		have b	een	25
DEATHS CERTIFIED BY CORONER IN 19	05 after	Inquests				26
DEATHS NOT CERTIFIED IN 1905						26
WARD STATISTICS :						
Table showing Number of Houses	of four o	lasses in	each Wa	rd per c	ent	
of all the Houses in the Ward						27
Table showing different Death Rat						28
Death-Rates from All and Several G						
Ward and in the whole Town, I						29

	Alphabetical	List of De	aths in	Streets	of No	rth W	ard				30
	**	**	**	••	So	uth W	ard				32
		**		••	Eas	st War	d				33
	••	**	••	**	W	est Wa	rd				35
	**		**		Cer	ntral W	ard				36
		**	••	**	Mi	ddle W	ard				37
	Deaths in Pu	blic Institu	itions								38
	Deaths in Bo	rough belo	nging t	o Outsi	ide Di	stricts					39
Loca	al Government	Board Ta	bles I.,	II., II	I., IV.	, V.	?				40-4
	le of Deaths 1										45
Wo	ork Done :					-					
	Report of Cl	hief Sanita	ry Insp	ector							45
	Summary of	Routine a	nd oth	er Wor	k						45
	Inspections.										47
	Improvement	ts in Dwel	ling He	ouses							49
	Houses Clos	ed as Unfi	t for H	uman	Habit	ation					49
	Improvement	in House	Drain	s							50
	The Corpora										52
	List of Hous	es for whic	h the S	anitary	Certif	icate v		nted in			52
	Improvement										54
	Common Lo										54
	Slaughter-Ho	0 0									56
	List of Butch										56
	List of Privat										57
	Number of A										58
	Unsound and										
	of man .										58
	Inspection of	f Food Sh	ops								59
	Bakehouses										60
	Offensive Tra	ades									60
	Dairies, Cow	sheds and	Milksho	ps							61
	Provision of	Ash Recept	otacles								62
	Paving of Ya	rds									62
	Inspections u	nder the F	actory	and W	orksho	ps Act					63
	Table of the	Secretary of	of State	re Fac	tories	and W	ork-pla	ces			65
Rei	port upon	Matter	s of	Curr	ent	Inter	est_				
ner	The Sanitary								nd Wo	ork-	
											66
	Sewers and	Sewage Tr	eatmen	t							69
	Establishmen by a Neigh	t of a Sew bouring Co	age Tre ouncil	atment	t Plant		our Bo	rough	Bound	lary	72
	The Water S	upply									73
	Monthly Ana		Severn	Water	r durin	g 1905					77
Ap	pendices			••							
	Sale of Food	and Drugs	Act-1	Return	of Ar				he Pul	blic	
	Analyst, 19								•••	• •	78
	Annual Repo	rt on the N	leteorol	ogy of	Chelte	enham,	by Mi	. Saxby	y	•••	79



To the Mayor and Members of the Sanitary Authority of the Borough of Cheltenham.

GENTLEMEN,

I have the honour to present my Annual Report for the year 1905, which is now added to the score of past years.

Last year was as usual a busy year in the Health Department, our efforts to maintain and further improve the existing sanitary conditions having been unremitting, and the report makes a good showing of work actually accomplished. In the course of the dozen years just past a very great deal has been done by compliance with notices served from this department, with the result that the borough presents a totally different sanitary aspect to that which formerly held, but any relaxation or weakening of effort on the part of your sanitary officers would lead to a rapid falling back to something resembling the former conditions, because the production of defects in old properties is continuous. The public demand for improvements is also ever advancing, and Cheltenham requires to be in the forefront rather than in the rear rank of progress. This seemed to be forgotten when, upon the occasion of the death of an inspector last year, an effort was made to prevent the appointment of a successor and thus reduce the sanitary staff, which is already small compared with that of many towns.

I venture to point out again, that the action of the sanitary officer who is bent upon doing his duty without fear or favour, cannot fail to be in conflict with private interest very frequently, and he can hope for no popularity amongst the owners of neglected house-property, and others who are caused to spend money by doing the things demanded in the notices constantly being served from the Health Department. The officer acts in the behalf of the public and has no private interest whatever to serve ; in return he is attacked personally by those whose private interests are at stake, and a considerable section of the public appears always ready to join against the officer whatever the matter may be. But although the greater public cannot, or at all events do not, understand this conflict of private and public interests, the Town Council must understand it, and must protect its officers when this private interest becomes strongly represented upon the Council itself.

The death-rate of 14.8 per 1,000 persons living in the borough at the middle of the year was a trifle higher than in the previous year, several adverse influences having told against us last year to increase the number of deaths. This rate is, however, a little below the average of the previous ten years. The particulars as to illness and death, and the influences to which I refer are detailed in the report, and to that I beg to draw your attention.

I have to acknowledge the friendly help of the other officials of the Corporation with all of whom I am upon very cordial terms.

I am, Gentlemen,

Your obedient servant,

J. H. GARRETT.

February 12th, 1906.

# VITAL STATISTICS.

#### SUMMARY.

				ACRES.
Acres of Municipal Borough .				4,726
Rateable Value				£309,823
Population at middle of last year.				50,500
Population in 1901 Census .				49,439
Persons per Acre in the Borough.				10.6
Average number of persons per ho	use 19	01 Ce	nsus	4.77
Death Rate, 1905	Per	Thousand		14.8
Average Death-Rate for previou	us			
		,,	,,	15.2
Zymotic Death-Rate for 1905		,,	,,	1.46
Average Zymotic Death-Rate for	or			
previous ten years		,,	,,	1.0
D' IL DI LOOF		,,	,,	19.7
Average Birth-Rate for previou	15			
ten years		,,	,,	20.6
Infant Death-Rate (under one	year	old)	per	
thousand Births, 1905 .			·	131
Infant Death-Rate Average for pre-	evious	ten v	ears	
per Thousand Births				133

#### The Borough of Cheltenham.

The main character of Cheltenham is that of a private residential town with numerous villas situated in gardens, with broad streets adorned with well grown avenues and with imposing college buildings for the accommodation of the great schools for boys and girls with which the name of Cheltenham is everywhere associated. Although the general aspect of the town suggests an extremely well-to-do population, and the casual visitor may come and depart with the idea that there are no poor in Cheltenham, as a matter of fact there are some extensive poor neighbourhoods, and our vital statistics are permanently and unfavourably affected by our having so many poor as compared with certain other first-class towns.

7

SITE AND ASPECT: The town stands well for drainage, being situated upon ground that has a general slope away from the closely neighbouring Cotswold Hills towards the Severn valley. These hills form a long bold escarpment, which lies immediately to the East and stretches from the North East to the South West. Looking away from the hills the country lies very open and the views from any height are of most extensive range.

ALTITUDE AND CLIMATE: The average altitude of the actual town is about 200 feet above sea level, whilst the neighbouring hills rise to about 1,000 feet at several points. Cleeve Common, which is connected with the centre of the town by an electric tram-line, includes the highest ground of the hills, and offers its wide expanse, many hundreds of acres in extent, for popular recreation. The climate of the town is mild and somewhat humid like that of the whole country westward; the climate of the hills is distinctly more bracing. In the Meteorological Report appended will be found the measurements of sunshine, humidity, rainfall, etc., for last year, and for a series of years past.

GEOLOGY AND GENERAL TOPOGRAPHY: The rocks of the locality are those of the lias system, the clay being at the surface, excepting where covered with drift sands. These sands are more than fifty feet in depth over considerable areas, and about half the town stands on sand and half on clay. At a greater or less altitude upon the hill sides the clay is left below and the oolitic limestones, characteristic of the Cotswolds, lie immediately below the surface soil. Cheltenham is not a hilly place; within the town itself the gradients are very gentle though continuous towards the hills. The roadways are for the main part broad and with ample pavements for foot passengers. The country around is green and interesting, and the roads connecting the town with the surrounding villages are in excellent condition.

THE POPULATION : Our population grows slowly, and irregular fluctuations occur from year to year owing to the emigration and immigration of families, who come to spend some few years here on account of the educational facilities afforded, and move away again when the children grow beyond school age. There were 222 more births than deaths in the borough last year, and 168 houses erected against 70 demolished, but I am doubtful nevertheless, whether there was any material increase in the population between 1904 and 1905, and I retain the number of 50,500 previously estimated as representing the number of persons residing in Cheltenham in the middle of last year.

Our population is characterised by a greater proportion than usual of senile persons, and of females, and a smaller proportion of infants. The average age is heightened by those immigrants who retire to Cheltenham to spend the last years of their lives, as well as by the comparatively small birth-rate, and the excess of females is occasioned by the emigration of sons in families to enter various professions in other places whilst the daughters remain at home, and also to the employment of a large number of female domestic servants many of whom come from outside the town. There are probably many more youths and young men at that age at which deaths are least likely to occur, who leave the town than those at similar age who enter it, and this desirable part of the population is lost to our statistics.

The appearance of the chief streets of Cheltenham is so pleasing and prosperous that it will come as a surprise to most people to learn that more than half of the houses in this town are so small as to be let at a rental of under  $\pounds 15$  a year each. Probably but few of our permanent inhabitants appreciate this fact. The poor quarters chiefly lie together and form two or three extensive localities towards which the more fashionable resident rarely directs his steps. As there are no factories or great industries, the means of living of the poorest are somewhat more precarious here than is the case in many other places. There are a great many persons doing odd job work, and on the whole the average earnings of the inhabitants of our poor streets is low, and cases of extreme indigence are by no means uncommon.

By the courtesy of Mr. Ricketts, the Rate Collector, I have been able to obtain the number of houses upon the rate books at the present time, in each ward of the town, together with their gross annual value, and this information in connection with the vital statistics of the town is of the greatest interest. The houses of Cheltenham with their annual or rent value grouped into four groups is as tabulated below :—

	Under £15.	£15 to £25.	£25 to £50.	£50 and upwards
North Ward	1907	141	106	19
South Ward	960	387	375	184
East Ward	1129	215	265	167
West Ward	582	262	277	390
Central Ward	861	241	343	205
Middle Ward	794	278	345	631
Total all Wards	6233	1524	1711	1596

the Pate Books in the Sir Wards

BIRTHS AND THE BIRTH-RATE : Last year for the first time I was able to obtain from the Registrar a return of births, with details of the actual place in which each birth occurred and particulars as to the status of the parents, &c. The information supplied by these returns is of exceptional interest confirming in detail the general conception before held that the greater proportion of the births in Cheltenham occur amongst the poorest part of the community. The actual figures are, however, striking and surprising, the number of births taken together with the deaths occurring in the same class of houses, show very clearly that that part of the population of Cheltenham inhabiting houses of over £25 a year rental is decreasing very rapidly by excess of deaths over births. The natural increase for the whole population takes place in houses under £25 a year rental and particularly in houses under £15 a year rental, that is, in the very poorest streets in the town.

The actual figures are as follows : ---

10

acc	of Births in Cheltenham in ording to the Annual Value of ich the birth took place.		
		Number of Births.	Rate per 100 houses
Births in	houses of under £15 yearly rent	660	10.5
,,	,, between £15 & £25 ,,	228	14.9
,,	", ", $\pounds 25 \& \pounds 50$ ,	83	4.8
,,	,, over £50 ,,	- 24	1.5
.,	,, all values	995	9.0
	of Births required to balance the per of deaths in 1905	747	6.7

The actual highest rate of births per hundred houses is not in the very smallest houses, but in the houses a grade higher than these, namely, those let at a rent of between  $\pounds 15$  and  $\pounds 25$  a year, but these houses are outnumbered by the houses of the smallest class in the proportion of more than 4 to 1. In houses above  $\pounds 25$  a year rent there is an immediate and extensive falling off in the number of births.

In regard to houses over £50 a year, some allowance is necessary for the fact that the largest houses are frequently occupied by families in which the mother has finished her child bearing, but there are very many houses from £25 a year rental upwards where this is not the case, and the tremendous difference represented by the figures below cannot arise from any such cause. Table showing that the natural increase takes place entirely in small houses, and that in the larger houses deaths largely exceed births, or that the population is dying out excepting in the smaller houses.

	Number of houses.	Births per 100 houses	Deaths pe 100 houses
Houses under £15 a year rental	6233	10.5	7.0
" between £15 & £25 "	1524	14.9	9.5
,, between £25 & £50 ,,	1711	4.8	6.1
,, over £50 ,,	1596	1.5	3.2
,, at all rentals	11064	9.0	6.7

If these differences were calculated upon population instead of upon number of houses, the divergences would be still very great. Although I do not know the relative population of houses under and over  $\pounds 25$  a year rent I have no doubt that the population per house is much greater in the large houses than in the small. In all our villas the number of the family is added to by the number of servants, and the average number of inhabitants of large houses must be considerably over 4.77 per house, which is the average for all houses in the borough.

These figures give rise to a curious contemplation, proving as they do that the best educated and those occupying the positions requiring the best talents and energies are unable of themselves to maintain their numbers, but must be continually recruited from the lower strata of society. That there are so few births in middle class houses, namely, those rented at from £25 to £50 a year is especially surprising. These include a large proportion of the shopkeepers, and people in respectable positions, amongst whom the occurrence of large families was formerly very common, and who were considered to be the backbone of the country.

It is not probable that this condition is peculiar to Cheltenham, but these figures may be taken as being more or less indicative of what is happening throughout the whole country. The general birth-rate of England has been

gradually lessening for some years, and hitherto it is probable that the greatest falling off has occurred amongst the best informed members of the community, who have exercised their knowledge in the limitation of their families, having come to understand that the rearing of a large family generally means self-sacrifice on the part of the parents, and being unwilling to undergo this self-sacrifice. It seems easy to foresee that the same knowledge extending to the poorest people will have the same effect upon them, and result in a further diminution of the number of births, leading to a stagnation or decadence in the numbers constituting our nation. As it is, our numbers are maintained by increase amongst those who are least generously endowed, and it is by no means certain that the best ever have been, or can be, recruited from those lower classes to an extent necessary to maintain the former general standard of moral, mental and physical development. The likelihood as estimated by an unprejudiced mind must appear all the other way, for although from time to time a good specimen of mankind arises from amongst the lowest, it is still to be expected that the best in the main will be bred of the best, and it is even not improbable that if enquiry were made through a few previous generations into the history of those who rise, good breed would be found to exist behind most of them.

This question of births with all it so evidently entails to the future of the country both as to numbers and as to quality, is a matter of first national importance that is bound to claim national consideration before many more years have passed ; for if there be anything which men may control, by the use of their higher intelligence, for the betterment of human kind, it surely lies here, and it is manifestly the duty of the Medical Officer of Health to transmit to the public the information upon this subject which he has obtained by virtue of his office.

There were 995 births registered in Cheltenham within the year 1905, giving a birth-rate for the whole borough of 19.7 per 1,000 living persons.

Of these births 56 were illegitimate or about 1 illegitimate birth in every 18 births. These 56 illegitimate children had 55 mothers, 35 of whom were engaged in some sort of domestic service and 10 others were laundresses, and the remaining 10 were of mixed occupation, or described as of no occupation. By the end of the year, 9 of the 56 illegitimate children. born as above, had occurred in the death returns for the same year. A considerable difference is, speaking generally, everywhere observable between the death-rate of legitimate and illegitimate infants under 1 year of age, the difference last year in Cheltenham was about 13 per cent. of the former as against 16 per cent. of the latter. The death-rate of illegitimates as shown in our returns is not, therefore, so bad as that observed in many industrial towns, where the habit of farming out the child is more common, but it is still enough to show the lessened chance of life for the illegitimate child.

The 995 births give a birth-rate of 19.7 per 1,000 living inhabitants.

The infant death-rate for the borough, or rate per 1,000 children born of deaths under 1 year of age, was 131, exactly the same figure as in the previous year, and is very nearly the average rate for the last ten years. About 40 of these children had but slight chance of life from the time of birth, 36 died within the first month of life, 17 deaths were attributed to premature birth, and 20 others died through some congenital deficiency, malformation, weakness, or injury at birth. Diarrhoeal diseases claimed 21 victims. Measles and whooping-cough together 19. Tuberculous diseases 15.

The number of deaths of infants under a year old proportionate to the number born, was 50 per cent. greater in houses under  $\pounds 25$  a year rental than in houses over  $\pounds 25$  a year rental.

DEATHS AND THE DEATH-RATE: The total number of deaths that occurred within the borough of Cheltenham in the year 1905 was 773. Of this gross number, there were 26 who came into our district from immediately surrounding districts to die. Our hospitals serve the villages round, and 25 of the 26 deaths took place in the hospitals in persons who came in from the outside, chiefly from the neighbouring urban district of Charlton Kings and the villages of the Cheltenham Union. One man also came into our district from his home at Gloucester to meet with a sudden violent death, and this makes up the 26. To get a nett death-rate these are the only deaths I deduct from the gross total of deaths. I believe in some other towns greater deductions are made for deaths of "visitors," but unless an addition is also made of the deaths in persons who were visiting away from the town, and a reduction of the population made for any "visitors" that were counted into it at the last census, the result is misleading, though doubtless favourable to the statistics of the town where the deduction of deaths in "visitors" is practised in this one-sided way.

The 747 deaths occurring in the town and its institutions, and which we accept as belonging to our district, gives a death-rate per 1000 living of 14.8 for last year. The average rate for the previous 10 years being 15.2.

There are many influences affecting life and death of which at present we have no clear knowledge. There are propitious and unpropitious years, when more or fewer deaths occur, apparently irrespective of those ordinary circumstances of life and living of which we have a better understanding. No one has even vet been able to demonstrate any definite relationship between the varying measurements in meteorological returns and the death returns, though it is almost certain that there is a relationship between life and death, the weather, and that somewhat indeterminate relative condition we call climate. More vague, yet equally true, must be the statement that there are other influences which we may indicate indefinitely as pertaining to movements in the crust of the earth, or the earth's motion through space, and the influence of other celestial bodies upon it, which affect life constantly or occurring intermittently affect it from time to time. No one can say what are the natural influences which have called forth life, and which maintain, develop and determine the length of it in individuals. They may be broadly divided into those which are innate and those which are external, and it is to the unknown external influences to which one chiefly alludes when one says that after all sanitary measures have been perfected, there will still be influences beyond the control of men which will cause fluctuations in the death-rate, resulting in good and bad years and periods of years. Recently, in connection with an enquiry into the physical condition of a large number of school-children, it has been noticed that children born in some years are of better general stamina than those born in other years, and the suggestion is that there are broad influences not vet understood which are even capable of affecting the development of children prior to birth, and which are relatively more actively

operative in some years than in other years. Such a statement is comparable with what I would say in regard to the unknown influences capable of depressing vitality, or even producing disease and death.

Last year was a comparatively bad year with us for respiratory diseases, including phthisis, bronchitis, pneumonia, &c. Cheltenham as compared with many places is favourable to diseases of the respiratory organs; the atmosphere seems to suit bronchial patients. We had, however, last year 36 deaths more from respiratory diseases than the year before, which of itself more than accounts for the slightly increased death-rate. Pneumonia, although having a more mortal effect upon the very young and the old, attacks and kills people at every age, and tubercular disease in one shape or another is almost equally general in its attack, the very young suffering chiefly in the abdomen and brain, whilst from adolescence on through young adult life and middle age the lungs become the chief seat of the disease. The number of deaths from zymotic diseases are dealt with under another heading a little further on.

There were 53 deaths certified by the Coroner after an inquest, the usual number being somewhere about half-ahundred. The railway at Cloddimore where it is crossed by a footway was again the site of several deaths, all or chiefly of a suicidal nature, and brought about by being run over by the train. There were nine deaths not certified and which are registered with simple probable causes, three of the nine being newly born at time of death, and three of senile agé.

Table showing comparative Birth and Death-Rates, Zymotic Death-
Rates, and Infant Death-Rates for 1905, all at per 1000 living
inhabitants, excepting Infant Death-Rate, which is at per 1000
infants born.

	Birth-rate.	Death-rate.	Death-rate from 7 chief Zymotic Diseases.	Death-rate of Infants under one year of age.
England and Wales	27.2	15.2	1.52	128
Rural England & Wales	26.3	14.9	1.09	113
76 Great Towns	28.2	15.7	1.88	140
141 Smaller Towns	26.9	14.4	1.50	132
Cheltenham	19.7	14.8	1.46	131

Table of Statistics for the last 10 years, shewing Deaths from Chief Zymotic Diseases, and Zymotic Death-rate, and Total Deaths and General Death-rate; also Total Births and Birth-rate per 1,000 of population, and (under 1 year old) Infant Death-rate per 1,000 children born.	ewing Deaths from Chief Zymotic Diseases, and Zymotic Death Total Births and Birth-rate per 1,000 of population, and (under fant Death-rate per 1,000 children born.	m Chief I Birth-1 Der 1,000	Zymo ate per o childr	tic Dis 1,000 ( en born	eases, a of popu	nd Zyr lation,	notic D and (ur	eath-ra nder 1 y	-rate, and ' I year old)	Total
	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905
Population	49,000	49,000	49,000	49,000	49,000	49,500	49,700	50,500	50,500	50,500
Small Pox	47	: 01	13	:∞		:-	15	::	::	30
Fever		1	9	5		1	c1	67	3	1
Diphtheria	-	9		11	4	2	10	00	on (	9
Whooping Cough	1	22	5	14	::	14	8	0	~~ ·	11
Enteric and Continued Fevers		67	õ	5	9	1	67	~	c1	61
Diarrhœa, Enteritis in Infants, &c	18	12	16	24	23	16	13	16	39	24
Total Deaths from seven chief Zymotics	88	45	52	. 69	35	40	51	29	50	74
Death-rate from Chief Zymotics	1.79	16.	1.06	1.40	12.	•80	1.02	29.	66-	1.46
Total Deaths belonging to District	826	776	804	775	688	757	715	643	714	747
General Death-rate	16.8	15.8	16-4	15.8	14.0	15.2	14.3	12.7	14.1	14.8
Total Births	1041	1043	1090	1044	968	1005	945	1062	196	995
Birth rate	21.2	21.3	22.2	21.3	19-7	20.3	19-0	21.0	19-0	19-7
Infant Death-rate per 1,000 Children born	135	151	146	147	115	111	120	85	133	131

Month.	Scarlet Fever.	Diphtheria.	Enteric Fever.	Erysipelas.	Small-pox.	Totals
January	9	10	4	5		28
February	10	3	2	3		18
March	14	11	4	2	1	32
April	9	4	3	3		19
May	4	2	1		1	11
June	8	5		1	1	15
July	34	6		4	1	45
August	3	3		1		7
September	9	4	1	2		16
October	4	4	1	4		13
November	5	5		10		20
December	7	8		4		19
The 12 months Totals	116	65	16	42	4	243
Tot'l No. treated in Hospitals	100	35	7		4	146

#### ZYMOTIC DISEASES.

We suffered a rather unusual visitation of zymotic disease of one sort and another in the year 1905, and the zymotic death-rate of 1.46 is a good deal higher than the average for the previous ten years, and assists materially in raising the general death-rate.

AN EPIDEMIC OF MEASLES.—I had anticipated that an epidemic of measles must soon come, and it came last year and caused 30 deaths. We had had but a moderate incidence of measles cases with some prevalence once or twice, since the great epidemic of 1896, and I knew that in the intervening years a considerable number of susceptible children must have come into being, and were ready for attack. The epidemic of last year began at the Cheltenham College where it spread with great rapidity and nearly the whole of the boys who were not protected by a previous attack got the disease. In a great college like this it would have been very difficult to have suggested a means of extinguishing the disease under any circumstances, after it had taken the great and sudden hold upon the boys which it did, but information of the epidemic did not reach me at the onset, and when it did reach me it was clearly too late to think of advising the closing of the College. I am not, however, sure that this could have been advised even had I heard of the first cases, for of the boys who had not already had an attack it would have been impossible to say which had and which had not been subjected to the infection, and as closing the College would have meant the return home of the boys, such action would have resulted in sending incubating measles cases to a great many centres. After events showed that from an early period a great many boys were infected, and as from infection to first appearance of symptoms is some twelve days, there is plenty of time for travelling great distances before the disease makes itself manifest. Under such circumstances not only is it inadvisable for the parents to have the boys home, especially if there are other children in the house, but from the public point of view they ought to be prevented going. The disease was probably brought to the College by a boy sent here in the incubating stage, and we have had evidence from time to time of the almost wilful carelessness of parents in sending children to our colleges when there is a liability of their being in so dangerous a state, but no certification, or any precaution that can be devised, will prevent the occasional introduction of infectious disease in this manner.

Following the epidemic amongst the College boys came the epidemic in the town. It swept through the town from the East to the West side in a very definite way, and the disease was done with if not forgotten at the College and in the East Ward by the time St. Mark's district became affected. It began in the early spring and ended with the summer holidays.

The epidemic accorded with previous experience in affecting chiefly children under 7 years of age, and, with the exception of one case, all the deaths were in quite young children, 12 being in infants under a year old, and 16 in children be ween 1 and 5 years, thus accentuating the well known fact that although a child is very likely to get an attack of measles sooner or later, if it can be postponed until the child is well beyond infant age, it is much less likely to prove fatal. The usual complication of inflammation of the lungs and air passages was the assisting cause of death in most of the cases that died.

Comparatively few elder children got the complaint, most of them were doubtless protected by a previous attack, and the evidence which this epidemic afforded of a previous attack protecting against further attack was very marked indeed, though as usual there were a few cases of second attack.

The infants' departments of a dozen schools in the town were closed on account of measles, but no boys' or girls' departments was closed, and the attendances in these departments kept up well throughout the epidemic, as the elder children in the families in which measles existed were seldom excluded from school on this account. The majority of the elder children have had measles, but apart from having had a definite attack, the elder children appear to be less liable to get measles than are the younger children. I make this last statement, however, with some reserve.

As regards school closure, it is probably the most advisable plan to close all the infants' schools at once. whether there have been known cases of measles or not. whenever measles is epidemic in a town. Measles is the worst infectious disease affecting infants, and of itself constitutes an argument against herding very young children together in large numbers. I cannot say that closing our infants' schools last year was very effective in checking measles, as in most cases the disease had secured a good many victims before the school was closed. In this connection I may refer to what appears the inexpedient change made a year or two ago in the regulations as to allowing an average attendance to be counted for individual children shut out of school on account of infectious conditions. Unless the school is actually closed the attendances now suffer in connection with the Government money grant to the school, that being based on attendances, the result is a tendency in the absence of any stringent regulations for reporting cases, for infectious children to go on attending school.

Some disinfection after cases of measles was done, but there were probably hundreds of houses in which measles occurred without being reported to us, and in which no disinfection was done. It appears certain that the infection of measles is short lived, and I question whether the infection is often borne by an intermediary, or otherwise than directly from, and within a moderate radius of the actual body of the sufferer.

Since the report I made at the request of the Local Government Board upon the Measles Epidemic in Cheltenham in 1896 some additional knowledge of measles has been gained, though many of the statements I now make are only reiterations of what I reported before. I regret that no preventive means has yet been discovered for effective measles. Epidemics continue to occur everywhere as with ourselves last year, and they usually run their course producing a considerable number of deaths. Nine years ago I stated that in its fatality measles headed the list of the infectious fevers in England, and it still occupies that position. In my report after the 1896 epidemic I advocated the notification of measles by medical practitioners, but since then the results obtained in those towns where notification has been adopted are so little encouraging that I cannot now advise the following of their example. The majority of the towns in question after trying notification of measles for some years have given it up as a useless expense. At Aberdeen notification of measles has recently been abandoned after having been practised for over twenty years.

Whooping Cough.—Following close upon the epidemic of measles, and overtaking and running concurrently with the measles before that disease had exhausted itself, came an epidemic of whooping-cough. Cheltenham is but little prone to whooping-cough as compared with many towns, but we had many more cases last year than ever known to me in any single year before. It was, however, generally speaking of a mild type from which children were not usually long in recovering. It occasioned 11 deaths. For whooping-cough to occasion only 11 deaths in a town of this size when extensively epidemic is evidence of the benignity of the type, as this disease is often much more fatal. But this represents our general experience of whooping-cough in Cheltenham. There appears to be something in the place or climate conducive to mildness in this disease when it occurs here. Not one of the eleven children who died was so old as 3 years.

SCARLET FEVER.—We had a moderate incidence of scarlet fever last year, the number of cases notified being 116 with one death only. The only thing specially deserving relation in connection with scarlet fever was the occurrence of a batch of cases attending two schools situated not far from each other, desquamating children, members of one family, were found in both of the schools. Inquiry at the houses of the children who stayed away from school with an illness of unknown nature led to the discovery of 5 cases in as many houses upon one morning. The advantage of an isolation hospital for scarlet fever cases was made undeniably evident in this instance. A sharp search being made amongst the scholars of these schools, and all cases sent to hospital, and the schools closed and thoroughly disinfected, the outbreak was easily and quickly extinguished.

DIPHTHERIA.—Of this disease there were notified 65 cases which is not an unusual number, although with bacteriological diagnosis the numbers may be expected to be greater than formerly, as there is a tendency to notify cases which clinically would not have been diagnosed as diphtheria. By taking swabs liberally from sore throats of all kinds, the number of bacteriologically diagnosed diphtheria cases can be multiplied almost indefinitely ; but the common experience of every day appears to prove these diagnoses to be of less practical value than that which has been claimed for them.

ENTERIC OR TYPHOID FEVER.—Since the shallow wells in the town gave place to a better water supply we have had but little typhoid, before then there had been several sharp outbreaks, an experience which was not to be wondered at considering the close contiguity of the wells to defective drains and sewers at the lower end of the town. Of the two deaths certified as from typhoid last year, one in the person of a nurse was contracted whilst nursing a case of the same disease outside our district.

ZYMOTIC DIARRHEA.—This cause of death was operative to the extent of producing 24 deaths, and 21 of these were in infants under a year old, and the other 3 in children between 1 and 2 years of age. They include deaths certified variously as being from diarrhœa, enteritis, and gastro-enteritis, terms which when applied to infants may be rightly conceived to be all the same complaint, and it is evident that these three terms are used synonymously in the Cheltenham death-returns, These cases chiefly occur in the late summer and autumn, which tends to prove them to be of specific zymotic origin. It would be assisting if medical practitioners would be as clear as possible in certifying deaths from diarrhea. term is often used for a simple cause of death in elderly persons, where it is almost certain there is some other chief cause to which the diarrhœa is secondary or symptomatic. 1 view the matter in this light when I have no more definite information than simply "diarrhœa," "enteritis," or "gastroenteritis" given as the cause of death in elderly persons. The same terms in connection with deaths in infants and young children, being all classed as zymotic disease. The matter is of some importance as more than a third of our average zymotic death-rate results from deaths due to zymotic diarrhœa.

INFLUENZA.—This still continues as a cause of deaths and last year 8 deaths were directly attributed to it.

ERYSIPELAS.—This disease is compulsorily notifiable under the Notifications Act, but notification is very rarely of any service to us, and there is a tendency to incorrectly notify inflammatory conditions connected with abscesses and chronic ulcers as erysipelas. There were 42 notifications of erysipelas received in 1905.

SMALL-Pox.—The construction of a new railway from Honeybourne to Cheltenham, which has been in progress during the last three years, brought a number of navvies and casual tramp workers into this neighbourhood last year. Temporary huts and shelters were erected for them at several points along the course of the new line which were shifted as the line progressed, and there were several outbreaks of small-pox in these huts. As the work approached Cheltenham a new lot of huts were erected within easy walking distance of our town, and the danger of introduction of small-pox into Cheltenham became grave and threatening. Two men who had been in contact with small-pox cases in the huts came into the borough and were notified in due course as suffering from small-pox. One man walked into the town to a doctor's surgery with the rash upon him, the other who had been staving two or three nights in a common lodging-house presented himself at the Workhouse in the same condition. These cases were removed immediately upon discovery, and every possible precautionary measure taken in connection

with all discoverable contacts until the danger of infection had passed. The inmates of the common lodging-houses at this time were a rough lot, and fortunately most of them had been re-vaccinated at a time of previous contact with smallpox, and to this fact we largely owed our escape from a more serious outbreak. From the two cases there was no extension. Previous to the occurrence of these cases in the persons of navvies we had a case in the person of a sailor, who had contracted the disease aboard ship, and had been permitted to visit friends here before the expiration of the usual 14 days from time of contact. This case also was discovered, and removed to hospital before anyone else had become infected. Two other cases were sent to the hospital into quarantine upon suspicion, and were kept there until it was safe to discharge them. Most likely neither of these latter two was a genuine case of small-pox. The Public Vaccinator lent us his assistance, visiting the lodging-houses and other places to vaccinate contacts, for which service we were much indebted to him. The railway is now nearing completion and as there has not been a case of small-pox for the last three months we hope the danger of further introduction of this disease from the same source is past.

VACCINATION.—The Vaccination Officer obliges me with the information that there were 609 primary vaccinations done in the borough during last year. There were 995 births during the same time, and allowing for deaths in infancy of unvaccinated children, there will remain over 300 or a number representing one-third of the births not vaccinated. This means that protection by vaccination of our population is becoming very partial, and the prevention of spread of small-pox whenever the infection of this disease is introduced is becoming more difficult. A good deal has been said about the cost of vaccination, but it will take a very long time for vaccination to cost our neighbour town of Gloucester so much as the small-pox cost it nine years ago in money, to say nothing of the 400 lives then and there lost from small-pox.

PHTHISIS.—The voluntary notification of phthisis, or consumption of the lungs, which was adopted with us two or three years ago, has proved only a moderate success. Last year 21 cases of phthisis were notified. The Town Council has not taken any steps, up to the present time, towards the isolation or treatment of phthisis in a Sanatorium or otherwise. THE ISOLATION OF INFECTIOUS DISEASES.—The Delancey Hospital for infectious diseases continues to do good service to the town. There is here special accommodation for the isolation of small-pox, scarlet fever, typhoid fever, and diphtheria, the buildings for the various diseases being well separated from each other, and situated in excellent grounds on the border of the town, and within its boundaries. The Cheltenham College has a hospital block of its own for the isolation of infectious cases, situated upon the Delancey Grounds, and the Ladies' College has a well-built separate hospital situated apart but in the same locality. The permanent provision of hospitals for the isolation of infectious diseases at Cheltenham is at the present time sufficient and satisfactory.

Detailed information concerning the cases treated last year in the Delancey Hospital is contained in the Hospital Report. The number of cases isolated in hospital relative to the number notified, &c., is shown in the accompanying tables. The following list gives the numbers of cases of zymotic diseases which have been notified since notification began :—

Year	Scarlet Fever	Diphtheria	Enteric Fever	Puerperal Fever	Small-pox	Erysipelas
1890	93	16	24	2		
1891	75	15	19			
1892	264	10	10			
1893	419	33	63			
1894	147		27	4	$\frac{2}{3}$	
		26				
1895	89	25	34	3	-1	
1896	126	60	26	4	22	
1897	224	43	20	1		
1898	296	52	23	5		
1899	273	80	16			
1900	103	74	32	1		21
1901	67	58	18	1		16
1902	147	63	18	3	1	19
1903	142	65	17		1	25
1904	143	59	7			25
1905	116	65	16		4	42
Average for all years	170	46	23	1.5	2	24

### Deaths Certified by Coroner after Inquests, 1905.

Accident by asphyxia in a sewer m	anhole		 	1
Accident by burns and scalds .			 	7
Accident by falls and injuries from				11
Suicide or Accident by being run of				
by train				3
Suicide by narcotic poisoning .				1
Suicide by hydrochloric acid poisor			 	1
Suicide by carbolic acid poisoning.				1
a · · · · · · · · · · · · · · · · · · ·				2
				1
Murder by fracture of skull				1
Abscess on the brain				1
0 1 11 1				1
Heart disease, weak heart, syncope				14
T 1 I				11
Malnutrition, want of attention at	hieth	••••	•••	3
		••••	••••	
Pneumonia		••••	••••	
Rupture of coronary artery .		•••	••	1
Shock, the result of ptomaine poise	oning		 •••	1

#### 53

## Deaths not Certified in 1905.

The following causes were assigned to these deaths :---

Convulsions at age 1 day	 	1
Diarrhœa and convulsions at age 3 months	 	1
Heart disease at ages 76, 62, 61	 	3
Premature birth at ages 15 minutes, 30 minutes	 	2
Senile decay at ages 78, 79	 	2

9

#### Ward Statistics.

As usual the deaths last year from all and special causes were distributed through the wards in unequal proportions relative to the populations of the several wards. The births were distributed with similar inequality. In dealing in the foregoing pages with the births and deaths I have shown how quality of population as judged by the rental of the houses affects the birth-rate and death-rate, and as the number of poor-class houses varies considerably in the six wards into which Cheltenham is divided, we may expect to find exhibited considerable differences in the birth-rate and death-rate of the several wards in accordance with variations in the quality of their populations. We may first give the percentage number of houses of the four classes in each ward.

Numbe	r of houses of for h			the W		nu pe	1 100	or an t	ne
		/		North Ward	South Ward	East Ward	West Ward	Central Ward	Middl Ward
Houses u	nder £15 annual	renta	1	88	50	64	38	52	39
., f	rom £15 to £25			6	20	12	18	15	13
	rom £25 to £50			5	20	15	18	21	17
	bove £50			1	10	9	25	12	31

These figures demonstrate particularly the inferiority of the houses of the North Ward where 88 per cent. are under a rental of £15 a year. This of course is our great poor ward which has always shown the highest birth-rate and the highest death-rate, and the highest rate for infectious diseases, and the cause is shown to be connected with the quality of the population. The birth-rates and death-rates in the other wards are also comparatively high or low according to the number of small and greater houses con-The East Ward is next worst to the tained in the wards. North Ward, having 64 per cent. of houses under £15 rental, and its birth-rate and death-rate are next highest to the North The South and Central Wards more nearly approxi-Ward. mate to each other in regard to the quality of their houses. and are more nearly equal in regard to their vital statistics. being lower than the North and East Wards and not so low as the West and Middle Wards. These two last named wards resemble each other closely in the quality of their houses and population. They contain many more houses let at rentals of  $\pounds 50$  and over than either of the other wards.

The High Street divides the town into two parts of nearly equal populations. Of the six wards into which the town is divided three, namely the North, Central and East Wards lie to the North of the High Street, only a few streets of the North Ward overlapping the line of division, and three, namely, the South, West and Middle Wards, lie to the South of the High Street. It happens that the wards which lie to the North of the High Street are those with the less favourable death-rate, whilst the wards to the South of the High Street exhibit a remarkably low rate. These deathrates are shown in the following table :—

Table Showing Death-Rates for Town, 1905.	two Halves	of the
	Approximate Population.	Death-Rate.
North, Central, and East Wards	25,642	17.5
South, Middle, and West Wards Whole Town	24,858 -50,500	$11.9 \\ 14.8$

The next table shows some further particulars of the statistics of the six wards taken separately, as compared with the whole town :—

Ward Statistics, including Death-rates from all and several causes, and Infant Death- rates (all at per 1,000 living inhabitants, excepting the Infant Death-rate, which is at per 1,000 children born), also Birth-rates, for the year 1905.	rom all nts, exc rates, fc	and se epting 1 or the y	veral c the Infi ear 190	auses, ant Dea 5.	and In th-rate,	fant D , which	eath- is at
	Whole Town	North Ward	South Ward	East Ward	West Ward	Central   Ward	Middle Ward
Population	50,500	9,700	8,350	8,506	6,850	7,436	9,658
Birth-rate	19-7	31.6	20.6	21.1	12.4	17-71	12.6
General Death-rate	14.8	20.3	14.3	16.1	11-3	15.4	10.3
Infant Death-rate	131	169	145	95	<del>1</del> 6	121	98
Zymotic Death-rate	1.46	3.20	0.55	1.52	-72	1.07	.52
Phthisis Death-rate	01:	1.75	09.	ç0.1	65.	<u>ęč</u> .	1ç.
Tubercular Death-rate (other than Phthisis)	29.	19.	09.	9ç.	67.	99.	16:
Cancer Death-rate (all malignant disease)	1.03	1.23	61.1	1.17	1.16	£č.	-72
Pneumonia, Bronchitis, &c., Death-rate (Diseases of Respiratory Organs)	2.37	2-99	2.27	3.40	1.16	2.28	1.34

In the following Lists the Deaths are given in the streets in which they occurred. The figures after the name of the chief cause of death represent the age at death, the comma separating one death from another.

#### NORTH WARD.

Albert street, St. P.	eter's	 nephritis 64
Bloomsbury street		 measles 13 months
Burton street		 whooping cough 10 months, broncho- pneumonia 2, tuberculous meningitis 10, cirrhosis of liver 53, heart disease 60, non- assimilation of food 10 months, bron- chitis 77
Carlton place		 whooping cough 5 months, erysipelas 4 months, diarrhœa 9 months
Cleeveland street		 phthisis 23, meningitis 8, bronchitis 4 months
Devonshire street		 general degeneration 55
Elm street		 scalds 6
Elmstone street		 premature birth 30 minutes
Gloucester road		 ricketts 7 months, diabetes 65
Granville street		 broncho-pneumonia 9 months, bronchitis 68, atheroma 78
Grove street		 broncho-pneumonia 6 months, marasmus 6 months, heart disease 65, gangrene of of foot 82, senile decay 80, 87, general paralysis 52
Hereford place		 conjestion of lungs 63, apoplexy 71, measles 10 months,
High street		 phthisis 46, 19, apoplexy 84, 58, cancer of uterus 29, fracture of skull 47, broncho- pneumonia 11 months, heart disease 44, cirrhosis of liver 52, endocarditis 67, appendicitis 37, malnutrition 1
Hungerford street		 measles 11 months, premature birth 12 days
King street		 phthisis 21, apoplexy 77
King street gardens	s	 pneumonia 7 months, bronchitis 48
Larput place		 whooping cough 1, inanition 5 months, phthisis 39, cancer of breast 41
Malvern street		 bronchitis 1 month, 75, senile decay 79, 92, cancer of uterus 38, premature birth 6 hours, gangrene 84, heart disease 64
Market street		 senile decay 71
Marsh lane		 congenital defects 1
Millbrook street		 infantile atrophy 6 months
Mossleigh terrace		 cancer of stomach 51
Milsom street		 suicide by hanging 52, diarrhœa 61
Nailsworth terrace		 pneumonia 6 months, ptomaine poisoning 4, congenital debility 3 months

New street		 premature birth 12 hours
Normal terrace		 meningitis 4 months
Park street		 heart disease 54, 64, senile decay 67, eczma 7 months, bronchitis 73, cellulitis of leg 54, apoplexy 57, rupia 34, cancer of liver 72
Queen street		 whooping cough 2, phthisis 54, premature birth 1 hour, pneumonia 4, bronchitis 4, 86, enteritis 5 months, 9 months, in- fluenza 34, ricketts 18 months
Russell place		 bronchitis 79, senile decay 85
Russell street		 colitis 76
St. Paul's road		 diphtheria 2, diarrhœa 8 months, heart
		disease 61
St. Paul's street N		 phthisis 21
St. Paul's street S	South	 bronchitis 68, 74, phthisis 42, hemiplegia 5, 67, measles 8 months, epithelioma penis 61
Sandfield road		 phthisis 20
Stanhope street		 bronchitis 6 months, cancer 70, phithisis 67, senile decay 76, heart disease 59, 60, measles 14 months, 18 months, enteritis 7 months, premature birth 15 minutes
Stoneville street		 senile decay
Sun street		 heart disease 22, 33, diphtheria 6, measles 11 months, 2, diarrhœa 9 months, con- vulsions 7 months, 15 days, cancer of liver 68
Swindon passage		 convisions 14 days, measles 9 months
Swindon place		 convulsions 8 months, apoplexy 65, asphyxiated in sewer 29
Swindon road		 bronchitis 73, senile decay 88, 74, measles 22 months, cancer 73, 59, 62, 40, Bright's disease 35, apoplexy 71, burns 80
Swindon street		 general paralysis 73
Tewkesbury road		 whooping cough 17 months, Tabes mesen- terica 2, epilepsy 44, apoplexy 65, enteritis 3 months, 5 months, phthisis 36, measles 9 months, 2
Townsend street		 pneumonia 7 months, phthisis 49, 19, meningitis 7, senile decay 84, caucer of uterus 49, bronchitis 84, marasmus 2 months, heart disease 61
Victoria street		 atalectasis 5 days, gastro enteritis 47, bronchitic 2
Waterloo street		 phthisis 68, zymotic enteritis 4 months, fall and fractured spine 50, general paralysis 52
Whitehart street		 bronchitis 77, heart disease 67, senile decay 8I

...

Worcester street ...

Workhouse Infirmary (not referred to localities to which they originally belonged) syphilis 4 months, heart disease 66, enteritis 4 months, typhoid fever 47

senile decay 83, 75, 88, 78, 77, phthisis 69, 29, 79, heart disease 69, 63, 63, debility 1 hour, 4 days, apoplexy 83, 81, 84, alcoholism 45, diarrhœa 9 months, epilepsy 20, pneumonia 68, cerebral softening 46

#### SOUTH WARD.

Bath road			senile decay 81, tetanus 5, hœmatemesis 40, ricketts 2, gastro-enteritis 5 months, 23 days, measles 16, pneumonia 68, atalec- tasis 2 days, whooping cough 2 months, enlarged prostrate 68, bronchitis 65, cancer 69, phthisis 15, pleurisy 18, diabetes 78, heart disease 64, locomotor staxy 66, pernicious anæmia 38
Bath street			hemiplegia 82
Bath terrace		••••	
Cambray		•••	epilepsy 11, senile decay 76
Cambray			septicæmia 11 months, abscess of brain 36, cirrhosis of liver 76, athermo 59, heart disease 22
Clare place			cancer 65, 68
Clare street			phthisis 52, premature birth 1 hour
College road			hernia 66
Commercial street			debility 1 month, senile decay 76
Corpus street			senile decay 86, 85, apoplexy 66, cancer of
Exmouth street Fairfield avenue		 	omentum 75 heart disease 64, zymotic enteritis 5 months, miliary tuberculosis 8, pneumonia 30, 2, apoplexy 86
Fairfield parade			aneurism 40
Fairfield road			peritonitis 67, burns 2, senile decay 79, malignant stricture of pylorus 51, enteritis 4 months, measles 7 months, pneumonia 50, ricketts 14 months, broncho-pneu- monia 15 months, heart disease 66
Fairhaven road			diarrhœa 18 months
Francis street			heart disease 35, gastric catarrh 80, broncho-pneumonia 2
Gratton road			senile decay 75, influenza 76, phthisis 21, apoplexy 86
Gratton street			diabetes 65, apoplexy 88, senile decay 91
Great Norwood sti	reet		bronchitis 10 months, measles 17 months
Haye's Cottage H	omes		heart disease 78
Hermitage street			apoplexy 62, whooping cough 9 months
High street			senile decay 85
Kew place			prolonged labour 6 hours, phthisis 64

Lookhampton road			managementa da davia
Leckhampton road Leicester terrace			masasmus 29 days
London road			heart disease 25
			bulbar paralysis 78, senile decay 89, 77, apoplexy 82
Mitre street			bronchitis 74, 59
Montpellier grove			senile decay 82
Montpellier retreat			cirrhosis of liver 44
Naunton crescent			marasmus 2 months, measles 10 months, phthisis 19, pneumonia 3
Naunton lane			bronchitis 27 days
Old Bath road			heart disease 42, bronchitis 90
Oriel road			fall and old age 88
Orial walk			premature birth 19 hours
Pilley			senile decay 79, burns 38
St. Luke's			paralysis agitans 76
St. Philips' street			broncho-pneumonia 72, 7 months, fall and concussion 74
Sandford street			senile decay 80, premature birth 2 days, cancer 70
Sandford terrace			tubercular nephritis 57, abscess of lung 53,
Suffolk parade			inanition 10 days, pneumonia 30, senile
			decay 84, cancer of stomach 81, hepatic congestion 84
Suffolk road			cancer of stomach 52
Suffolk street			atheromo 78, senile decay 65
Thirlestaine road			cerebral softening 81
Upper Bath street			disseminated scherosis 50, zymotic enteritis 3 months, 2 months, epitheliome of
Vernon place			palate 80 concentral defects a days
Vernon place			congenital defects 2 days
Victoria place Wellington place		••••	Marasmus 5 months abscess of lung 49
wennigton place			abscess of rung 49
		E	AST WARD.
Albert place			phthisis 21, bronchitis 70
Albion street			arteris-selerosis 67, fracture of skull 19
All Saints' road			influenza 91, bronchitis 79, apoplexy 66, 72,
			senile decay 77, 82
Berkeley place		••••	operation for hernia 60
Carlton street			cerebral abscess 47
Clarence square	•••		prostatigis 77
Coltham Fields		••••	measles 9 months, malignant disease of back 6
Columbia street			heart disease 49, marasmus 3 months, senile decay 77
Denmark villas			zymotic enteritis 2 months
Duke street			broncho-pneumonia 3, 10 months, heart disease 72, 39, phthisis 24, zymotic enteritis 13 months, hepatic cirrhosis 60, tumour of liver 54

Fairview road			senile decay 78, 79, heart disease 32, bron- chitis 53, cancer of sophugus 44, diph- theria 3
Fairview street			emphysema 69, asthma 65, bronchitis 75, apoplexy 71, cancer 62, 39, 53, senile decay 69, premature birth 21 hours, alcoholism 61, senile decay 73, cystitis 59
Glenfall street			senile decay 73, apoplexy 76
Glenfall terrace			atheroma 49
Grosvenor street			senile decay 77, cirrhosis of liver 40
Hale's road			atalectasis 30 minutes, cancer of intestine
II			84, bronchitis 68, arteris-scherosis 76
Hayward's road	••••		cancer of rectum 52, pneumonia 1 month
Hewlett road	•••		heart disease 60
Hewlett street			influenza 85, convulsions 6 months, para- plepia 68, senile decay 85
Highbury lane			pneumonia 35
High street			necrosis of skull 61, apoplexy 62, phthisis
			21, 63, broncho-pneumonia 79, 8 months, senile decay 89
Jersey street			malnutrition 6 weeks, measles 2, 2, menin-
			gitis 3 months, fall from swing boat 19
Keynsham street			apoplexy 82, cancer of stomach 68, phthisis
King's road			senile decay 88, congestion of lungs 65
Leighton road			narcotic poisoning-suicide 57, broncho-
0			pneumoi.ia 75
London road			myelitis 63, exopthalmic goitre 29
Oxford street			malignant disease 75, senile decay 80
Park street			pneumonia 63, heart disease 73, enteric
			fever 35, phthisis 30
Pittville Circus ro	ad		hepatic cirrhosis 61, pneumonia 42
Princes street		•••	broncho-pneumonia 2, Bright's disease 53, bronchitis 74
Priory street			senile decay 91
Priory terrace			apoplexy 81
Rosehill street			nephritis 69, phthisis 51, enlarged pros- trate 63, measles 13 months, bronchitis 88, filroid lung 65, marasmus 1 month, heart disease 51, hydrochloric acid poisoning—suicide 44, influenza 70
St. James' street			congestion of lungs 13, premature birth 3 hours, heart disease 38
Selkirk street			senile decay 79, cancer of breast 78
Sherborne place			diphtheria 6
Sherborne street			bronchitis 71, 70, phthisis 36
Sidney street			measles 4, 15 months, bronchitis 5
Sydenham road			pneumonia 74, diarrhœa 90, senile decay 75
Union street			whooping cough 11 months, enteritis 12
			months, pneumonia 69, heart disease 65
Whaddon lane			broncho-pneumonia 1 month, senile decay 93, phthisis 37, Bright's disease 77, septicæmia 23

11	Time		1	
M	1nst	tonian	road	
100			T. O.F.P.F.F	

Winstonian road	 	fracture of scull—murder 3, premature birth 6 hours
Witcomb place	 	
Victoria terrace		senile decay 76
York street	 	pneumonia 2, tubercular hip-disease 50

#### WEST WARD.

Alstone avenue		 chicken pox and gastritis 4, apoplexy 71, whooping cough 11 months
Alstone		 premature birth 1 month, gangrene 83, measles 9 months
Arle		 senile decay 83, 76, 77, apoplexy 81
Barnard's row		 heart disease 84
Bayshill road		 senile decay 95
Chapel street		 old age 80, 82, heart disease 23
Christ Church roa	d	 senile decay 86, hemiplegia 81, nephritis 74
Church road		 bronchitis 71, heart disease 82
Douro road		 influenza 92, old age 95, colitis 87
Eldorado road		 pneumonia 8, cancer of intestine 59, heart disease 64
Fairmount road		 apoplexy 55
Gloucester road		 phthisis 51, cancer of gall bladder 65, meningitis 2 months, rheumatoid arthritis 74, senile decay 87
Grange crescent		 appendicitis 33
Lansdown crescen	t	 cancer of œsophagus 46, meningitis 2, gastric ulcer 70, apoplexy 72
Lansdown parade		 pneumonia 60, bronchitis 93
Lansdown place		 rheumatic gout 90, cancer of pharynx 67 appendicitis 17, senile decay 82
Lansdown road		 apoplexy 93
Libertus road		 cancer of rectum 68, heart disease 77, phthisis 25
Little Bayshill ter	race	 measles 20 months
Malvern road		 cancer of stomach 76
Manchester street		 albuminuria 69, renal cirrhosis 69
Millbrook street		 bronchitis 10 months
New street		 broncho-pneumonia 9 months
Overton road		 heart disease 50
Parabola road		 enteritis 64, rheumatic arthritis 80
Queen's parade		 apoplexy 69, cancer of breast 47
Queen's retreat		 heart disease 63, pernicious ancernia 64
Queen's road		 heart disease 77
Roman road		 marasmus 1 month, senile decay 82
Rowanfield road		 premature birth 13 days
Royal crescent	•••	 carbolic acid poisoning—suicide 24, ob- struction of bowels 85
St. George's avenu		 measles 16 months
St. George's place		 bronchitis 67, senile decay 85, nephritis 72, gastric ulcer 67, heart disease 78

St. George's road	 	nephritis 66, heart disease 64, senile decay
Sandfield place	 	82, cancer of œsophagus 58 heart disease 57
Western road	 	pneumonia 22

# CENTRAL WARD.

Albion street			heart disease 51, appendicitis 48
Beaufort buildings			apoplexy 65
Bennington street			senile decay 75
Berkeley avenue			pneumonia 60, apoplexy 63
Brunswick street			bronchitis 76, 58, caries of spine 22, measles
			10 months, diabetes 15, heart disease 20
Clarence road			heart disease 64
Clarence square			appendicitis 37 apoplexy 89
Courtenay street			sarcomo 43
Dunalley parade	•••		acute indigestion 83, phthisis 60, fall and broken neck 60
Dunalley street			endocarditis 81
Evesham road			cancer of breast 72, senile decay 87, 87,
Evesnam road			pneumonia 20
Fairview road			
Fairview Ioad			broncho-pneumonia 6 months, cut throat —suicide 28
Gloucester place			measles 2, pneumonia 69
Grosvenor terrace			otititis media 16, heart disease 50, 40, senile
			decay 71
Henrietta street			burns 2, lymphatism 5 months
High street			pneumonia 33, cirrhosis of liver 59
Limekiln row			zymotic enteritis 8 months
Malthouse lane			apoplexy 86
Marle Hill parade			apoplexy 77, pericarditis 64
Marle Hill road			whooping cough 7 months, papilloma of
Marie IIII Ioad			bladder 73, intestinal obstruction 50
North place			phthisis 28, senile decay 83, 79, appendicitis
			5, heart disease 71, septicæmia 73,
			broncho-pneumonia 73, pneumonia 77
Northfield terrace			heart disease 46
Orchard place			bronchitis 6 months, senile decay 96,
orenard place			marasmus 1 month
Pittville street			heart disease 27
Portland place	•••		heart disease 70
Portland square	•••	••••	gout 63, meningitis 15 months, bronchitis 11 months
Portland street		•••	heart disease 64, 78, cirrhosis of liver 48, miscarriage 29, senile decay 87
Rose and Crown p	assage		diphtheria 1, nephritis 48, scrofula 11
	assage		months
Rutland street		••••	whooping cough 2, heart disease 25, 50, phthisis 17, premature birth 1 hour,
			pneumonia 42, broncho-pneumonia 64,
			senile decay 84, convulsions I day,
			measles 3, enteritis 1 month, bronchitis 64
			j, month of the second second

St. George's street ...

St. Margaret's parade

- St. Paul's road ...
- St. Paul's street North
- Sherborne place ...

Sherborne street .... Swindon toad ....

Warwick buildings .... Wellington passage ... Wellington square ...

Wellington road ... Winchcombe street .. Windsor street ...

premature birth 1 hour, heart disease 71, ... 65, 20, 65, senile decay 84

influenza 62 ...

- marasmus 2, spinal myelitis 60, cancer of ..... breast 57, heart disease 60, apoplexy 60
- heart disease 76, apoplexy 81, pneumonia ... 45
- atalectasis 3 days, asthma 4 days, heart ... disease 66
- gastric ulcer 63 ....
- delirium tremens 33, progressive muscular ... atrophy 38
- general paralysis 55 ...
  - meningitis 27, heart disease 60
- phthisis 45, want of attention at birth, ... newly born, progressive paralysis 71 .. atheroma 58
- ... anæmia 56, epithilioma of rectum 58
- senile decay 81, bronchitis 65, pepatitis 94, ... ulcerative enteritis 82, rheumatoid arthritis 57

#### MIDDLE WARD.

Andover street			scarlet fever 10, cancer of œsophagus 39
Casino place			gout 70, measles 7 months, zymotic enteritis 10 months, bad feeding 3 months
Chester walk			cerebral tumour 52
Church road			asthma 58, phthisis 30
Cloddimore			suicide by lying on railway 37, 50
Crescent terrace			pneumonia 75, fall and shock 85
Croft street			phthisis 34
Dagmar road			intestinal obstruction 60, premature birth 2 hours, scalds 27, bronchitis 81
Dean Close Schoo	ol		gastric ulcer 20
Gloucester road			apoplexy 83, 69, heart disease 50, 62, syphilis 18 months, accidental fall 35, marasmus 6 months
Granley road			malformation of trachea 3 days, marasmus 4 months, heart disease 66, senile decay 79, diphtheria 2, measles 5
Great Norwood st	reet		apoplexy 84
High street			laryngitis 16 days
Hall road			epithelimia 83, cerebral thrombosis 78
Hatherley road		• • •	phthisis 47, apoplexy 76, cystitis 85, senile decay 85
Hatherley street			ulcerative endocarditis 34
Imperial square			apoplexy 69, phthisis 65, influenza 68
Leckhampton roa	d		suicide by hanging 21, pneumonia 43
Lypiatt terrace			hemiplegia 60, cancer 62, apoplexy 53
Lypiatt street			heart disease 59

Montpellier terrace ... ... cancer of uterus 62, cirrhosis of liver 35,

			heart disease 76
Montpellier villas			apoplexy 65, heart disease 75
Moorend Park road	d		apoplexy 74
Moorend road			cancer of uterus 64
Moorend street			granular kidney 77
Painswick parade			senile decay 87
Painswick road			apoplexy 76, phthisis 18
Park, The			rupture of coronary artery 75, cirrhosis of
			liver 67, congenital malformation and operation 3 days, jaundice 71, senile decay 90
Park place	•••	•••	urinary calculus 75, albumenuria 67, senile decay 93, heart disease 79
Princes road			broncho-pneumonia 9 months, tubercular peritonitis 50, operation for hairlip 5 months
Promenade, The			tuberculosis of kidney 38, cirrhosis of liver 41, heart disease 70, bronchitis 90
Rodney terrace	•••		heart disease 59, senile decay 82, fall and fracture of skull 62
Royal parade			filroid lung 63
Royal Well place			broncho-pneumonia 2
St. George's road			obstruction of bowel—operation 11
Short street			apoplexy 59
Shurdington road			fall and shock 80
Spa buildings			cancer of uterus 34
Suffolk square			broncho-pneumonia 77, senile decay 84, 80
Tivoli road			bronchitis 88, cancer of breast 85
Tivoli street			meningitis 2
Upper Norwood st	reet		apoplexy 60, 97, appendicitis 52, bronchitis 70, 77, debility 19 days, heart disease 67
Up-Hatherley			run over by train—suicide 25 (circa)

### **Deaths in Public Institutions.**

These deaths have all been referred to the localities to which they really belong in the town, or outside it, excepting 22 deaths, 21 of which took place in the Workhouse, and 1 in Nazareth House. These could not be referred to their previous residences, their former addresses not being obtainable. They will be found under "Workhouse" in the North Ward, and Bath Road in the South Ward.

THE GENERAL HOSPITAL.—Bronchitis 67, 59, 4, apoplexy 57, 60, 75, 81, 53, nephritis 48, 34, heart disease 25, 22, 39, 25, 64, 33, 40, premature birth 1 hour, emplysema 69, cerebral abscess 47, broncho-pneumonia 6 months, 2, 2, pneumonia 35, 2, 50, 45, operation for hare-lip 5 months, burns and scalds 2, 2, 38, 83, 27, 6, 80, tuberculosis of kidney 38, marasmus 6 months, 3 months, 5 months, fracture of skull 3, 47. gastric ulcer 20, 45, congenital malformation and operation 3 days, empyema 51, endocarditis 34, 67, appendicitis 52, 37, 33, 17, 48, phthisis 23, 29, 21, cirrhosis of liver

76, 44, atheroma 59, 49, carbolic acid poisoning 24, diabetes 15, 65, prostatitis 65, intestinal obstruction 53, accidental fall 35, pyopneumotherax 42, meningitis 27, 3 months, Addison's disease 22, 55, periostitis 11, otitis media 16, enteritis 2 months, fall and broken back 26, peritonitis 23, malignant ovarian tumour 53, enteric fever 35, malignant stricture 51, 68, abscess of lung 53, rupia 34, miscarriage 29, epithelioma penis 61, tuber-culous peritonitis 50, hydrochloric acid-poisoning 44.

THE WORKHOUSE INFIRMARY.—Bronchitis 64, 68, senile decay 79, 72, 83, 67, 79, 85, 71, 82, 80, 84, 75, 78, 82, 88, 73, 92, 74, 77, 82, 81, 88, 73( 96, 77, 72, 75, 79, 82, 79, general paralysis 73, 55, 52, 52, phthisis 69, 46, 67, 29, 24, 36, bulbar paralysis 71, pericarditis 64, epilepsy 11, 20, debility 11 hours, 4 days, cancer 70, 70, nephritis 64, heart disease 69, 66, 50, 49, 38, 63, 60, 63, gangrene 82, 83, apoplexy 83, 71, 65, 81, 66, 84, alcoholism 45, 64, pernicious anæmia 64, cellulitis of leg, 54, spinal myelitis 60, diarrhœa 9 months, 9 months, paraplegia 68, pneumonia 68, 72, cerebral softening 46.

DELANCEY HOSPITAL.-Diphtheria 6, 6, 2, 3, scarlet fever 10.

NAZARETH HOUSE.—Apoplexy 75, cancer 70, 79, senile decay 76, renal cirrhosis 69.

IMPERIAL NURSING HOME.—Obstruction of bowels and operation 11, bronchitis 65.

HOME FOR SICK CHILDREN.—Tubercular meningitis 2, non-assimilation of food 10 months, heart disease 5 months.

### Deaths in the Borough belonging to Outside Districts.

The only deaths which I refer to outside districts, and substract from the whole number of deaths occurring within the borough in order to get a nett death-rate for Cheltenham, are those which have occurred in our hospitals of persons who have been brought in from the surrounding district which our hospitals serve. Thus with only one or two exceptions these deaths are of persons belonging to the villages surrounding this town. Last year 26 such deaths took place which are referred as follows :—

Charlton Kings	5	 9	Prestbury	 3
Staverton		 4	Andoversford	 I
Brockhampton		 I	Withington	 I
Haydon		 I	Guiting Power	 I
Hampnett		 I	Northleach	 I
Gloucester		 I	Wincanton	 I
Birmingham		 I		

For the rest we suppose that the immigrants who came in to die at Cheltenham within a short time of their arrival, about balance the number of Cheltenham people who left this town to die within a short time of leaving it. Possibly our statistics suffer a little in this exchange, but there is no means of obtaining information which would lead to greater exactness. Local Government Board Table No. I.-Vital Statistics of whole District of the Borough of Cheltenham and menions to ve

		BIRTHS RI	BIRTHS REGISTERED.	TOTAL D	TOTAL DEATHS REGISTERED IN THE DISTRICT	ERED IN THE	DISTRICT		Deaths of	Douthe of	NETT DEATHS AT AGES BELONGING	BETT DEATHS AT ALL AGES BELONGING TO
	Population			Under I'N	Under I Year of age	'At all	At all Ages	Total Deaths in Public	Non- residents		THE DI	THE DISTRICT.
YEAR.	estimated to Middle of each Year.	Number.	Rate per 1,000 of Population.	Number.	Rate per 1,000 Births registered.	Number,	Rate per 1,000 of Population	10	Public Public Institutions in the District.		Number.	Rate per 1,000 of Population
1895	49,000	1070	21.8	167	156	844	17.2	126	18	tor tor	827	16.8
1896	49,000	1041	21.2	141	135	844	17.2	140	18	oqu	826	16.8
1897	49,000	1043	21.2	160	153	800	16.3	133	24	gior Hiv	776	15.8
1898	49,000	1090	22.2	159 .	146	828	16.8	162	24	litul d b dl v lten	804	16.4
1899	49,000	1044	21.3	154	147	793	16.1	121	18	AL B	2175	15.8
1900	49,000	968	19.7	112	115	708	. 14.4	137	20	un	688	14.0
1001	49,500	1005	20.3	112	111	2775	15.6	132	18	suc up:	757	15.2
1902	49,700	945	19.0	114	120	737	14.8	177	22	р р	715	14.3
1903	50,500	1062	21.3	91	120	666	13.1	138	23	poq 4D	643	12.7
1904	50,500	196	19.0	128	133	733	14.5	162	19	эцТ	714	14.1
Averages for years 1895-1904	49,420	1022	20.7	134	133	772	15.6	142	20.4		752	15.2
1905	50,500	995	19-7	131	131	773	15.3	177	26	:	747	14.8

For names of Public Institutions receiving sick persons see pages 38 & 39. Average No. of persons per house 4.11 O

RD.	I Year Deaths under	$\begin{array}{c} 14 \\ 14 \\ 119 \\ 110 \\ 112 \\ 112 \\ 113 \\ 113 \\ 8 \\ 8 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$	13	12
MIDDLE WARD.	Deaths at all Ages	$\begin{array}{c} 92\\ 92\\ 110\\ 99\\ 99\\ 110\\ 110\\ 110\\ 110\\ 103\\ 107\\ 107\\ 107\\ 107\\ 107\\ 107\\ 107\\ 107$	109	100
DDLE	Births boroteigor	11455 No Return	121	122
MII	Population	8870 8870 8870 8870 8870 8870 9478 9508 9508 9558 9558	9152	9658
RD.	l year Deaths under	$\begin{array}{c} 26\\ 27\\ 15\\ 15\\ 19\\ 12\\ 19\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	20	16
CENTRAL WARD	Deaths at all Ages	$\begin{array}{c} 133\\122\\1122\\1102\\83\\83\\91\\117\\1106\\103\end{array}$	108	115
TRA	Births boroteigor	1167 No Return 1167 No Return	148	132
CEN	Population	6553 6553 6553 6553 6553 6553 7336 7336	6886	7436 13
D.	l year Deaths under	$\begin{array}{c} & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & \\ & & & & \\ & & & \\ & & & \\ & & & \\ & & & & & \\ & & & & \\ & & & & \\ & & & & \\ & & & & & \\ & & & & \\ & & & & \\$	11	œ
WARD	Deaths at all Ages	$\begin{array}{c} 81 \\ 87 \\ 66 \\ 68 \\ 68 \\ 68 \\ 68 \\ 68 \\ 68$	75	78
WEST	Births registered	94 102 No Return	105	85
M	Population	$\begin{array}{c} 6039\\ 6039\\ 6039\\ 6039\\ 6039\\ 6039\\ 6039\\ 6039\\ 6542\\ 6563\\ 65893\\ 6893\\ 6893\\ 6893 \end{array}$	6321	6850
	l year Deaths under	$\begin{array}{c} 31\\16\\27\\24\\14\\13\\13\\13\\13\\13\\13\\13\end{array}$	18	17
WARD	Deaths at all Ages	$\begin{array}{c} 131\\126\\1127\\114\\108\\108\\138\\138\\138\\125\\124\end{array}$	123	137
EAST V	Births borotered	177 No Return 1794 179	180	177
E.	Population	8242 8242 8242 8242 8242 8242 8242 8242	8311	8506
RD.	l year Deaths under	$\begin{array}{c} 22\\ 24\\ 12\\ 12\\ 11\\ 11\\ 13\\ 13\\ 13\\ 13\\ 13\\ 13\\ 13\\ 13$	15	22
WAR	Deaths at all Ages	$\begin{array}{c} 107 \\ 78 \\ 78 \\ 94 \\ 73 \\ 73 \\ 73 \\ 109 \\ 100 \\ 100 \\ 100 \end{array}$	100	120
NTUOS	Births	151 No Return 151 No Return	140	172
SOI	Population	$\begin{array}{c} 8020\\ 8020\\ 8020\\ 8020\\ 8020\\ 8020\\ 7924\\ 8074\\ 8074 \end{array}$	8005	8350 172
	Deaths under Deaths under	$58 \\ 51 \\ 52 \\ 50 \\ 50 \\ 50 \\ 30 \\ 50 \\ 50 \\ 60 \\ 60 \\ 60 \\ 60 \\ 60 \\ 6$	48	52
VARI	Deaths at all Ages	$\begin{array}{c} 175\\ 179\\ 176\\ 158\\ 161\\ 161\\ 180\\ 180\\ 180\\ 180\\ 180\\ 194\end{array}$	167	197
NORTH WARD	Births registered	30.5 30 8 8 No Return	299	307
NOR	noimuqoq	$\begin{array}{c} 9790\\9790\\9790\\9790\\9790\\9790\\9923\\10023\\10023\end{array}$	9863	131 9700 307 197 52 8350 172 120 2
Ч.	l year Deaths under	$\begin{array}{c} 167\\ 141\\ 160\\ 159\\ 154\\ 112\\ 1112\\ 1112\\ 1116\\ 90\\ 126\end{array}$	133	131
CHELTENHAM	Deaths at all Ages	$\begin{array}{c} 827\\ 826\\ 776\\ 804\\ 775\\ 757\\ 757\\ 737\\ 666\\ 666\\ 733\end{array}$	758	773
CHELTENHAN	Births registered	$\begin{array}{c} 1070\\ 1041\\ 1043\\ 1090\\ 1044\\ 968\\ 945\\ 945\\ 945\\ 1062\\ 945\\ 961\\ 961\\ \end{array}$	1022	995
CHE	Population esti- mated to middle of each year	$\begin{array}{c} 49,000\\ 49,000\\ 49,000\\ 49,000\\ 49,000\\ 49,500\\ 49,700\\ 50,500\\ 50,500\end{array}$	49,420 1022	50,500 995 773
of Localities	Year	$\begin{array}{c} 1895 \\ 1896 \\ 1897 \\ 1898 \\ 1899 \\ 1900 \\ 1900 \\ 1902 \\ 1903 \\ 1903 \\ 1904 \\ 1904 \end{array}$	Average of years 1895 to 1904	1905

Local Government Board Table II.-Vital Statistics of separate Localities in 1905 and previous 10 years.

belong. The deaths in the whole Borough include those that died in hospitals within the Borough, but which do not belong to the district.

Local Government Board Table III.-Cases of Intectious Disease notified during the year 1905

for the Borough of Cheltenham.

						1000	
	Total cases rem Hospital	4	35	:	100	7	146
ital	Middle Ward.	:	7		36	:	43
o Hosp ty.	Central Ward.	:	9	:	00	;	6
loved to Locali	West Ward.	:	5	:	~	~	13
Cases removed to H from each Locality.	East Ward.	1	9	:	10	61	19
No. of Cases removed to Hospital from each Locality.	South Ward.		4	;	43	1	49
No.	North Ward.	61	5	:	5	1	13
dity.	Middle Ward.	:	11	x	42	1	62
ch Loca	Central Ward.	:	10	6	33	÷	22
d in eac	West Ward.	:	10	ŝ	4	ŝ	22
Total Cases notified in each Locality.	East Ward.	-	16	61	15	00	37
l Cases	South Ward.	1	9	C1	45	1	55
Tota	North Ward.	61	12	18	5	9	45
	spuendn ý 59	:	:	1	:	:	1
strict.	.25 to 65.	00	ŝ	24	1	9	37
whole District.	15 to 25.	1	10	10	6	5	35
	.čI oj č	:	36	4	91	4	31 135
Cases Notified in	1 to 5.	:	14	1	15	1	31
Cases	Under I.		61	61	:	:	4
	sagA IIa M	4	65	42	116	16	243
	Notifiable Diseases.	Small-Pox	Diphtheria	Erysipelas	Scarlet Fever	Enteric Fever	Totals 243

Local Government Board Table IV.--Causes of, and Ages at, Death during Year 1905 in the Borough of Cheltenham.

	1	Deaths in or belonging to whole District at subjoined Ages	or belor at sub	r belonging to wh at subjoined Ages	a whole Ages	Distric		1	Deaths 1	n or belo (at al	in or belonging to (at all Ages).	Localities	5	Deaths
CAUSES OF DEATH.	All Ages.	Under 1.	1 and under 5.	5 and under 15.	15 and under 25.	25 and 65 and under up- 65 wards.		Ward V	South Ward W	East W Ward W	West Cen- Ward Ward	dle Ward	Out- side Dist'ts	
Measles	30	12	16	1	-	:	:	12	4	9	33	c1	:	::
Scarlet Fever	1	:	:	1								1		1
Whooping Cough	11	-	+					2	67	-	1 2			
embranous Croup	6	:	4	01	:			67	. ;	07	-	1		4
Enteric Fever	67					07		-						-
a	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	:				0	9	-		4	1	-		
and Enter	24	21	~					II	1	00	6	-		00
Symptomatic Diarrhœa and Enteritis		:	:	:	:	00	1	07		1	-			
Erysipelas		1		::	:			1				:		
Other Septic Diseases	3	1			1		-		-		-			
Phthisis (Pulmonary Tuberculosis)	42	:		:	14	22	9	17	1.0	6	2	5		6
Other Tubercular Diseases	29	16	4	4	-1	4		9	5	5	2	5	-	9
Cancer, Malignant Disease	52	:	:	-	:	28	23	12	10	10	8	5	-	5
Bronchitis	49	9	01	-		-	33	17	9	12	4.4	5	1	9
Pneumonia and Bronchopneumonia	59	17	6	67	67	14	15	12	10	15	4 12	5	-	6
Pleurisy	2	:	:		1	-	:	::	1				-	::
Other Diseases of the Respiratory Organs	10	C7	::			5	00	::	0			33	1	1
Alcoholism, Cirrhosis of Liver	15	::		::	:::	13	67	00	c7			~		4
Venereal Diseases			61	:	:	:	:	1	:			1		
Premature Birth	17	17	:					9	~	~	2 9	-		1
Diseases and Accidents of Parturition		c1	:	:::		-			-					
Heart Diseases	76	1	::	:	20	43	27	15	8	8	1 21	10	6	16
Accidents	21	:	ŝ	1	01	6	9	9	4	2	6	2	007	6
Suicides	6	:	:		07	-	:	1	:			~	-	C7
Murder		:	1	:	:	::				1				
All other causes	296	29	9	5	9	0	188	99	48	44 3	39 45	41	14	98
All causes	773	131	22	00	95	100	110	1 201	101	+				

			_
Total Deaths	127	$\begin{array}{c} 12\\ 21\\ 22\\ 25\\ 22\\ 11\\ 12\\ 12\\ 66\\ 6\\ 11\\ 11\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12\\ 12$	131
sdinom 21-11	∞ :	· · · · · · · · · · · · · · · · · · ·	x
sdinom 11-01	ъ :	∞ : : - : : : : : : : : : : : : - :	6
stinom 01-6	12	44	12
stitnom 6-8	· 2		õ
stitnom 8-7	10		10
stitnom 7-8	10	· · · · · · · · · · · · · · · · · · ·	10
sittnom 8-8	6 :		6
siltnom č-t	∞ :	:::• :::: · · · · · · · · · · · · · · ·	x
sdinom 1-8			~
sitnom 8-2	9 :	· · · · · · · · · · · · · · · · · · ·	9
sitnom 2-1	10		10
Total under I month	33		36
sdoow b-E	c1 :		70
2-3 weeks	4 :		4
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CAUSE OF DRATH.	All Causes { Certified	Measles	Totals

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r :-- Legitimate, 939 ; Illegitimate, 30. Deaths from all Population, estimated to middle of 1905, 50,500.

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# WORK DONE.

### SUMMARY OF ROUTINE AND OTHER SANITARY WORK DONE IN THE HEALTH DEPARTMENT IN 1905, WITH NOTES THEREON.

### REPORT BY THE CHIEF SANITARY INSPECTOR.

I hereby submit my report as Sanitary Inspector of the Borough of Cheltenham of the work done in the Department in the suppression and abatement of nuisances during 1905. Following the practice adopted in previous years, a statement of sanitary operations is furnished below. On reference to this it will be seen that during the year 2,357 nuisances were reported in connection with 1,172 houses and premises. To abate these nuisances 696 notices were served upon the responsible persons. In all cases the necessary steps have been taken to remove the nuisances discovered, and the work has been carried out, or is in progress. In addition to the notices served, 648 letters were written requiring structural amendments, and numerous verbal notices have been given where the matter has been one needing immediate attention.

### SUMMARY.

Total Number of Houses and Prem	nises Ins	pected	 10916
Ordinary Inspections			 3252
House-to-house Inspections			 2004
Re-inspections			 2136
Visits to Slaughter-houses			 508
" " Food Shops			 934
", " Common Lodging Houses			 350
", " Houses Let in Lodgings			 74
" " Cowsheds, Dairies and Mi	lkshops		 89
", " Bakehouses			 62
", "Workshops			 516
", ", Schools			 88
, , , re Infectious Disease			 483
", " re Publichouse Convenience	ces		 211
,, ,, Places where Animals wer			 209
Complaints Received			 84

Number of Nuisances Reported			2357
", " Houses and Premises dealt with			1172
" " Notices Served			696
", " Letters Written referring to Notic			648
DRAINS :			010
Drains Opened & Examined under Sec.41 P.H	I.Act.	1875	209
Sami Tata I' I' D'			469
Chemical ,, ,, ,, ,,			72
			510
Water " " " " " " Defective Brick Drains removed …			51
New Drains laid			249
Length in yards of Stoneware Pipe Drains			4207
" " " Heavy Cast Iron Pipes 1	aid		1601
"""""Heavy Cast Iron Pipes 1 Manhole and Inspection Chambers provided			161
Intercepting Traps fixed			155
Stoneware Gully Traps fixed			536
Dip and Bell Traps removed			166
W.C's. :			100
New Water Closets built			18
New W.C. Pans of the "Wash-down" type	fixed		306
Old Pan Container and Long Hopper Closet			260
Flushing Boxes fixed to W.C's			214
Flushing Boxes repaired			28
Water Closet Drains unstopped			55
Soll Pipes :			
Soil Pipe and Ventilating Shafts fixed			204
New Waste Pipes fixed and disconnected			215
New Lead Traps provided to Sinks, &c.			156
Miscellaneous :			
Rooms cleansed and limewashed			572
Houses closed as unfit for human habitation			5
House Roofs, Rainwater Pipes, &c., repaire	d		175
Yards and Areas asphalted or concreted			130
Ash Receptacles (moveable galvanized iron w	vith co	ver)	240
Bakehouses cleansed and limewashed			22
Slaughter-houses cleansed and limewashed			26
Workrooms cleansed and limewashed			86
Common Lodging Houses cleansed and lime	washe	d	8
Sleeping Rooms ventilated			20
Workrooms ventilated			19
Overcrowding in dwellings abated			38
Overcrowding in Workrooms abated			8

Samples of Water taken	25
Urinals built or re-constructed	18
,, provided with a proper water supply	18
Accumulations of Manure removed	54
Manure Receptacles built or re-constructed	8
Infectious Diseases :	
Inquiries into cases of Infectious Diseases	483
Notices to Parents with regard to Infectious Diseases	456
Notices to Schoolmasters with regard to ,, ,,	56
Notices to Free Library with regard to ,, ,	10
Rooms Disinfected after cases of ,, ,,	178
Articles of Clothing, Bedding, &c., disinfected after	
Infectious Diseases	2679
Loads of Clothing disinfected for outside Sanitary	
Authorities and private persons	11

### Inspections.

The total number of inspections made during the year was 10,916, of these 2,004 were house-to-house inspections, 2,136 revisits to premises to ascertain if notices had been complied with, 1,284 to slaughter-houses and food shops, and 516 to workshops. The remainder of inspections made were the result of complaints received, the occurrence of infectious disease, the inspection of work in progress, and visits to Common Lodging-houses, Bakehouses, &c.

The Public Health and Housing of the Working Classes Acts requires Local Authorities to cause to be made from time to time inspections of their district, with a view to ascertaining what nuisances exist calling for abatement under these Acts, and the Local Government Board also imposes the duty of making a systematic inspection of their district upon the Health Officers. House-to-house inspection is a most important branch of the work of this department, as by means of it, numerous structural sanitary defects are discovered, remedied, and the house made sanitary, whereas, if it were left till the occupier complained to us, nothing would in many cases be done to keep the premises in decent habitable condition. Such is our experience, for we find numerous owners who even when their attention is called by their tenant to some serious but easily remedied defect, such as a leaky roof, damp house walls due to broken rainwater pipes. &c., allow these conditions to continue until compelled by notice to remedy these defects. Even in the larger and better class houses, it is a great advantage to have an examination of the sanitary arrangements of the premises made by an Inspector from this department, as very frequently defects exist in connection with the sanitary fittings or drains, of which the tenant is absolutely ignorant, and which defects may be, and frequently are, injurious to health.

House sanitation is of great importance, for unless the house is in good structural condition, illness and low state of health generally, are bound to follow, and the occupants have less power to withstand the attack of any illness. Where the urgency of the case permits the usual procedure in the event of any defect being found is to call the attention of the owner or occupier to the fact by letter with a statement of the defects and amendments. If, after the lapse of a reasonable time the defects have not been remedied, the matter is reported to the Public Health Committee, and a legal notice is served, if this is not complied with in the time specified, the Committee give instructions for legal proceedings to be taken. It is very rare indeed that such extreme steps have to be taken, as the necessary alterations are carried out without having to resort to such measures, as our demands for rectifying defects are reasonable, and we are at all times willing to meet owners by appointment and render any assistance by pointing out any details in connection with any notice served.

In the course of the house-to-house inspections made during the year, numerous structural defects were discovered, in fact more than half the houses inspected were found to have one or more defects requiring amendment. Structural defects as a rule refer to leaky house roofs, damp walls, floors and walls in bad state of repair, defective paving of vards, &c. Overcrowding of houses were discovered in 38 cases. This class of nuisance is difficult to deal with, as the people are generally very poor and have large families, and unfortunately the more overcrowded the house the more dirty and filthy are the habits of the occupants. One could cite a number of cases in proof of this, but the two following found during the year under review will be sufficient. A house consisting of one living room, one bedroom and a scullery, was occupied by father, mother, and five children, three of whom were over twelve years of age, and two under twelve years.

The bedroom was divided into two by a wooden partition, the cubic space of both rooms was scarcely sufficient for three persons, but into these were packed seven persons. The cubic capacity of the bedrooms was only 960 cubic feet, whereas they ought to have been at the very least 1800 cubic feet. The rooms, bedding and bed-rooms were found to be in a filthy condition, and in the scullery was a wooden bucket three parts full of solid and liquid excremental matter, filling the whole place with pestiferous odours, the smells were abominably foul.

At another house, a bedroom large enough for sleeping purposes for two adults and a child only, was found to be occupied, both as a living and sleeping apartment, by three adults and three children. The room was dirty and generally untidy, and the coals, as well as food had to be kept in this room.

#### Improvements in Dwelling-Houses.

A large number of improvements were made in connection with dwellings as a result of notices served. These improvements vary from small repairs to eaves spouting, rainwater pipes, &c., to others of a considerable magnitude, such as stripping roofs and re-slating, underpinning walls and inserting damp proof course, laying new floors, the provision of impervious sinks and new W.C's., and the ventilation of unventilated bedrooms, &c. 175 roofs, eaves spouting, down pipes, &c., were repaired, 572 rooms were cleansed, limewashed or repaired, 214 flushing boxes fixed to W.C's. The floors of 117 houses were repaired or new floors of boards or tiles laid, 130 yards and areas paved with impervious material such as asphalte, concrete or blue bricks. Altogether 2,152 improvements have been effected in connection with 1,009 premises.

# Houses Closed as Unfit for Human Habitation under the Housing of the Working Classes Acts.

During the year five houses have been represented to the Public Health Committee as being unfit for human habitation. Of these one was closed by order of the Magistrate. Three were closed without obtaining a Magistrates Order, the owners voluntarily consenting to close the houses, and the remaining house is now being dealt with. One of the above mentioned houses has been demolished and the ground area upon which it stood has been cleared, paved, and added to the yard of an adjoining house. Two houses in Bath Road which were closed last year as being unfit for human habitation owing to their ruinous condition, have been pulled down and new buildings built in accordance with the building byelaws have been erected on the same site.

### Improvements in House Drains.

As usual a considerable amount of time and attention has been devoted to the condition of house drains. Authority was obtained in 209 cases to open ground, examine drains, &c., and 182 notices and specifications with detailed requirements were served upon the owners to carry out such work as was necessary to satisfactorily abate the nuisance. In addition to the work done under the above mentioned Act, a good deal of drainage work has been done to obtain a Corporation Sanitary Certificate, and also by verbal notice. Altogether the Inspectors have supervised the laving of 4,207 yards of stoneware pipes, and 1,601 yards of heavy cast iron drains. A considerable length of the latter type of drains have been put in, even when the pipes were laid outside the house. Experience has proved that iron pipes are far superior to stoneware on shifty clay soil in securing anything like permanency of soundness in the drain. One sometimes hears grumbling as to the cost of drainage work, but, if we compare the modern drains—in size, cost and efficiency—with the old brick barrels formerly in vogue, the advantage of the present compact watertight system of drainage is clearly evident. Those old house drains were, more or less, elongated cesspools, containing deposits, in most cases several inches deep, and the liquids poured into them seldom reached the sewer, but gradually soaked through into the ground beneath, and polluted the soil.

A few observations made in the course of the sanitary inspections during the year may be of some interest. During the alteration of shop premises in the Promenade, three old brick drains were discovered, two of these were disused, and had been cut off inside the shop but not at the sewer end, and as the ends were imperfectly bricked up, rats and sewer gas had free access to the premises. The other brick drain was at the rear of the shop and took all the sewage from two other large premises, and was found to be connected to a surface water sewer, consequently sewage was going into the river Chelt instead of into the proper sewer. Complaints of offensive smells and sore throats of tenants led to an examination of the drains of three houses. At the rear of one house and within 2ft. 6in. of the house wall a cesspool 5ft. 6in. by 4ft. 6in. and 2ft. deep to the overflow was found, and into this the drainage from the houses discharged. The overflow pipe was connected to the sewer in the street, but the cesspool which contained some 307 gallons of decomposing sewage was never cleaned out, as neither owners or occupiers were aware that such a thing existed.

Four cases of enteric fever occurred in a small house the drainage of which appeared to be satisfactory. Two w.c.'s belonging to some other houses in the next street had been built against the wall of the house in which the disease occurred On examination the drains of these w.c.'s were found to be very defective and considerable leakage had taken place from w.c. drains into the house, and there is not the slightest doubt that emanations from the sewer gained access to the house.

As the work of resewering St. Peter's district has proceeded the drains of the houses connected to the new sewers have been examined and tested and those found defective have been reported to the Public Health Committee with a view to notices being served requiring them to be made good. By these means the sanitary condition of the resewered district will be greatly improved. In this work the drains from 232 houses have been smoke tested, with the following results : 150 tests were applied to the drains, of these 119 proved defective, and 31 did not show signs of a leak, or in other words 79.3 per cent. proved defective. In the majority of cases the defects were exceedingly bad, more particularly in the w.c.'s and near the houses where the defects were found.

In some instances notwithstanding the drains were laid outside the house, large smoke leakages were found inside the dwellings. In one case the pantry of a small cottage, in which all the eatables were stored, was completely filled with smoke when testing the drain of a house in an adjoining street. The smoke had worked its way through holes made by rats which had come from the defective drain. The total number of water tests applied to drains was 510, this number including the tests applied to drains in sections, and the final test, the latter test being applied on completion of the work. The smoke test was applied in 469 instances. In connection with this work 51 old brick drains were removed and replaced by watertight drains. 166 defective iron D and Bell traps were removed, and 536 stoneware gully traps fixed. 161 manholes and inspection chambers have been provided and 155 intercepting traps fixed.

### The Corporation Sanitary Certificate.

There has been a greater demand for sanitary certificates during this year than there was in 1904. There were 54 certificates granted last year as against 37 in the previous year, making the total granted since the commencement of this work 623. As usual, this work has been the means of greatly improving the sanitary conditions of the premises for which the certificates were granted. The inspections frequently revealed grave defects in the drainage system and sanitary fittings of a house when the owner thought everything was in perfect sanitary order. Periodical testing of the drains and sanitary fittings is the best form of insurance against the evils arising from defective drainage. All who are about to take a house are strongly recommended before signing any agreement to insist upon an up-to-date inspection, and a certificate of sanitary fitness of the premises.

### List of Houses to which Sanitary Certificates were granted in 1905.

Situation of Premises.		Annual lue.
Bayshill Terrace, 1	 	 £55
Brandon House, Painswick Road	 	 170
Cambray, 14	 	 35
Chandos Lodge, Thirlestaine Road	 	 85
Christchurch Terrace, 13	 	 22
Clarence Square, 4	 	 35

Situation of Premises.					Annual lue.
Clarence Square, 26			 		£40
Clarence Square, 30			 		35
Cloverdale Lawn, 4			 		40
Columbia Place, 3			 		30
Crescent Terrace, 5			 		55
Deenhurst, Church Roa	d, St.	Mark's	 		42
Glenfall Terrace, 2			 		32
Heath Lodge, Pittville	Circus		 		135
Hewletts, Agg's Hill			 		150
Imperial Square, 14			 		70
Keynsham Bank, 2			 		75
Lansdown Crescent, 45			 		40
Lansdown Place, 3			 		70
Lansdown Villas, 2			 		110
Lypiatt House			 		70
Marlborough Lawn, Syc		n Road	 		100
Millfield, Christ Church	Road		 		70
Montpellier Grove, 7			 		26
Montpellier Terrace, 7			 		60
Montpellier Villas, 17			 		20
Mulberry Villa, London			 		20
Mural Lodge, Vittoria V			 		35
National Provincial Ban			 		175
Netherleigh, Lansdown	Place		 		105
North Place, 33			 		30
Oxford Parade, 7			 		55
Oxford Street, 6			 		23
Park Place, 12			 		42
Pembroke Villas, 1, Mo		street	 		13
Priory Parade, 2			 		60
Promenade, 27			 		80
Rainow, St. George's R			 	1	110
The Rock House, Vitto		lk	 		50
Rosebank, Fairmount R	oad		 		30
			 		55
Selkirk Parade, 1			 		26
Selkirk Parade, 7			 		30
Sherborne Place, 19			 		16
Spa Buildings, 11			 		50
Springfield, Christ Chur	ch Roa		 		75

Situation of Premises.		Gross Annual Value.
St. Luke's Terrace, 5	 	£24
St. Oswald's, Tivoli Road	 	50
Staincliffe, Glencairn Park Road	 	42
Stratford House, Suffolk Square	 	200
Ravensmeade, Sydenham Grove, 6	 	65
Trebarwith, Montpellier Parade	 	110
Verdahla, Queen's Road	 	100
Westwood, Hale's Road		60

# Improvements in Sanitary Conveniences in Public Houses.

Many of the Public House urinals were without any provision for flushing, and many were also defective in construction, and in a foul state so as to be a nuisance. Eleven Public House urinals were altered, or reconstructed on more sanitary principles, their sides, floors, and channels being re-made, and in one way and another rendered impervious and easy to cleanse ; in other cases stoneware urinals or troughs were provided, the traps and drains being renewed where necessary. Eleven urinals not previously supplied with regular means of flushing had water laid on to them for flushing purposes.

Of the one hundred and fifty nine licensed houses visited, all but eleven were provided with suitable urinal accommodation. The owners of these latter premises were required to provide suitable urinals, properly flushed, and they have complied with our request. Thirty-six of the urinals are external to the houses, and to these the public have access as well as the customers, access to one hundred and thirty-three can only be obtained from the premises.

# **Common Lodging Houses.**

The number of visits made to the six Common Lodging Houses during the year was 350. Owing to the prevalence of small-pox in an adjoining district and the influx of men into the town, connected with the new railway, these houses were visited daily for a considerable period. These six houses provide accommodation for 142 lodgers. On making a night inspection of these houses, slight cases of overcrowding were detected in two instances, and two keepers of lodging houses were found to be using certain bedrooms without first having obtained permission from the Local Authority. These breaches of the bye-laws were reported to the Public Health Committee, who decided not to take legal proceedings on this occasion, but the occupiers were warned that any future breach of the bye-laws would be followed by prosecution.

With the exception of the afore-mentioned breaking of the bye-laws the whole of the houses have been well conducted.

Application was made by the occupier of Cumberland House for permission to increase the sleeping accommodation of that house by the addition of two extra bedrooms; the Public Health Committee granted this subject to the tenant increasing the size of the windows, repairing walls, &c. This has been done and the rooms are now in use. At this house a new floor of red tiles has been laid and the whole of the vard asphalted.

Two public houses in the lower part of High Street were found to be receiving large numbers of men lodgers, they were to all intents and purposes being used as common lodging houses without being registered as such.

In one of these houses the rooms were very dirty, no less than seven out of twelve were unventilated, having neither fireplace or opening of any description when the doors and windows were shut. Some of these rooms were very badly overcrowded indeed. Allowing only the small amount of 300 cubic feet per head, one room only large enough for four persons was occupied by seven, another large enough for three persons was occupied by six, and another large enough for one adult was occupied by two adults, and one room was found to be too small to accommodate even one person.

At the other public house three bedrooms and a landing on the staircase were found in use for sleeping purposes, in these rooms sleeping accommodation was provided for 18 persons, whereas they were only large enough for 10 persons. Of the three bedrooms two were unventilated, and in the third was a fireplace, but this opening was covered with a sack. Both houses are being thoroughly overhauled and put into good repair, all windows being made to open, ventilators provided, and all rooms thoroughly cleansed.

### Slaughter-houses.

The number of private slaughter-houses now on the register is eighteen. One of these places is used for slaughtering purposes by four different firms of butchers, and another by two firms, so that the slaughtering of animals for twentythree butchers is done in these eighteen private slaughterhou es. The bye-laws relating to the periodical limewashing of the walls of the slaughter-houses, the removal of skins, garbage, etc., have been fairly well observed. Frequent inspections have been made of these places, and the meat killed in them was inspected as often as it was possible to do so.

On several occasions we have been requested by the occupier of a private slaughter-house to examine the carcases of animals which the butcher on dressing found to be diseased or of a doubtful character. It is with pleasure that I record the fact, that during last year we received more applications than in any previous year, and from a larger number of butchers, to examine animals of which they had some doubt as to their fitness for human food. It is a good sign, and it is to be hoped that this co-operation of the members of the trade with the officers of the Health Department in this direction will continue to grow.

# List of Butchers who used the Abattoir during the Year.

General Butchers.

Mr. W. Alcock	Moorend Street
	Fairview Road
Mr. G. Collins	278, High Street
Mr. F. Davis	Charlton Kings
Messrs. A. D. & D. Downham	3, Exchange Buildings, Bath Rd.
Mr. E. T. Drew	95, Winchcomb Street
Mr. Dickenson	Prestbury
Mr. J. C. Green	162, Albion Street
Mr. J. Hayward	2, St. Mark's Emporium,
•	Gloucester Road
Mr. J. Hodges	317, High Street
	Clare Terrace, Bath Road

Mr. Jenkins		Bat	h R	load			
Mr. J. Lane		267	, H	igh	Street		
Mr. Pates		307	1.4	,,	,,		
Mr. F. W. Pleydell		288			,,		
Mr. H. T. Pryer		308	,		,,		
		341			,,		
Mr. G. Taylor					Street		
Mr. T. Verrinder		He	wlet	t Re	oad		
Messrs. Waghorne Bros. 1	.td.	346	, Н	igh	Street		
Mr. F. Waghorne		4, 1	Five	li B	uildings	;	
Mr. G. Willis		Reg	rent	Ho	use, Sw	indon	Road

# Pork Butchers.

Mr. F. P. Carrick	 294, High Street
Mr. J. Fisher	 St. Paul's
Miss Gwinnell	 Winchcomb Street
Messrs. Yarnold & Sons	 296, High Street
Mr. A. Smith	 280, ,, ,,
Mr. J. Jackson	243, ,, ,, (grocer)
Mrs. Burrows	279, ,, ,, (baker)
Mr. L. Giles	76, Tewkesbury Road (baker)
Messrs. Locke & Sons	17, Clarence St. (confectioners)

# List of Private Slaughter-houses at present in Occupation.

Mr. F. Beckingsale	187, High Street
Messrs. Stroulger & Co	
Messrs. Turner & Co	424, High Street
Messrs. Holliday & Page Ltd.	Bath Street
Messrs. Waghorne Bros. Ltd.	Prestbury Road
Mr. B. Coombe	Sherborne Place
Mr. F. Knight	5, Mountpleasant
Mr. G. S. Tarr	Victoria Street, Gosditch
Mr. W. A. Davis	Dunalley Street
Mr. C. Fryer	St. James's Terrace
Mr. J. T. Burrows	Upper Bath Street
	Commercial Street
Mr. E. R. Bloxham	Bath Terrace
	4, Adelaide Buildings, Bath Road

Messrs. Holliday & Page, Ltd. Brunswick Street Mr. A. Ashcroft ..... Gosditch Messrs. Williams and Co. ... Grosvenor Terrace

# Number of Animals Slaughtered in the Abattoir during the last two years.

	1904	1905
Beeves	583	 559
Calves	639	 592
Sheep	4067	 2429
Lambs	621	 509
Pork Pigs	1277	 1096
Bacon Pigs	187	 149
	7,374	 6334

# Unsound and Diseased Meat, &c., Destroyed Last Year as Unfit for the Food of Man.

- 2 carcases of beef—affected with generalized tuberculosis.
- 17 pigs—affected with tuberculosis.
- 1 pig—affected with dropsy.
- 3 sheep—emaciated with chronic disease.
- 57lb. of mutton from four sheep on account of bruising.
- 1 box of hake—unsound.
- 1 box of codling—unsound.
- 75 kippers—unsound.
- 6 kegs of tripe from America—unsound.
- The lungs, livers, and other internal organs of 235 animals which were locally diseased.
- Total weight of meat, &c., destroyed : 2 tons 18 cwt. 3 grs. 13lbs.

Of the two beasts affected with tuberculosis it was found necessary to destroy the entire carcases and offal of both, as, although they were both well nourished animals, the disease was so extensive and generalized as to render destruction absolutely necessary. In one instance the butcher was very fortunate in recovering practically the whole value of the beast destroyed from the gentlemen of whom he purchased it. 17 pigs were found to be so badly affected with tuberculosis as to render it necessary to destroy the entire carcases and offal.

In the case of one sow pig which was destroyed, an incision was made in the udders, and they were found to be one mass of tuberculous growth. It is difficult to conceive how the last offspring from this animal could escape from contracting the disease, seeing that they would be swallowing daily milk containing immense numbers of tubercle bacilli.

On four occasions I have been called to inspect the carcases of pigs affected with pleurisy. One pig was found to to be affected with urticaria. In all cases the carcases or organs were voluntarily surrendered by their respective owners, and on no occasion has it been necessary to apply for a Magistrates' Order to secure the destruction of diseased animals or organs.

#### **Inspection of Food Shops.**

The various Butchers', Fishmongers', Greengrocers' Shops, and other places where food is sold, were frequently inspected during the year. The following table gives some information as to the number of the various shops where food is sold in this town. A detailed description of the unwholesome food, &c., dealt with during the year is given on another page :—

Butchers' Shops				 62
Fish and Chipped Po	tato and	Faggot	Shops	 13
Tripe Shops				 4
Fish Dealers				 21
Fruiterers' and Gree				 81
Restaurants	-			12
Tea Rooms				 9
Confectionery and S				 104
General Shops				 42
Dairies				29
General Shops Sellin				6
Provision Dealers and			s	128
Bakers' Shops				48
Ice Cream Shops				6

### Bakehouses.

During the year the whole of the Bakehouses in the town have been inspected. There are 52 bakehouses on the register, of these 43 are above ground, and 9 are underground. The underground bakehouses have all been certified by the Sanitary Authority as being suitable with regard to construction, lighting, ventilation, water supply, drainage, and in all other respects, having been altered and amended to the satisfaction of the Corporation as required by the Factory Act, 1901. Several of the bakehouse floors were found to be n such bad condition as to need new floors, these were formed of concrete and granite chipping trowelled up to a smooth surface.

One underground bakehouse has ceased to be used as such during last year, a new model bakery having been built to take its place. The new bakehouse is above ground, large, airy, and well lighted. The flooring is of concrete, and the walls are of white glazed bricks. The fittings are as plain as possible and so placed as to enable the rooms to be kept thoroughly clean. The stoking of the ovens is applied externally, so that the smoke and sulphurous fumes are largely consumed in the furnace, and the remainder escape up the chimney without a chance of contaminating the atmosphere of the bakehouse or oven.

Another bakehouse has been considerably improved by the provision of three large outlet shafts fixed over the mouth of the ovens, to carry off the heat, &c., when the doors are opened. The ovens have also been altered so that the firing is now done outside the bakehouse, this effectually prevents the contamination of the air of the bakehouse from smoke and sulphurous fumes, which formerly occurred when stoking of ovens was done from the interior.

### Offensive Trades.

The offensive trades carried on in this town are few in number. The trades in operation here, which are in the statutory list of offensive trades, are two Fellmongers, one Tallow Melter, four Tripe Boilers, 18 Rag and Bone Dealers, and 13 Fried Fish Shops. The bye-laws regulating these trades have been fairly well carried out, although it has been necessary to occasionally call attention to the desirability of removing garbage, &c., regularly, and for the thorough cleansing of the floors and pavements at the close of each working day.

A person commenced the business of tripe boiling in Francis Street, without having first obtained the permission of the Local Authority to establish such a trade. An inspection of the premises proved that they were totally unsuitable, and could not be made suitable for the purpose of carrying on such an offensive business. The occupier made an application to the Public Health Committee to be allowed to continue this business, but his application was not granted. because the place, both on account of its surroundings and structure was not fit for carrying on such a business.

### Dairies, Cowsheds and Milkshops.

Under the Dairies, Cowsheds, and Milkshops Order, Cowkeepers and Purveyors of Milk are required to be registered by the Town Council. At the present time there are upon the register fifty-nine milkshops and fourteen cowsheds. These have been inspected during the year and found to be fairly satisfactory. Nine applications to be registered as dairymen or purveyors of milk were received during the year, the premises of the applicants were inspected as to their sanitary condition and suitability for carring on this trade. Seven were ultimately registered, and two refused on account of unsuitability of the premises. Two applications from cowkeepers were received and both granted. The following is a list of the Cowsheds in the borough :—

Alma Farm Dairy	 Messrs. W. J. and F. Wood.
Arle Court Farm	 F. W. Brown.
Alma Villa Farm, Hatherley	 T. Robinson.
Benhall Farm	 H. Pitman.
Elm Farm, Fiddler's Green	 J. H. Tucker.
Fiddler's Green Farm	 Messrs. W. J. and F. Wood.
Golden Valley	 Mrs. Nunney.
Hale's Road	 J. Haines.
Harthrustfield Farm	 E. Stephens
Hester's Way Farm	 F. Gabb
	 G. Teal.

Prior's Farm ... A. P. T. Tuffley. White Lodge, Gloucester Road T. E. Whitaker. Whaddon Farm ... Mrs. Wood.

### Ash Receptacles.

The Cheltenham Improvement Act provides that every house shall have a receptacle for ashes and house refuse of such sort as shall be approved by the Corporation. The one usually required is a galvanized iron moveable ash bin with a tight fitting lid, where one is not sufficient to hold the ashes of a week, two can be used, for it is desirable that they should not be too large or they would be to heavy for the men to lift when full of ashes or refuse. By the use of these moveable receptacles a saving of labour in the collection of ashes is effected, and the insanitary and frequently dangerous conditions due to an ash-pit containing large quantities of decomposable materials are done away with. During the year 240 galvanized iron receptacles have been provided.

### **Paving of Yards.**

This form of sanitary improvement is much needed, in the case of the yards of small properties, and especially in a vard common to several houses. The public health value of this work is becoming more generally recognised by all who take an interest in the surroundings of the dwelling house. Without paving, the surface of the ground is worn into holes, which are puddle holes in wet weather, and at all times an unpaved surface near the common door of a house is necessarily in a dirty condition, the children run in and out many times in a day ; and every person in the household brings dirt into it continually. The dirt on the floor dries, and is kicked or blown about as dust, which settles on the walls, ceiling, clothing, &c. Unpaved vards not only conduce to dirtiness of the house, but slops or foul water thrown on to them soaks into the ground polluting the earth. In wet weather many house walls abutting on such yards are found to be very damp, the dampness being caused very frequently by the the absence of impervious paving against the house.

During the year 130 court yards, areas and open spaces around houses, having an approximate area of 1,582 yards, have been paved with impervious material. Several common yards have been paved with asphalte, adding considerably to the comfort of the people residing in the houses, facilitating and encouraging cleanliness, and enabling rainwater, &c., which falls on the surface to drain off rapidly to a gully trap instead of soaking into the ground.

### Inspections under the Factory & Workshops Act.

A good deal of time and attention has been devoted to the inspection of workshops, workplaces, and outworkers, a large number not hitherto inspected have been added to the register. The Local Authority is the Authority responsible for the sanitary conditions of the workshops and workplaces in its district.

"Sanitary Conditions" includes (a) cleanliness, (b) overcrowding, (c) ventilation, (d) drainage of floors of workshops, and (e) sanitary conveniences. There are 481 workshops on the register, to which 516 visits have been paid.

*Cleanliness*—Eighty-six workshops were found to require the ceilings, or walls, or both, cleansed and whitewashed.

Overcrowding.—Eight workrooms were found to be overcrowded. Notices were served on, or representations made to the responsible persons, and the overcrowding has been abated. Sixty-two workrooms were measured up and cards setting forth the measurements have been supplied to the occupiers stating how many persons could be employed in each workroom.

Ventilation.—Nineteen workrooms have been more effectively ventilated by the provision of suitable inlet and outlet shafts. The temperature of one workroom was found to be much too high, especially in the evenings when the gas had been lit for some time, this has been remedied by providing suitable extract shaft.

Drainage of Wet Floors in Laundries, etc.—The floors at these places were found generally to be in a satisfactory condition.

Sanitary Conveniences.—Two workshops were found to be without sanitary conveniences, these have been provided, and twenty-one workshops were found to have unsuitable or defective W.C. arrangements. Suitable accommodation has been provided where necessary, and the defective places repaired.

Outworkers.-The names and addresses of seventy-eight outworkers were received from their employers. The object of visiting outworkers is to control the conditions under which certain specified classes of work is done in the houses of the workers. The powers given aim at the prevention of home work being carried on as a means of livelihood in dwellings which are injurious or dangerous to the health of the workers themselves. This may arise through overcrowding, want of ventilation, defective drains or other insanitary conditions, and in places where there are dangerous infectious The classes of work specified in the Home Work diseases. Orders are incidental to the making of wearing apparel, lace, furniture, upholstery, brush making, the making, altering or repairing umbrellas, the making of paper bags, brushmaking, &c.

Our attention has been called to the following defects in factories and workshops by H.M. Inspector of Factories :—

Three factories with insufficient w.c. accommodation.

Two factories without a sufficient supply of water to w.c.'s.

One factory with a dark and unventilated w.c.

One factory with improper w.c. accommodation.

One factory at which animals were being kept so as to be a nuisance.

All these defects have been remedied and notice to that effect has been sent to the Factory Inspector.

A. E. HUDSON, Mem. San. Inst.,

Chief Sanitary Inspector.

Report on the Administration of the Factory and Workshop Act, 1901, in connection with Factories, Workshops, Laundries, Workplaces and Homework.

# 1.—INSPECTION.

Including Inspections made by Sanitary Inspectors or Inspectors of Nuisances.

Premises.	Number of Inspections.	No. of Written and Verbal Notices.	Number of Prosecutions.
Factories (including Factory Laundries.) Workshops (including Work-	24	12	Nil
shop Laundries.) Workplaces	$516 \\ 80$	$153 \\ 6$	"
Homeworkers' Premises	75	5	"
Total	695	176	,,

# 2.—DEFECTS FOUND.

Particulars.	Number of Defects found	No. of Defects remedied.
Nuisances under the Public Health Acts :		
Want of cleanliless	86	86
Want of ventilation	19	19
Overcrowding	8	8
Other nuisances	17	17
Sanitary ) insufficient	2	2
accommodation $unsuitable or defective$	21	21
Total	153	153

### 3.—OTHER MATTERS.

Class.	Number.		
Matters notified to H.M. Inspectors of			
Factories :—	- 6		
Failure to affix Abstract of the Factory			
and Workshop Act (s. 133)	28		
Notified by H.M. Inspectors	8		
Reports (of action taken) sent to H.M.			
Inspectors	6		
In use at the end of the year	9		
	Number of Number of Lists. Outworkers.		
Lists received	14 75		
Workshops on the Register (s. 131) at			
the end of the year	481		

# The Sanitary Improvement and Up-keep of Dwelling-houses and Work-places.

A very considerable part of the laws affecting Public Health deal with the conditions of the dwelling. Here there is scope for work and improvement, since the defects arising from original bad building or from wear and tear, are often too evident to be denied, and as they are capable of exact determination and specific remedy, it is possible to put the laws concerning them into execution with effect. It is unfortunately more difficult to deal with the personal neglect and general defect in character of tenants of many houses, and these are treated with much greater diffidence and uncertainty by the law, no ready means being known for instilling into dirty careless and destructive persons the qualities of good housekeepers ; we therefore have to be content with our means to compel owners of house properties and proprietors of lodging-houses, shops and workshops, to do what is necessary to make amendments in those conditions of the buildings and their appurtenances, which are calculated to affect health prejudicially.

The defects to be found in old properties of the above mentioned class, are such, in the first place, as arise from the increase of knowledge and better appreciation of what is necessary and fitting. The houses built a hundred years ago were in accordance with the knowledge of the time, but the houses built to-day have many improvements and advantages adding to their healthiness, as compared with the old houses, and there were many houses that were looked upon as sufficient in times gone by which both knowledge and law to-day condemn as entirely unsuitable. One part of the work therefore lies in the effort to put the worst of the old houses altogether out of occupation, and to bring the remainder as near as is practicable up to the modern idea of a healthy dwelling. Secondly, there are those minor defects for ever arising, and in old properties recurring with great frequency, which are the result of wear and tear, including those which must arise from stress of weather and time, and those dependent upon the often very careless use of the inhabitants.

No doubt these modern requirements make a considerable difference in the profits to be derived from houseproperties, and especially from the older and poorer-class properties. But the whole tenour of the Public Health Laws affecting dwellings is opposed to the privilege formerly enjoyed by the property owner, and in favour of the tenant or user of the property, though this fact meets with but tardy recognition amongst the poorest and most ignorant tenants, especially if putting the law into execution means turning them out of unhealthy dens occupied at a low rent. It is not however, the tenants of the poor houses alone that benefit by these house improvements, but the tenants of larger houses also, particularly in respect of drainage and sanitary appliances. The demand by an incoming tenant for a sanitary certificate of some sort for the house he is about to take has grown considerably of late years, and usually results in the landlord being called upon to do the work required.

Presumably these new liabilities of house-property have already had their effect upon the buying and selling price, that being modified to meet the possible requirements of the Sanitary Authority. Some owners, however, have suffered losses of both capital and interest by losing their houses entirely, when these have been closed as unfit for habitation under the Housing of the Working Classes Act, and deemed to be too bad, or of too little worth, to be capable of such alterations as to render them again fit. Others have had their rents temporarily absorbed by having been called upon to spend considerable and perhaps recurring sums in carrying out notices demanding specific repairs. In the application of these powers the law has granted the owners of houseproperties no relief by application of the doctrine of compensation for losses in "vested interests," which rather tends to show that the care exhibited in some other directions in this particular is unnecessary, as well as very hindering to the introduction of required reforms.

The great question of the better housing of the Working Classes has two sides, the one being the building of new houses of superior accommodation to the houses formerly occupied by the same class of persons; the other is the improvement of existing houses. It is only rarely however that the improvement in the latter case can comprise the enlargement and increase in number of the apartments of the houses. Practically, it is only when houses are closed as unfit for habitation that the opportunity arrives for their enlargement, as for instance, by means of converting two adjacent houses into one house. However well the condition of the smallest houses are kept up, they can never supply the needs of a large poor family which requires for healthful and decent life a greater number of apartments, and these of larger size than those commonly met with in our smallest houses. To provide much larger house-room at the same rental paid for dwellings at present occupied and over-crowded by large poor families, and to make sure that those large poor families are they who reap the benefit of the provision, is the chief difficulty in the question of the better housing of the poor. Until some method of solving this is arrived at, the best work that can be done lies in the improvement and upkeep of the existing houses which should be carried on with undiminished persistence.

# Work Done in Cheltenham for the Improvement of Houses and Workplaces in the 10 years 1896-1905 Inclusive.

Number of Inspection	s of Hou	ses and P	remises		113074
Number of Notices	served	in conn	ection	with	
Dwelling-houses,	Lodging	g-houses,	Shops	and	
Workshops					17348
Advisory Letters writ	ten conce	erning the	same		3277

Houses closed as unfit for habitation	138
Overcrowding of houses abated under notice	268
Houses repaired in walls, floors, ceilings, and cleansed	
and limewashed under notice	2478
Structural defects in roofs, eaves, gutters, and water	
pipes repaired under notice	1133
Yards and areas paved under notice	979
Ash recepticles provided under notice	4279
Additional W.C's. provided under notice	232
Flushing cisterns for W.C's. under notice	5974
Flushing cisterns repaired under notice	458
New W.C. pans provided under notice	5921
Drains cleansed and unstopped under notice	455
Old house drains renewed under notice	1975
Manhole and Inspection Chambers provided under	
notice	1145
Intercepting traps provided under notice	1565
Stoneware gully traps provided under notice	8794
Soil pipes and ventilating shafts ,,	1702
Corporation Sanitary Certificates for dwelling-houses	
granted	551
Defects remedied under the Factory and Workshops	
Act in, or in connection with Workshops and	
Workrooms including defects in structure of	
walls, floors, ceilings, drains, &c., iusufficient	
closet accommodation, overcrowding, bad venti-	
lation, and want of cleanliness	888

### Sewers and Sewage Treatment.

Some advance was made last year in the re-sewering of the borough, which I advised some years ago as being necessary, and which, as will be remembered, it was decided to carry out systematically district by district. Last year the St. Peter's district was re-sewered—the work is nearly complete—and powers were obtained to finance the re-sewering in St. Paul's district, and the work there is just beginning.

This work of re-sewering, however, is being accomplished much too slowly. I have pointed out to the Public Health Committee that at the rate the work is proceeding it will take 60 or 80 years to complete the required re-sewering of the town.

A portion of our sewers are looked upon as privately owned. Chiefly these are known as the Tivoli sewers. An examination of these has shown them to be amongst the most defective sewers in the borough, and they urgently require renewal. It is also essential that the Corporation should acquire full right over them. For the Sanitary Authority not to have full right over the sewers receiving the domestic sewage of a considerable portion of their district is a most unusual thing, I know of no other such case, and I look upon this condition as very detrimental to Cheltenham. This I have urged upon many occasions during eight years, but the matter remains unsettled. Three or four years ago when the Corporation were promoting a Bill for various powers some sections were introduced dealing with this matter, but the Bill fell through, and that is the only attempt ever made to deal with this question of private sewers. During the last three years I have brought the matter up again and again with no result. In dealing with the question it would perhaps be necessary to oppose some private interests, and it appears as if the majority of the members of the Corporation are not prepared to do this, and so the thing drifts.

The sewage of Cheltenham is treated by broad irrigation of land, a method which up to the present time continues common throughout England. This method always results in some unpleasantness to the neighbourhood in which the sewage farms lie, and except upon chalk, and possibly a few other soils, it generally leads to a greater or less pollution of the streams receiving the effluents from the farms.

The treatment of the sewage at Cheltenham is consequently imperfect, and can be improved at considerable cost by treatment in tanks and filters prior to application to the land.

It has for some time been the object of a few persons whose interests are in some degree affected by the condition of the land irrigated by the sewage, and the condition of the brooks receiving the effluents from the farms and the storm water overflows, to compel the Cheltenham Corporation to adopt an up-to-date system of sewage treatment. One cannot say there has been an agitation by the public, as really, very few people are affected by the sewage treatment, but a certain few influential persons who live near the farms, or by whose land the streams flow, being members of the local Councils, have exerted their influence upon those Councils, to cause the latter to take action against the Cheltenham Corporation. There has been considerable exaggeration of the damage and nuisance arising from the sewage, that being necessary to make a strong case. The County Council has recently sent a kind of ultimatum to the Corporation threatening action under the Rivers Pollution Prevention Act unless "The Cheltenham Corporation shall have adopted a satisfactory scheme for treatment of sewage at their February meeting."

Many years ago I called the attention of the Corporation to their Sewage Farms which at that time were let to farmers to whom was left the distribution of the sewage upon the land. The Local Government Board compelled the Corporation to take the land under their own management. I advised that the land should be better prepared for the reception of the sewage so that the best effluent possible might be produced. In the meantime what is known as the bacterial method of sewage treatment was developing, and there were several rival processes proposed which were under trial in one town or another, and a Royal Commission was appointed to make enquiry into the best mode of sewage treatment. Until it was possible to say which was the best method to adopt I advised deliberately that no general method should be adopted in substitution of the broad irrigation method, but that the Corporation should wait until the question had come nearer a definite decision. In anticipation that sooner or later a new method of sewage treatment would have to be adopted I advised the reservering of the town to be rapidly proceeded with, saying that it was most desirable that this should be completed before any new treatment of the sewage was adopted, as there would be an opportunity of reducing the quantity of sewage to be treated by diverting the storm water from the sewers into which it at present discharges.

Of the two works, namely, the abolition of all our many defective sewers and replacing them by good new sewers, and the introduction of a new sewage treatment scheme, the former is infinitely the most important, and for this reason also, the resewering should be rapidly proceeded with—much more rapidly than hitherto,—and in connection with this work action to bring all the sewers of the town under the absolute control of the Corporation should be taken immediately, and diligently pursued to a satisfactory termination. During the year just past the Borough Surveyor by instruction of the Town Council prepared two admirable reports upon the treatment of the Cheltenham sewage by tanks and continuous filters with details as to construction and cost, and of two or three alternative schemes submitted, the Corporation has just adopted one, and provided the sanction of the Local Government Board can be obtained this is to be carried out.

# Establishment of Sewage-Treatment Plant upon our Borough Boundary by a Neighbouring Council.

The Parish of Prestbury which lies contiguous to Cheltenham and consists of a compact village situated about a mile from the border of our town, with detached portions that adjoin or are continuous with the buildings of Cheltenham, required better means of sewerage. All those houses actually adjacent to Cheltenham already drained into sewers that were joined with the Cheltenham sewers, and it would have been quite an easy task to extend the existing sewers to drain all parts of the village in the same manner, when Prestbury would have disposed of its sewage cheaply and without any trouble whatever in regard to sewage treatment. They preferred however, to act independently of Cheltenham, and proposed to lay sewers in another course to drain the whole of their houses, and to carry the sewage in a new main sewer, extending about two miles to a new tank and filters situated near the brook, which forms our dividing boundary. The houses which are already joined with the Cheltenham sewers, are to be disconnected from them, and joined up with the new system.

Generally speaking it is undesirable to multiply sewage treatment works where that can be avoided, and at the Local Government Board Inquiry I give evidence against the scheme on that main ground. It appeared that the proposition was not founded upon a desire to do that which was best and easiest and cheapest from the point of view of sanitary work, but was advocated on the ground that if the sewers of Prestbury were joined with the Cheltenham system, Cheltenham would have an argument in favour of extending its boundaries to include Prestbury. I am not aware of any present suggestion or likelihood of that occurring, although those houses which adjoin Cheltenham and lie away from Prestbury village are virtually a part of Cheltenham, and there is much rightly to be said in favour of their inclusion with the borough.

The matter of right or wrong so far as the work about to be done at Prestbury is concerned, and from the point of view of sanitary work, may be judged by supposing that the borough boundary had been extended to include Prestbury with Cheltenham, and the business of sewering Prestbury had consequently fallen upon the Cheltenham Corporation. To suppose then that Cheltenham would do what Prestbury is doing is an outrage to common sense, namely, to create a new and separate sewerage system for Prestbury, disconnect from the Cheltenham sewers the houses now connected with them (nearly a quarter of all the houses to be drained) and construct long new main sewers to convey the sewage to new tanks and filters situated near the Wyman's Brook below Folly Lane, where some amount of nuisance is certain to be created, and a continuous expense entailed in the proper working of tanks and filters, besides the incurring of a continuing and unnecessary responsibility.

The Local Government Board Inspector appeared to take the view that where a Local Governing Council proposes a scheme which in itself is deemed to answer the purpose for which it is intended, circumstances such as those above related cannot be allowed to interfere with their liberty to carry out the proposition, and are irrelevant to the Inquiry.

# The Water Supply.

The main supply of water to Cheltenham is derived from springs from the oolite, and the upland surface, draining to form the head waters of the river Chelt, the water being collected chiefly in the Dowdeswell Reservoir. This reservoir was constructed 20 years ago by throwing a dam across a narrow part of the Chelt valley. At that time it was erroneously considered that the impounding space obtained would afford an ample store of water to supply Cheltenham under all circumstances. The required supply was miscalculated owing, perhaps, to the fact that all the poor quarters of the town were at that time supplied by shallow wells, and more than 5000 of the water closets were flushed casually by hand, and the great difference to water consumption which would ensue upon closing the wells and extending the public water supply to every house appears to have been lost sight of.

As time has shown however, the creating of a larger reservoir in that locality would not have met the requirements, for in several years the quantity of available water has not been sufficient to fill the reservoir, and a further quantity of water could not be obtained from any neighbouring source, or one may say, from any source at all, to supplement the supply to the reservoir. It consequently became evident as soon as the shallow wells began to be closed that another source would have to be sought.

The Corporation had obtained parliamentary powers many years before to take water from the river Severn, at a point above the town of Tewkesbury, 10 miles away, but had only exercised its powers to supply Tewkesbury and its neighbourhood, for which purpose it had established works upon the Severn bank, at The Mythe, near Tewkesbury. It was a question whether the river water should be brought into Cheltenham as a supplementary supply, and having considered all possible sources available this course was decided upon by the Corporation. That is a dozen years ago, and the Severn supply has proved of the greatest value to the borough. As more of this water came to be required, and the confidence of the public in its suitability increased, the works at Tewkesbury were extended by the making of new filters to correspond with the filter area required for thorough treatment of the water, by duplicating the first pipe laid between the Severn and Cheltenham, and by erecting additional pumping plant. During last year the construction of two large new filters was begun and is now well advanced towards completion. When these new filters are completed a filtering area will exist equal to supply as much water as can be pumped into Cheltenham by the existing available pumping power, the water being filtered at the slow rate recommended by the authorities upon the subject. We shall then be secure against any possible water famine since the Severn can be relied upon to vield a large volume of water at all seasons.

Although a large river which is subject to considerable pollution has not been considered an ideal source for drinking water, experience has shown in the case of London and very many other large cities, that water derived from such a source, when carefully purified by filtration, constitutes a safe supply. The water of the Severn as it comes to the point at which it is taken from the river for our supply, whilst still in its natural condition, that is, before being filtered, is very commonly of quite astonishing purity, bearing in mind the pollutions it receives higher up. The magnificent volume of water that flows down the Severn is generally but little affected by the organic matters it receives in its course, and these are undoubtedly rapidly deposited and destroyed. A considerable and varying quantity of water derived from vegetable sources is natural to the water, and this gives the water a brown tint invariably, which at certain times becomes so marked as to cause comment amongst the consumers of the water, especially as upon occasions the brownness is greatly and suddenly increased, when heavy rains occurring in the localities which are responsible for its production, cause it to be washed into the river in greater quantities than usual.

In the course of an inquiry I made some years ago into the quality of the water of the Severn and its several tributaries, and the result of which inquiry I embodied in a paper read before the Cotswold Field Club, I made note of this brown material, and stated those tributaries in which it was chiefly developed, and upon the same occasion commented upon certain other abnormal qualities of the Severn water, giving the reasons for those abnormalities. An analyst analysing this water requires to have a knowledge of its source, and of the peculiarities referred to, and if he is ignorant of these he may be led to condemn the water quite unjustly. In fact this very thing has happened on more than one occasion.

Last year complete monthly analyses were made of the Severn water before and after filtration, samples having been obtained from the Cheltenham Water Works at Tewkesbury for this purpose. In the last month the unfiltered water alone was analysed, as the filters there had ceased working for a time, owing to a temporary abundance of water in the Dowdeswell Reservoir. These 12 months' analyses are appended in Tabular form. They show that a good water efficiently purified was supplied from the Severn through the whole year. The enumeration of the bacteria in the water by means of gelatine plate cultures further showed the effectiveness of the filtration in removing bacteria. Generally the results were satisfactory. Very much greater care is now taken with regard to the filtration of this water than formerly, a fact which benefits Tewkesbury as well as Cheltenham.

Another auxiliary supply of water, derived from springs, and stored in brick-built reservoirs called the Hewlett's Reservoirs, has been a constant source of trouble to us by a self-contamination due to the growth of chara and infusorial organisms. This water, which is of very excellent quality when received at the reservoir, undergoes great deterioration from the above mentioned causes upon standing. Some years ago I enquired into the exact causes of this deterioration, and published results showing the nature of the growths which give unpleasant odour, taste, and turbidity to this water. Incidentally I discovered that the growths did not take place when the water was protected from the light. The pollution was in the open reservoirs but in certain closed and dark reservoirs standing side by side with those that are open to the daylight, the water remained very nearly in the same pure condition as it is discharged from the springs.

In the course of last year I inspected the springs supplying these Hewlett's Reservoirs in company with the Water Engineer, and after an inspection of the reservoirs Mr. Pickering reported to the Water Committee advising that all the water, from this source, should pass through the dark reservoirs. If this be done the water will be prevented spoiling, and there can be no further cause of complaint from this water so long as this expedient is practised. It means that the open brick reservoirs, which were of costly construction, will be practically thrown out of use, at least for a great part of the year, but with the Severn to fall back upon the storage afforded by these reservoirs is not of the The importance it was at the time of their construction. alternative would be the treatment of the water by filters, or otherwise, for its purification. Along with Mr. Pickering I considered the various means recommended for purifying such a water, and we together visited the enclosed pressure filters in use at Gloucester, and entered into correspondence with the Director of the Bureau of Plant Industry of the United States Department of Agriculture as to treatment of

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the water by sulphate of copper, a mode discovered and practised in the States. I have always advocated, however, that this pure spring water should be used in its fresh state when it constitutes the purest water we possess. To let so pure a water get contaminated in the way above described, and then to employ expensive means to partly remove the contamination is not a thing to be permitted if it can by any reasonable means be avoided.



# Sale of Food and Drugs Act.

Return of Articles submitted to the Public Analyst during the year 1905, with the results of the Analyses.

(G. Embrey, Esq., Gloucester, Public Analyst.)

Samples submitted by Superintendent A. W. Hopkins.

### Quarter ending 31st March.

Articles submitted. Result.

4 Samples of Arrowroot, all genuine.

6	,,	Butter	**	,,
3	,,	Coffee	,,	,,
3	,,	Pepper	,,	,,
32	,,	Sugar	,,	,,
6	,,	Tea	"	,,

### Quarter ending 80th June.

6 Samples of Butter, all genuine.

- Cheese, genuine. I ...
- Coffee 2 ,,
- 15 .,

...

Milk, 10 samples genuine; 1 with 171% of fat extracted; 1 with 20% of fat extracted. A clerical error in making out the summonses in the prosecutions instituted in these 2 cases prevented them being taken to judgement. I sample with 14% of fat extracted, seller prosecuted and fined £1 and £1 15s. 2d. costs.

### Quarter ending 30th September.

2 Samples of Arrowroot. all genuine.

4	,,	Butter	,,	,,
3	,,	Gin	,,	,,
II	,,	Milk	,,	,,
Ι	,,	Tea	,,	,,
3	,,	Whisky	,,	,,

## Quarter ending 31st December.

2 Samples of Arrowroot, all genuine.

I	,,	Brandy ", "
15	,,	Butter, all genuine, but 3 samples very wet.
I	,,	Gin, genuine.
3	,,	Milk, all genuine.
I	,,	Pepper, genuine.
Ι	,,	Tea "

# ANNUAL REPORT

UPON THE

# Meteorology of Cheltenham,

BY

MR. A. C. SAXBY,

F.R. MET. SOC.,

BOROUGH METEOROLOGIST,

FOR THE YEAR 1905.

LATITUDE 51° 53′ 45″ N. LONGITUDE 2° 3′ 21″ W. Height of Barometer above Mean Sea Level 206ft.

THE INSTRUMENTS ARE ALL OF THE HIGHEST QUALITY, AND HAVE BEEN VERIFIED AT KEW.



# To the Mayor, Aldermen and Councillors of the Borough of Cheltenham.

## GENTLEMEN,

I have pleasure in submitting to you my Annual Meteorological Report for Cheltenham during the year 1905.

The instruments are as last year, and all in good order.

The observations have been taken as usual by myself or my deputy.

The bright sunshine Charts have been brought in from Pittville with regularity daily by the Head Gardener, and the amount of sunshine registered has been correctly calculated.

In addition to the Weekly and Monthly Reports published in the "Cheltenham Examiner," the "Gloucestershire Echo," and "Cheltenham Chronicle," I have, in response to your wishes, sent week-end Weather reports to the "Financial News" for publication every Friday. The continued keeping of Cheltenham before the public in this way is an advantage to the town.

Weekly and Monthly Reports have been sent to the Secretary of the Royal Meteorological Society as formerly.

I beg to tender my best thanks to those observers who have sent me returns from various stations over the county, and to all who have assisted me in the work.

I am, Gentlemen,

Your obedient Servant,

AUSTIN C. SAXBY, F.R. MET. SOC., Borough Meteorologist.

February, 1906.



THE METEOROLOGY OF CHELTENHAM.

Abstract of Meteorological Observations taken at the Montpellier Gardens, Cheltenham-the Barometer being at 397, High Street, 206 ft. above mean sea level-by A. C. SAXBY, F.R., Met. Soc., Borough Meteorologist. Latitude 51° 53' 45" N. Longitude 2° 3' 21" W. Height of instruments above Mean Sea Level, 216-ft.

Corrected Mean of	Corrected Mean of		AIR TE	AIR TEMPERATURES.	TURES.			Relative Humidity	Rain	Rainfall.	ght. Sht
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	52.0	-	39.4	22	6.09	4	27.8	86	3.42	22	
46-0	52.3		40.6	13	6.69	22	30-2	79	2.37	20	
52-6	61.4		43.6	28	73.7	23	32.4	72	0.20	~	
59-1	699		52.2	25	9.77	6	43.5	77	4.13	16	
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# NOTES ON THE TABLES.

#### (See previous page).

COLUMN 1 is the mean reading of the Barometer at 9 a.m. and 9 p.m., corrected for temperature—32° Fahrenheit—and reduced to mean sea level.

COLUMNS 3 to 8.—The maximum and minimum thermometers are read and set at 9 p.m., and entered to same day.

COLUMN 9.—The relative humidity is calculated by dividing the elastic force of aqueous-vapour at the temperature of the dew-point for the month by that at the temperature of the air.

COLUMN 12.—The amount of bright sunshine is registered by a Jordan's Twin-cylinder Recorder, which is mounted on the top of Pittville Pump Room.

#### WIND.

# The observations of Wind are taken at 9 a m. and 9 p.m. The general directions are as follows :

				70
From th	e North		 	0.05
,,	North-E	last	 	0.09
,,	East		 	0.05
,,	South-E	ast	 	0.1
,,	South		 	0.1
,,	South-V	Vest	 	0.3
,,	West		 	0.13
"	North-W	Vest	 	0.08
There w	ere Calms		 	0.1

North-East Winds prevailed in May.

South-East	,,	,,	November, December.
South	,,	,,	August.
South-West	"	"	January, February, June, July, October.
West	,,	"	March, April, September.

	oheric ire.	MEAN	AIR TE	MPERA	TURES	Hum	idity.	Rair	nfall
Year.	Atmospheric Pressure.	Max.	Min.	Mean	Range	9 a.m.	9 p.m.	Inches.	Days.
	INCHES.	Q	0	0	0	. %	%		
1878	29.913	56.1	41.5	48.8	14.6	83	88	33.18	176
1879	29.944	$52 \cdot 2$	38.5	45.3	13.7	87	89	32.63	212
1880	29.971	55.8	40.5	48.1	15.3	85	88	33.72	177
1881	29.957	55.0	38.9	46.9	16.1	82	85	25.28	185
1882	29.914	55.9	41.5	48.7	14.4	81	86	37 92	214
1883	29.964	55.6	40.6	48.1	15.0	85	89	29.93	204
1884	29.978	56.8	41.9	49.3	14.9	84	89	24.04	190
1885	29.930	54.8	40.0	47.4	14.8	84	87	26.45	193
1886	29.912	55.0	40.6	47.8	14.4	83	86	32.55	193
1887	30.029	55.3	38.6	46.9	16.7	80	83	22.78	153
1888	29.959	53.8	40.1	46.9	13.7	82	84	28.85	195
1889	29.971	55.4	40.6	48.0	14.8	84	87	27.07	181
1890	29.959	55.6	40.1	47.8	15.5	84	88	20.09	191
1891	29.957	$55 \cdot 1$	40.0	47.5	15.1	83	87	33.14	192
1892	29.948	54.6	38.7	46.6	15.9	82	85	19.45	175
1893	29.990	59.1	41.3	50.2	17.8	81	83	19.91	169
1894	29.963	56.2	41.6	48.9	14.6	83	87	29.12	194
1895	29.923	56.2	39.6	47.9	16.6	83	87	24.99	174
1896	30.030	57.0	41.4	49.2	15.6	83	86	21.54	185
1897	29.969	56.8	42.8	49.8	14.0	82	86	26.23	191
1898	30.009	58.2	42.5	50.3	15.7	82	85	24.23	173
1899	29.989	58.5	41.2	49.8	17.3	81	85	25.72	162
1900	29.928	57.3	41.1	49.2	16.2	80	84	28.44	203
1901	29.966	56.2	40.1	48.1	16.1	79	83	23.27	169
1902	29.906	56.9	42.4	49.6	14.5	84	87	22.53	176
1903	29.883	55.8	43.0	49.4	12.8	82	84	35.75	215
1904	29.988	55.7	42.8	49.2	12.9	80	84	22.41	177
1905	30.005	55.7	42.9	49.3	12.8	79	83	23.79	165
Means	29.958	55.9	40.9	48.4	15.1	82	86	26.96	185

# COMPARATIVE TABLE OF THE METEOROLOGY OF CHELTENHAM FOR THE YEARS 1878-1905.

The year as regards Meteorology of Cheltenham has not been one for great comment.

I have to draw special notice to the last page of the report—a table of Humidity and Bright Sunshine—showing how distinctly preferable Cheltenham compares in those respects to other places, also in its low rainfall, and freedom from tempest.

The month of April was somewhat colder than usual, and a few frosts proved to be disastrous to early fruit buds. May was a record one for absence of rain, but was followed by June with abundance of rain and plenty of sun, which made up for what otherwise would have been a disastrous season. During October, from 16th to 25th, in common with all other parts, we experienced sharp frosts, and as far as Cheltenham is concerned it was the longest spell of frost during the year.

Thunderstorms were very scarce, only occurring on six days, there were several more days on which storms were reported in the neighbourhood, passing either over or round Cheltenham. No damage was reported from lightning. Fogs were absent, at least as fogs are known in other parts of the country.

Westerley and South Westerly winds have been the most prevalent, the Northern and Easterly Winds being almost absent, due to the situation of the Hills surrounding Cheltenham.

JANUARY.—Atmospheric pressure was very light all through the month, excepting from the 12th to the 16th, when the barometer reached an unusually low reading, steadily rising to the 20th, maintaining its level until the 25th, again rising to the 28th, registering an unduly high point. Range of pressure 1.949 inch. The fall on the 16th was accompanied by a gale of wind and a blizzard. Range of pressure 1.849 inch.

Temperature very pleasant, the means being 0.6 degrees below the averages for January. A few low readings were registered, skating being indulged in for a few days between the 16th and 23rd.

Rainfall was one inch below the average for January.

Bright sunshine has been more than double the amount registered during January, 1904, on the 28th and 30th almost the maximum possible amount was registered.

Winds generally W. and S.W.

FEBRUARY.—Atmospheric pressure was light and very even up to the 16th, the barometer falling to the 19th, rising to the 22nd, steadily falling to the 25th, when a very sharp depression occurred from 2 p.m. until 6 a.m. on the 26th, reaching its lowest point, continuing low yet steady to the end of the month. Range of pressure 1.467 inch.

Mean temperature has been 2.5° above the average of previous years, on 6 nights only has frost been registered in the screen.

Rainfall has been unusually small, the lightest for February during the last 8 years.

Bright sunshine was recorded on each day but four, the total being 13 hours in excess of February, 1904.

During the early hours of Sunday, the 26th, the wind blew quite a gale, accompanied by heavy rain; during the afternoon of that day 102<sup>°</sup> were registered on the Solar Radiation Thermometer.

Light snow fell on the 12th, 19th, 21st, and 26th.

MARCH.—Atmospheric pressure was great on the 1st of March, the barometer steadily rising until the 3rd, reaching the highest during the month; undulating to the 8th, falling until the 12th, recovering slightly but falling rapidly on the 15th to an unusually low point, recovering during the four following days, then continuing a fairly even course although low, until the end of the month. Range of pressure 1.499 inch.

The mean temperature for the month was 4 degrees above the average for March. On the 1st and 7th thunder was heard in the neighbourhood.

On Sunday, the 7th, about 7 a.m., there was one of the heaviest

falls of hail experienced for a long time, the stones being unusually large, thunder and lightning with rain also accompanied.

Bright sunshine has been very abundant, there being only one sunless day, the total being 50 hours in excess of that for March, 1904.

From the 6th to the 13th the solar radiation thermometer averaged over 100° for the week. On Sunday, the 19th, nine hours twenty minutes bright sunshine was registered, being within half-an-hour of the possible amount.

Winds generally south-westerly. Rainfall much in excess of March, 1904, but only slightly more than the total for the first quarter of last year. Snow fell for a few minutes on the 1st, flakes were unusually large.

APRIL.—Atmospheric pressure throughout the month has been great. At no time was the barometer standing high, the highest reading being taken the morning of the 1st, and the lowest on the evening of the last day. The movements of Barometer were very undulating during the first and last weeks, the fall on the 28th being sharp, remaining low to end of month. Range of pressure 1.043 inch.

The mean maximum temperature has been three degrees below the average, whilst the mean minimum temperature was some three degrees above the average. A few snow flakes fell on the 6th and 8th.

Rainfall was heavier than the previous year, consequently the quantity of bright sunshine was not so great as that of April, 1904.

On Sunday, the 16th, two thunderstorms passed over Cheltenham between 4 and 5 p.m., the second being the heavier, The lightning was very vivid; hail and rain was also heavy.

MAY.—At the dawn of the month atmospheric pressure was at its greatest during the month, the barometer rose steadily until the 5th to its highest point, keeping a fairly even course until the 24th, when it dropped, remaining low to the end.

Mean temperature has been above the average of May in previous years, although the extremes have been greater than the corresponding month of last year.

Rainfall for the month has been a record for its dryness, being rain on three days only. The total is least for the month of May as far as records have been published, nearly 40 years.

Absence of rain for 29 days—from the 3rd to the 31st inclusive, with the exception of one slight shower—was very detrimental to the grass crops.

In bright sunshine there has been a corresponding increase, there being 82 hours more than in May, 1904.

Winds for the greater part of the time blew from a Northerly direction.

JUNE.—Atmospheric pressure has at no time been great, and movements of barometer very even; the range of pressure has been confined to less than three-quarters of an inch, o<sup>-700</sup> inch.

The month has been a very pleasant one. The mean temperature has been some 10 degrees higher than the average for June during the past 20 years, and the abundance of rain has been welcome for vegetation. The rainfall has been the highest recorded for June since 1867, the amount . . .

falling on five days—6th, 16th, 19th, 29th, and 30th—giving an average of 0.61 inch per 24 hours. Lightning has not been recorded and thunder on only three days. A thunderstorm which was severe in the neighbourhood also threatened here but passed off without troubling us. The grass vegetation very much improved under the heavy rains and abundance of sun.

Winds generally S.W.

JULY.—Atmospheric pressure for the month has been remarkably even, especially considering the thunderstorms which have visited the locality. Range of pressure less than half-an-inch o·462 inch.

Temperature higher than the average for the month, and although high generally throughout the country we were spared the excessive heat experienced in London and many inland stations.

The thunderstorm on Sunday, the 9th, was shared here, but no damage from lightning was reported locally, the rain—under one-third of an inch—was not so excessive as neighbouring towns.

The amount of bright sunshine registered on the 12th, 13th, 14th, and 17th, reached double figures each day.

AUGUST.—Atmospheric pressure was light, the barometer standing high at the commencement of month, but receded on the 3rd and 4th, reaching the lowest point touched during the month, rising on the 6th, continued a fairly even course until the 17th, undulating until the 23rd, falling gradually until the 27th. Range of pressure 0.962 inch.

The falling of the barometer on the 3rd and 4th was accompanied by a gale of wind and rain fell heavily.

Temperature mild and pleasant being 0.5 below the average for August.

The rainfall on the 27th and 28th was almost unprecedented for this district, totalling 2.53 inches for the two days.

SEPTEMBER.—Atmospheric pressure during the month has been unsteady, especially the first and third week, the greatest depression occurring on the 7th. The month closed without the usual gales experienced at the end of September. Range of pressure o<sup>.8</sup>90 inch. The temperature has been mild and pleasant, no frost being registered. Rainfall has been much less than the average.

Winds mild, generally South-Westerly. Bright sunshine very much less than last year.

OCTOBER.—Atmospheric pressure has been very uneven, the barometer falling sharply from 3rd to 5th, again on the 15th, also from 28th to the 30th, when the lowest reading took place. Range of pressure 1.418 inch.

Temperatures have been two degrees lower than the usual average for October, which is accounted for by the unusual low readings experienced throughout the country from the 16th to 25th.

Rainfall less than two inches, being one inch below the usual average for this month.

Bright sunshine above the average, and only twenty minutes short of the total for October, 1904.

Absence of fogs during the month.

NOVEMBER.—Atmospheric pressure has been most uneasy during the month, commencing far below the average the mercury rose until the 4th, rising and falling each three days until the 13th, when it rose steadily until the 18th, only to fall again to the 26th, reaching its lowest point, recovering a depression on the 28th, it finished about its normal position. Range of pressure 1.379 inch.

Temperatures rather lower than the mean of former years, some low readings being experienced about the middle of the month.

Rainfall much less than those wiseacres foretold, there being rain one day only, from the 15th to 24th inclusive.

Bright sunshine totals well, being 20 hours more than any November the last three years.

Winds generally southerly.

DECEMBER.—The month commenced with a very high barometer, falling on the 5th, steadily rising again until the 12th, then standing at the highest—with two exceptions—recorded here during the last twentyeight years, falling steadily, it continued very regular until the 25th, a sharp depression occurring on the 26th to 30th. Range of pressure 1.618 inch

The mean temperature for the month is higher by two degrees than the average of past years.

Humidity rather less than former years.

Rainfall very light, the total for the year being under the average.

Sunshine, a good supply, well in advance of the previous December.

# RAINFALL IN THE COUNTY OF GLOUCESTER IN 1905.

STA	TION.		OBSERVE	R.	RAIN- FALL.	RAINY DAYS.
					 Inches.	150
			 A. S. Helps			176
Moreton-in-M	arsh		W. Arkell		 26.67	143
Cheltenham	1		 A. C. Saxby		 23.77	165
Bourton-on-th	e-Wa	ter	 E. W. Kendall		 26.13	133
Great Barring	ton		 H. J. Barrett		 25.61	124
R.A.C., Ciren			 P. G. Gundry		 25.06	170
Destal			 R. Shore		 23.86	140
Lashlada			 A. Reeves		 21.87	196
Ower Count			 R. C. C. Lippin	cott	 24.68	192
Clifton			 R. F. Sturge		 00.00	179
Dracthury			 Miss Kerr		 26.19	181
			- N* N 15			

Cheltenham Rainfall is again low, in fact the smallest total but one in the county, and although the number of days on which rain fell is high, we had 22 days on which the smallest appreciable quantity, *i.e.*, 1-100 part of an inch fell during the 24 hours. It is strange that Lechlade with the smallest rainfall in the county registered rain on more days than any other station.

COMPARATIV	TE TABLE OF HUMIDITY AND BRIGHT	
SUNSHINE	REGISTERED AT INLAND STATIONS	
	DURING THE YEAR 1905.	

HUMIDITY %	STATION.	ABOVE SEA L		100000000000000000000000000000000000000	' SUNSHINE OURS.
83.0	Bath	 84—	Feet	Total	$-1541 \cdot 1$
86.8	Belvoir Castle	 276	,,	,,	$1578 \cdot 1$
84.4	Berkhampsted	 397	,,	,,	$1484 \cdot 3$
82.0	Birmingham	 542	,,	,,	1171.7
82.0	Buxton	 995	,,	,,	1288.3
85.7	Cambridge	 88	,,	,,	1595.7
81.0	Cheltenham	 216	,,	,,	1541.8
80.8	Coventry	 309	,,	,,	1376.8
86.0	Nottingham	 88	,,	,,	1404.9
82.0	Oxford	 212	,,	,,	$1439 \cdot 1$
82.0	Sheffield	 450	.,		1431.9

The lower the percentage of humidity the drier is the atmosphere.

