

A sanitary survey of Glamorganshire / by William Williams, County Medical Officer.

Contributors

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A SANITARY SURVEY
OF
GLAMORGANSHIRE.

BY
WILLIAM WILLIAMS,
M.A., M.D., & D.P.H. (OXON.),
County Medical Officer.

CARDIFF:
DANIEL OWEN AND COMPANY, LIMITED, ST. MARY STREET.

1895.



A SANITARY SURVEY

OF GLAMORGANSHIRE

BY
WILLIAM WILLIAMS

Author of "The Sanitary Survey of Glamorgan,"
and "The Sanitary Survey of Glamorgan."

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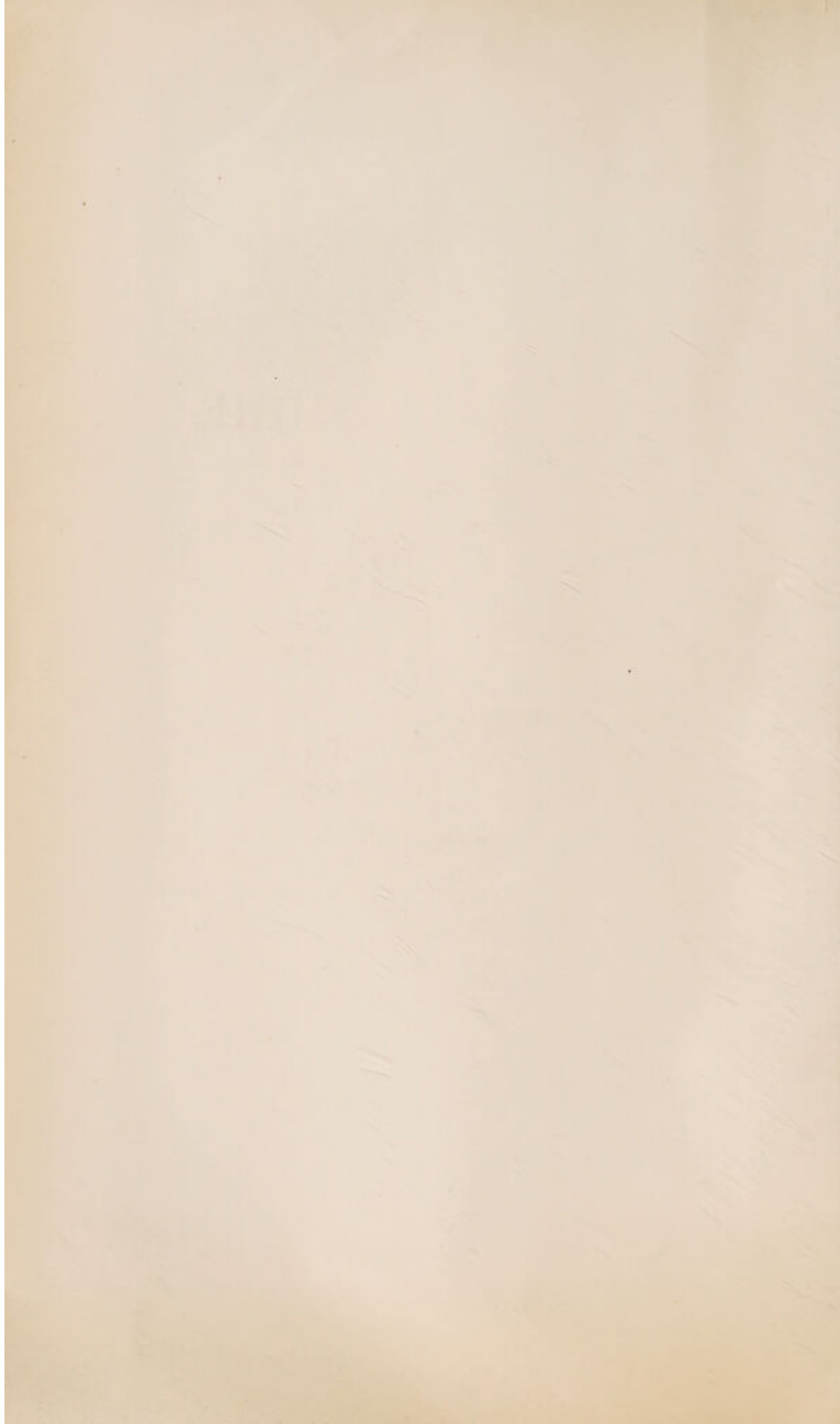


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"HEB IECHYD BAICH YW BYWYD."

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PREFACE.

*To the Chairman and Members of the Glamorgan County Council, and others
interested in the Public Health.*

EXPERIENCE has taught me that a Health Officer cannot reasonably expect many improvements in the sanitary condition of the area under his supervision unless at first, and from time to time, he makes precise and definite statements to the responsible Authority as to what these required improvements are. Basing my future plan of action on past experience, it occurred to me, on undertaking the duties of Medical Officer of Health to the Glamorgan County Council, some two and a half years ago, that my first duty was to make myself thoroughly familiar with the needs and requirements of each separate district, and then represent matters in their true light and with a kindly spirit to the Authorities concerned.

In order to gain this end I was actuated to make a systematic survey of the county, the outcome of which is embodied in Part III. of this volume. This survey is the first of the kind ever made (except in regard of threatened Cholera) for this or any county in England and Wales. Moreover, even as regards Cholera Surveys, none have extended to *all* the Sanitary Districts within a given Administrative County.

Part I. is devoted to the *Physical Features of the County*, and Part II. to its *Health History* and *Vital Statistics* for a period as far back as there is any reliable record. The three Parts collectively constitute the subject matter of the Dissertation which I presented last year for the Degree of Doctor of Medicine in the University of Oxford.

I am keenly sensible of the many imperfections of the volume, but it is published in the hope that it may prove useful for future reference and of some value to Medical Officers of Health, Private Practitioners, Members of the various Public Bodies, and others interested in the Public Health.

I have had one object constantly in view, viz., the ultimate improvement of the various Sanitary Districts in the County, and I felt convinced that this would not be attained on the *laissez faire* policy, so I determined at the outset not to go about with my eyes shut, and always to rely, as far as possible, upon my own judgment, with a firm belief in

"This above all—To thine own self be true,
And it must follow as the light the day,
Thou canst not then be false to any man."

For valuable information I have to express my obligations to various publications and official reports which are duly acknowledged in the text. I am specially indebted to Professor Howard, M.A., F.G.S., for his help in the preparation of the Geological Sketch, and to Dr. John Williams, M.D., B.Sc. (Pub. Health), for assistance in the revision of the proofs.

WILLIAM WILLIAMS.

County Offices, Cardiff, *June, 1895.*

LETTER FROM SIR HENRY W. ACLAND, BART. K.C.B., F.R.S.

OXFORD, *June 18, 1895.*

DEAR DR. WILLIAMS,

I am much indebted to you for the kindness of enabling me to read your report, as County Medical Officer of Glamorgan, addressed to the County Council of that most important County. It has always had a great interest to me since the time when I first, as a boy, scaled the Hills of Porlock after sunset to gaze on the brilliancy of the lights on the Nash Head, and afterwards in 1832 entered all the harbours and roadsteads on its coasts, from the Mumbles to Penarth, in one of the 40-ton Collier Sloops of those days. I wondered at the hardihood and skill of the three hands that managed the Coaster in your high spring tides, although in thick weather we were nearly all lost on the Nash Sands. I then got such insight, as might be had by a youth, of the nature of mining industry and general commerce, by land and by sea, in your Swansea and in Cardiff Districts and Works.

What a change has come over the scene in the 60 years that have passed—a change of which the subjects touched on by your report are not the least remarkable! Steam and the Telegraph have no doubt altered the conception as well as the condition of Human Society throughout the world. Yet probably nothing will, upon the whole, more affect the condition of the masses of mankind in all civilized or half civilized races everywhere, than the subject on which you have been called on to advise the great County of Glamorgan.

That this statement is not excessive will be made clear by a little reflection, when it is remembered that there is a common consent among all who have an intelligent conception of the aims and duties of modern medicine throughout the world. Will you excuse me if I write a few words on a subject with which you are most familiar?

The second half of the present century has been in no respect more remarkable than for the extension of our knowledge of the causes of disease in man, and in many living organisms other than man—in those especially that are domesticated for his service and his food.

This knowledge has led the practical energy of the English Nation to apply itself to the modes of controlling the causes of all diseases and of their prevention, and to the promoting and preserving both Personal and National health. England has been in the van of this movement. These are now taken up by every nation of the earth which has any Government worthy the name. The promotion of the health of man in his varied conditions and his several surroundings has now become a bond of union and of common action for wise and intelligent statesmen in all nations.

On a little reflection the reason of this is obvious.

With the progress of Education it has become clear to thoughtful persons of every station, that from all time, since there has been any record of the races of men, howsoever and wheresoever they had their origin, their physical conditions or surroundings have exercised an important influence on their intellectual, social, and moral character. This was thoroughly understood and taught with philosophical acumen by Hippocrates 2,000 years ago. He discusses in more than one striking passage, worthy a modern statesman, in his treatise on "Climate and Localities," the effect of physical conditions combined with political causes on the stamina and personal character of a race.

VIII.

The great importance to the whole human race of preventing disease was not generally realized by the profession of medicine, and still less by the public at large, until the reign of Her Most Gracious Majesty Queen Victoria. The particulars of this change are set forth in a valuable volume written by Sir John Simon, who has exercised a great influence on the present condition of this department of scientific and social progress. A few years since the paper to which you have kindly asked me to add these brief remarks could not have been undertaken.

I must congratulate both the several public bodies of the County of Glamorgan, whether sanitary or generally administrative, rural as well as urban, civil or clerical, that they have had placed in their hands, by you, documents which cannot but convince them of the great scope of modern preventive medicine, and of the beneficial effects which it will produce on the moral, and social, and educational progress of the population, as well as on their physical condition. Whether by observation or by published documents such as yours, they will not fail to see that the disorder and discomforts of dirty dwellings or surroundings are, as have been noted from the time of Moses, destructive of good and desirable lives.

At the same time the readers of this report of yours must not expect impossibilities. You can necessarily only note in a general manner what you have observed, and that very briefly, yet, this brevity notwithstanding, every reader, in your great county district, both of your preface and of the reports of many of your local Medical Officers cannot fail to see what a great subject you have had to handle, and how ably in your successive reports you have done so.

As I learn that some members of your Authorities may perhaps see this letter to yourself, I should almost like, were it necessary, which it is not, to write a brief summary of the duties which you have undertaken for them, under the present state of the law, and of the way in which this national work has grown to its present importance, and with that growth how scientific medical men like yourself have acquired the education and the skill which the Authorities of your County feel that true Public Health Officers possess. Many live who can hardly believe that such modern officers are members of the same profession as some of the old but wise and kindly practitioners of fifty years ago.

It was well said lately by Lord Salisbury that Medicine has become one of the most complex and difficult of all the Sciences. This may seem to some an exaggeration. But nevertheless it is so true, that it may be as truly said, that no one completely masters in the present day the whole of the Sciences upon which Medicine rests, and that very few can completely master the whole of the Arts which belong to its refined practice.

For in truth the questions with which Physics and Chemistry deal, and with which Physiology is more or less concerned, have increased in extent and importance in the last 50 years beyond any precedent. With some of the most advanced problems of Physiology and Pathology, the modern Officers of Health are and must be acquainted. All knowledge of disease, whether in respect of its causes, its prevention, or its treatment, rests partly on the observation of the character and causes of each disease, partly on the effect of agents upon the organism in different stages of the disease.

It must always be remembered that any summary of this description is entirely misleading unless it is clearly understood that in our day Human Physiology is part of all Biology; and Biology as a whole expounds the laws of organs, of growth, and of death of every organized being that is or has lived, anyhow, anywhen, anywhere, in the ancient and intricate planet upon which we find ourselves and our co-tenants conditioned—in other words, the laws of all growth, all decay, and all death.

To say that every portion of this vast range of knowledge must be known by all Officers of Health would be trifling, as demanding what is impossible. But the general principle must be and is accepted. Nor is this all, because some other

departments must be and are understood also in a general way. These are Geology, Meteorology, Vital Statistics, and Engineering with Architecture. The *first*, in relation to the nature of Soils and their effect on Health, a subject of great importance as regards Consumption, Cancer, and other fatal diseases, not yet fully worked out. The *second*, as regards the multifarious effect of dampness, dryness, and climate. The *third*, as regards the distribution and movements of populations in relation to the registration of births, deaths, marriages, and the frequency and locality of diseases. And the *fourth*, as to the question of Water Supply in relation to quantity and quality, and to the removal and disposal of the refuse both of single dwellings and of urban population of whatever numbers, and the construction of dwellings.

Every one of these subjects may present various forms of difficulty. An Authority has almost always now command of a capable Engineer, who relieves the Officer of Health of responsibility on the designing and executing of drainage works, great or small. In the last few years the designing and constructing healthy dwellings has become well understood in every urban and in most rural districts, whether they be acted on or not.

When the question of how to prevent disease in man is looked at under these several broad divisions, it is obvious that they are all subjects belonging to every Nation and Race, and they must vary and do vary under the varying conditions of Climate, Geographical, Geological, and Physical conditions—under the circumstances of origin and of inheritance, known or unknown, and the manners and surroundings of the whole race, the individual in the race, and the ethical standards in the race and in the individual.

Now you may consider these remarks as unnecessary as regards yourself as they are—and some of your readers, should you think fit to print them, may look upon them as quite irrelevant to the practical work they have at heart, the improvement of the dwellings and like conditions of the industrious workers in your romantic and productive valleys.

But this is not quite the case. Your work, and the work of your Guardians and Sanitary Guardians, are part of this great scheme, the improvement—physical, social, and moral—of Mankind. This is a problem which, till now, the end of the nineteenth century, has never had similar importance or appreciation.

It is true that the evolution of the Jewish people, from Abraham till the time of our Lord, marked out one unparalleled epoch, and it is at least as true that the epoch of the Christian Era entered upon a new history in the life of mankind. But is that life yet accomplished? assuredly not. Marvellous as is the change of ethical and social tone and action from the time, let us say, of the Kings of Israel, to the best aims of a modern Christian government—the very contrast brings out how far short we are from realizing in action the Faith, the Hope, the Charity which should bind together the Brotherhood of Man into one, making all races equal in ethical and social aims according to the conditions of their material life.

These considerations kindle light for your exertions in your allotted department of care for your fellow men.

There are three works which should be in your County Council's Library, exhibiting the subjects which I have endeavoured briefly to touch upon:—The *first* is—Hirsch, "A Handbook of Geographical and Historical Pathology," three vols., 8vo, 1883-6. These elaborate volumes will show to the intelligent, at a glance, that we cannot now-a-days look on local Public Health work, such as yours, other than as a part of the Medical History of Mankind, each part throwing more or less light on each other part, a history deeply interesting to every historian of the progress of man, or, as it is now called, the Science of Anthropology. Nor will such an one fail to see that the English speaking race has more interest and more duty in this work for mankind than any other nation. It is probably correct to say that this influence increases every year, notwithstanding the increasing

tendency of other races to enter upon certain forms of colonization and extended commerce. In India alone we have nearly 300,000,000 fellow subjects, with whom we have these relations under the most varied conditions. The *second* work—Stevenson and Murphy, "A Treatise on Hygiene and Public Health," 3 vols., 8vo, 1892-94, may be fairly taken as a typical work on the present position of Public Health in our own country. All details of English requirements are found in Knight's "Annotated Model Byelaws of the Local Government Board," and should be in the hands of every one interested in local health requirements. A much smaller book, but very complete, is Wilson's "Handbook of Hygiene and Sanitary Science." Every library should contain "Public Health Reports," 2 vols., 8vo, "English Sanitary Institutions," by Sir John Simon, and Thorne Thorne's pamphlet, "Progress of Preventive Medicine during the Victorian Era."

These, separately or together, give a most instructive and graphic account of the progress made in our day—progress both in the knowledge and requirements of Public Health.

It is in my personal recollection that any serious attention to the subject as now understood was looked on, in many places, as fantastic and waste of time.

But I remember the Parish Workhouse before the Unions were thought of. And now, with all their defects, under the Local Government Board some of the Workhouse Hospitals are models of kindness and care—and some of our rural cottages could not be better.

I fear that when I undertook to write to you these sentences concerning your great subject you would not have expected me to write things so well known to you, yet, from regard to yourself and life-long interest in the County of Glamorgan, I cannot refrain from sending you these few thoughts.

I am, dear Dr. Williams,

Ever yours faithfully,

HENRY W. ACLAND.

DIAGRAM OF THE SANITARY DISTRICTS IN GLAMORGANSHIRE.

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THE COUNTY OF GLAMORGAN.

PART I.

PHYSICAL FEATURES.

SITUATION, AREA, AND POPULATION.

THE County of Glamorgan, by reason of its maritime position, large ports, the industries of its densely-populated mining districts with their subterranean productions of coal and iron, far exceeds in importance and actual value any other county in Wales, and perhaps any other region of equal size in Great Britain.

It is situated in the south east corner of Wales, and is bounded on the South and West by the Bristol Channel, on the East by Monmouthshire, and on the North by Brecknockshire and Carmarthenshire. It has an extreme length from East to West of 53 miles, and an extreme breadth from the sea to the interior of 27 miles. Its superficial measurement is about 792 square miles. It is second in size of the counties of Wales, being exceeded only by Carmarthen.

The administrative County is nearly co-extensive with the ancient County. It includes two County Boroughs—Cardiff and Swansea—and three Municipal Boroughs—Aberavon, Cowbridge, and Neath.

It contains 516,966 statute acres, or, excluding the County Boroughs of Cardiff and Swansea, 505,815. According to the Census of 1891, the population of the Administrative County and County Boroughs was 687,218, that of the Administrative County being 467,954. Since that time the population has largely increased, especially over the mineral area.

	Area in Statute Acres.	Houses.			Population.		
		Inhabited.	Uninhabited.	Building.	Persons.	Males.	Females
Administrative County...	505,815	84,264	2,907	1,224	467,954	249,567	218,387
County Borough of Cardiff ...	6,064	20,476	1,086	332	128,915	65,745	63,170
County Borough of Swansea ...	5,087	16,305	595	171	90,349	44,938	45,411
Administrative County and County Boroughs	516,966	121,045	4,588	1,727	687,218	360,250	326,968

The following figures show the population of the ancient county at each successive census since 1801 :—

Total	population	in	1801	was	70,879
"	"	"	1811	"	85,067
"	"	"	1821	"	102,073
"	"	"	1831	"	126,612
"	"	"	1841	"	171,188
"	"	"	1851	"	231,849
"	"	"	1861	"	317,752
"	"	"	1871	"	397,859
"	"	"	1881	"	511,433
"	"	"	1891	"	687,218

The County is divided by nature into a Northern Hill Country, "the Hills"—cold, wet and sterile—and a Southern Low Country—"the Vale of Glamorgan"—milder in climate and more fertile. The former is severed from the latter by steep slopes, where the coal measures crop out on the south of the mineral basin. The hills are mining districts, while the lower grounds, the "Vale of Glamorgan" and South Gower, are agricultural. *The surface of the coalfields may be looked upon as a great plateau, with an elevation of 600 to 1,200 or more feet above sea level, and intersected by a series of more or less parallel valleys, excavated to a depth of 500 to 800 feet below its general level, and at the bottom of which run rapid streams. The valleys in the Eastern region—the *Rhymney*, the *Taff* and its tributaries, the *Rhondda* and *Cynon*—trend, as a general rule, towards the south-east; those of the middle—the *Ely*, *Ogmore*, *Garw*, and *Llynvi*—to the south; while those of the Western region—the *Avon*, *Neath*, *Tawe*, and *Loughor*—trend towards the south-west. They are generally narrow and deep, opening upon the "Vale" or the Bristol Channel, and they offer great facilities for mining and for the carrying away of the minerals along the railroads and canals which are constructed along most of them. Their sides are frequently wooded for some distance up, and above them the bare mountains rise, covered by coarse grass, bracken ferns, &c., whilst their summits are capped by rugged cliffs and debris of Pennant sandstone. The average height of the hills is very considerable, the highest in the coalfields being 1,970 feet above sea level.

†In early times the "Vale of Glamorgan" was the most wealthy and important part of the County; it favoured extensive settlements and yielded wealth ages before the subterranean treasures of the hills and the new energies of railways had been developed. Its many quaint villages and small parishes speak of a considerable population in former times, and various remains, executed in the time of the Roman occupation, indicate that this part has long been a cultivated district.

With regard to "the hills," circumstances are different. For about 200 years after the conquest of the lower grounds it is said that they remained in the hands of Welsh chieftains, and consisted of forest, pasture, and a little arable land, and could never rival the lower grounds from an agricultural point of view. The working of coal in this coalfield is first heard of in connection with iron-making, and its real development dates from the time pit coal began to supersede charcoal in the smelting of iron about 1755. Within the memories of men now living, it is said that the supply of house coal for Aberdare was obtained from hollows in the mountain side. A new world of industry and a great population have started up in the Rhondda during the last 30 years, and there are many localities now in their infancy, *e.g.*, Aber Valley, Aber and Blaengwynfy, Gilfach Goch, &c., &c. Other spots are untouched.

The West Bute Dock was opened in 1839. The Taff Vale Railway was completed to Merthyr and Aberdare in 1841, and the East Bute Dock was opened in 1859.

The following table given in Mr Foster Brown's paper on the "South Wales Coalfields" shows the rate of development of the coal trade:—

Quantities of coal raised in South Wales from 1860-1890.

Years.	Tons.	Increase.
1861 to 1870 ..	124,647,110	—
1871 to 1880 ..	162,786,855	28,139,745
1881 to 1890 ..	224,414,340	61,627,485

* South Wales Coalfield, by Mr. T. F. Brown.

† British Association Handbook.

The number of collieries at work in the whole district in 1890 was 523. The extent of the Glamorgan coalfields is approximately 500 square miles. That of Monmouthshire, Brecknockshire, Carmarthenshire and Pembrokeshire is also about 500 square miles, giving a total of 1,000 square miles as the extent of the South Wales coalfields. It is estimated that four-fifths of the whole population is associated with or dependent upon its mineral industries.

RIVERS.

The rivers of the County naturally follow the various valleys, and generally have the same names. They are the

Rhymney. The river Rhymney has its origin over the millstone grit and carboniferous limestone of Brecknockshire, and after running a course of some 30 miles between this County and Monmouthshire, enters the Bristol Channel east of Cardiff.

Taff. This river also has its origin over the Limestone and Old Red Sandstone of Brecknockshire, north of the coal measures. At Aberdare Junction it is joined by the Cynon, which also has its origin beyond the coal measures. At Pontypridd it is joined by the Rhondda river. This important tributary has its origin over the mineral area. The Taff flows a south-eastern course through the Borough of Cardiff, where it enters the Bristol Channel.

Ely or Elwy. The watershed of this river and its various small tributaries is over the south of the coalfield. After a winding course through the Vale of Glamorgan, it empties into the Bristol Channel between Cardiff and Penarth.

From the above it is seen that three of the most important rivers of the County pass through or near Cardiff.

Ogwr. This passes through the Western Division of the Vale of Glamorgan, and discharges to the Bristol Channel some four miles south of Bridgend. Its tributaries are the Ogmere Fach, Ogmere, Garw, Llynvi and Ewenny, all of which start from the coal measures.

Avan. This enters the Swansea Bay at Aberavon. It is a short river, its various tributaries having their watersheds over the coal measures.

Neath or Nedd. This river runs a south-western course of some 25 miles, through the Vale of Neath, and discharges into the Swansea Bay at Briton Ferry. Its origin is from the Old Red Sandstone and Carboniferous Limestone, north of the coalfield. It is navigable as far as Neath, some two miles beyond its mouth. It has various tributaries from the coal measures.

Tawe. On this important river the Borough of Swansea is situated. Its watershed is over the Carboniferous Limestone and Old Red Sandstone. Some of its tributaries rise over the Coal Measures. On its banks are a large number of important Tin-Plate Works.

Loughor or Llwchwr. The river Loughor forms the western boundary of the County, dividing it from Carmarthenshire. It has a south-western course and enters the Bristol Channel at Burry Estuary. Its tributary, the Amman, has its origin over the Millstone Grit of Carmarthenshire.

The few streams of the south of the Vale of Glamorgan and Gower have their origin in the Lias, Dolomitic, Carboniferous Limestone, and Old Red Sandstone formations of the districts.

All the rivers are highly important by reason of the numerous villages, towns, coal-mines, and other works which are situated on their banks. None of them are more than 20 or 30 miles in length, several are less than a dozen miles. The Rhymney, Taff and its tributary the Cynon, Neath and its tributary the Dulais, and the Tawe, all rise in the highlands of Brecknockshire, whereas the Ogwr, Avan, Thaw, Ely or Elwy, the two Rhonddas, and various other small tributaries, have their origin within the County, from watersheds overlying the coal measures.

Most of them are seriously polluted with coal-washings, sewage matter, tin-plate refuse, &c., and none are navigable for any distance beyond their mouths.

PORTS.

The Ports of the County are Cardiff, Barry, Porthcawl, Briton Ferry, Neath, and Swansea. In this connection I need only mention that the County, by reason of its maritime position, important and large ports, is peculiarly liable to an invasion of Cholera. All possible precautionary measures are adopted by the Cardiff, Barry, and Swansea Port Sanitary Authorities. Porthcawl, Port Talbot, Briton Ferry, and Neath are under the jurisdiction of Swansea, the Local Medical Officers acting as Assistants to the Swansea Port Medical Officer of Health.

INDUSTRIES.

The Industries of the County, of which Cardiff and Swansea are the centres, have been divided by Mr. W. Galloway into two well-defined classes, viz., "(a) those that are indigenous and (b) those that are adventitious. Among the former may be included agriculture, coal mining, the manufacture of coke, patent fuel, iron, bricks, terra-cotta and fire-clay goods. Amongst the latter, metal smelting in all its branches, the manufacture of tin-plates (very extensive), paper, and, to some extent, chemicals, flour-milling, brewing, &c., &c."

Metal smelting other than iron and steel is carried on in and around Swansea.

The manufacture of tin-plates is carried on extensively in the valleys (especially the Tawe) and on the banks of all the rivers (except the Garw, Ogmore, and other small streams) everywhere from west to east, polluting their contents with sulphate and oxides of iron and free sulphuric acid. These Works, however, cannot be carried on without a plentiful supply of water both for steam raising and for use in the process of manufacture.

SURFACE GEOLOGY.

*It is well known to agriculturists, geologists, and sanitarians that the character of the soil and subjacent strata, upon which crops are grown, cattle are reared, houses, villages, and towns are built, has an all-important influence upon the nature, quality, and value of the products and upon the health of the inhabitants. I propose, therefore, to give a short sketch of the surface geology, &c., of the county, with special reference to the water supply and drainage of its mineral districts ("the hills").

The following is a rough classification of the rocks, &c., of Glamorgan:—

Glacial gravels and clays, river deposits, and surface soil.

LIAS.—Impure limestone and bands of clay and shale.

RHAETIC.—Black shales with thin limestones.

TRIAS (KEUPER).—Clays with gypsum bands and nodules, sandstones, and dolomitic breccias.

COAL MEASURES.—

Upper—Pennant sandstones and grits.

Middle—Fire clays and coals.

Lower—Shales, sandstones, coals, and ironstones.

MILLSTONE GRIT.—Irregular in thickness—a grit passing into siliceous conglomerate.

CARBONIFEROUS LIMESTONE.—A massive limestone with minor bands of shale.

OLD RED SANDSTONE.—

Upper—Sandstone and conglomerate.

Lower—Clays, sandstone, and irregular limestones or cornstones.

SILURIAN.—Sandy shales with thin limestones.

Glamorgan is geologically divisible into three parts:—

(1) Northern and by far the smallest area, chiefly old red sandstone and carboniferous limestone.

(2) Central and greatest area. Coal measures.

(3) Southern—Vale of Glamorgan and South Gower. Chiefly beds of secondary age—*e.g.*, triassic clays and lias limestones.

* Article on Agriculture, by Mr. W. Galloway.

The highest ground is in the north and lowest along the south border, so the whole area roughly forms an inclined plane.

The rocks lie in east and west folds. There is a big anticlinal through Maesteg, bringing up the lower coal measures. There are minor folds in the coal basin itself, and also an anticlinal and synclinal (much obscured) in the Southern area.

The main surface features (already described) are due to folding, probably in early secondary times. The rivers started then, and have persistently run across the ridges in the direction of the inclined plane. There are only a few longitudinal (east and west) rivers in the coal basin, and these only tributaries of the main rivers.

The Country is marked (as previously described) by the older valleys cut deep and steep-sided in the Pennant Grit.

The sources of the rivers are usually in the northern hill country; many additional rivers and important tributaries are received from the Coal Basin area.

METEOROLOGY.

The prevailing wind is from south-west, and has a tendency to become westerly, following the lines of the ridges.

The rainfall is closely connected with the surface features, the elevation and contour of the ground determining in a remarkable manner its relative amount in any given locality of the district, and it is found to be very different in amount even at points only a few miles apart.

The following are four measurements from each area for two years; 1890 a fairly average year, and 1892 a drier year, thus:—

Area.	Place.	Height in feet above sea-level.	Amount in inches.	
			1890.	1892.
<i>Southern :—</i>	Fonmon Castle	130	28·41	32·83
	Ely	53	32·00	32·60
	Cardiff Castle	39	28·71	29·27
	The Rest, Porthcawl ..	60	29·78	29·64
<i>Middle :—</i>	Pontypridd Reservoir ..	300	41·69	40·47
	Ystalyfera	300	54·79	47·13
	Aberdare	425	40·42	44·87
	Mardy	431	49·41	43·40
<i>Northern :—</i>	Taff Vawr	1328	71·84	59·04
	Glyncorwg	717	78·83	67·88
	Treherbert	670	74·19	63·48
	Penwyllt (Brecon) ..	1108	64·46	54·21

*For the year 1890 the maximum temperature, 79 degrees, was on the 6th August; the minimum, 18 degrees, on the 15th December; the greatest daily range, 33 degrees, on the 7th of June; and the mean temperature of the year, 49·9 degrees.

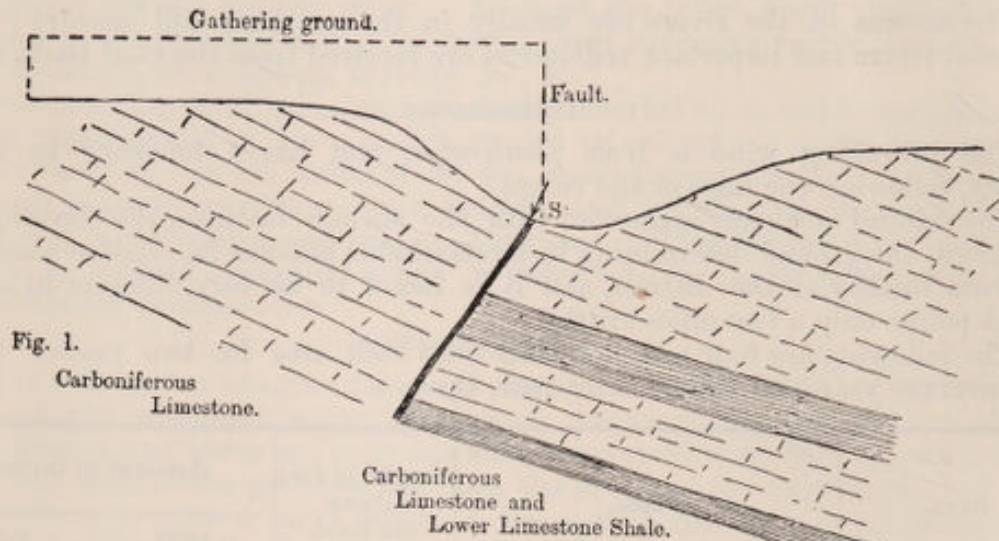
Owing to the steep-sided valleys the heavy rainfall of the northern area and hill summits supplies much surface water to the rivers, so that a drought readily affects the volumes of their water.

WATER SUPPLY.

The nature of the water and the sources of supply for drinking purposes is of the greatest importance. In the southern area, in addition to river supply (usually dangerous from pollution), there are numerous springs thrown out by the Shales and Clays of the Lias Limestone series. The quantity is generally small, and the water contains much lime and salt (*e.g.*, the Barry and Porthcawl supplies).

The Keuper Sandstones and Marl series, especially the junction with the Dolomitic Breccia, give a constant supply to the wells of the Cardiff breweries and the Ely district. The water is usually very hard, containing sulphates and carbonates of Lime and Magnesia, also Sodium Chloride.

From the Carboniferous Limestone, especially along the lines of faults, we often have springs of considerable volume, thus :—



A Section across the fault near Ewenny, showing the relation thereof to the Spring which supplies Bridgend.

These Springs are occasionally the outflow of surface springs which had disappeared below the surface for a while. Such an instance is to be found north-east of Cefn, near Merthyr, thus :—

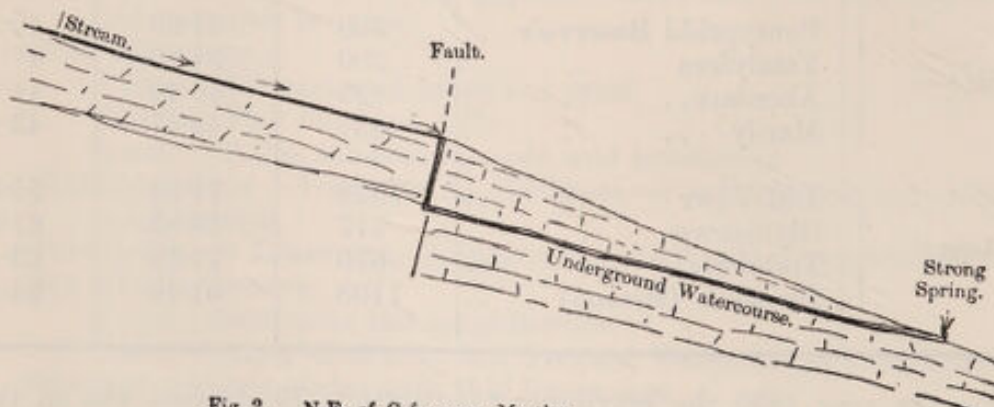
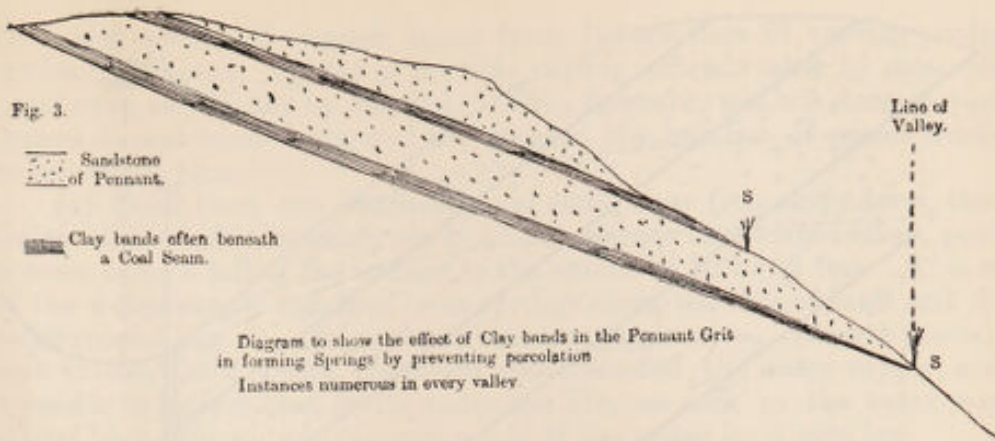


Fig. 2. N.E. of Cefn, near Merthyr.
The rock is Carboniferous Limestone.
(Different shading adopted to indicate fault.)

Sometimes ordinary underground streams are formed by percolation. The water from the Carboniferous Limestone is always hard.

Within the Coal basin the watersheds of the various rivers form the principal supplies. Besides these the Pennant Sandstones are full of water, and give rise to strong springs where percolation is hindered by the presence of Clay bands, *e.g.*, fireclays, thus :—



This water is soft, usually ferruginous, and occasionally slightly acid from the presence of coals. From one of these springs at least free nitrogen gas is evolved (Taff's Well). Very little of the supply of the northern area is obtained from the rocks. Water from the Carboniferous Limestone is hard, whereas the Millstone Grit above and the Old Red Sandstone below yield softer water.

The water from the surface of the hills is extremely soft, and in running over their peaty slopes it gathers much organic impurities, and when obtained from the high ground within the Coal basin is still more impure since it collects the particles of the atmosphere.

The most useful supply therefore (balancing the commercial gain of pure water for engines against the possible injury to health by too soft water and also the loss to breweries) is the rain supply collected on the northern area.

Cardiff and Merthyr obtain their supplies from this area, and Swansea is about to be supplied from the same.

On the hills the *surface soil* consists of a considerable thickness of peat, and in the smaller tributary valleys there is much boggy ground. This condition is produced by water, after heavy rain and from springs, flowing down along their steep slopes and constantly soaking into the peat, the result being a quagmire.

Naturally, the soil is derived in most cases by mere disintegration of the rocks below. Such a soil is common on the higher ground, and the rocks being pervious the soil is also pervious, or it may be due to glacial action, *e.g.*, Pwllpant old station is built on an esker. Along some of the valleys, *e.g.*, the Taff and its tributaries, also the Loughor, there are heaps and lines of clay and gravel, as well as scattered blocks, accumulated by this agent. It usually implies the shifting of the material further south than its natural outcrop, *e.g.*, on the flat north of the Cardiff Silurian outcrop, we get blocks, etc., from the Old Red Sandstone, Carboniferous Limestone and Coal Measures brought from the north. In the majority of cases these beds are porous, but they are very variable, and pass into impervious clays.

From the river Rhymney to the Ely there is a tract of Alluvium, and such a condition is also found for some distance up along the banks of the principal rivers. West of the Ely tracts of alluvium also occur. Wind has done much along the shore west of the Ewenny to beyond Neath by spreading sand over the surface and accumulating large sand-dunes. These beds are very porous and well adapted for the treatment of sewage, though, so far, they are not used for that purpose.

In the minor folds (already noticed) water was formerly naturally collected as in a basin, and the surplus got rid of by local springs. These have been weakened or destroyed by underground workings, which discharge large volumes of water, contaminated with impurities due to man and beast and the chemical products of the oxidation of the coal and associated minerals, and is no longer fit for drinking springs.

The bulk of the population withdraw from the Vale and accumulate in the valleys, the rivers have become too polluted for use, and the natural flow of the underground water is disturbed, so that the water supply of the present and the anticipated future of the Coalfield is most important.

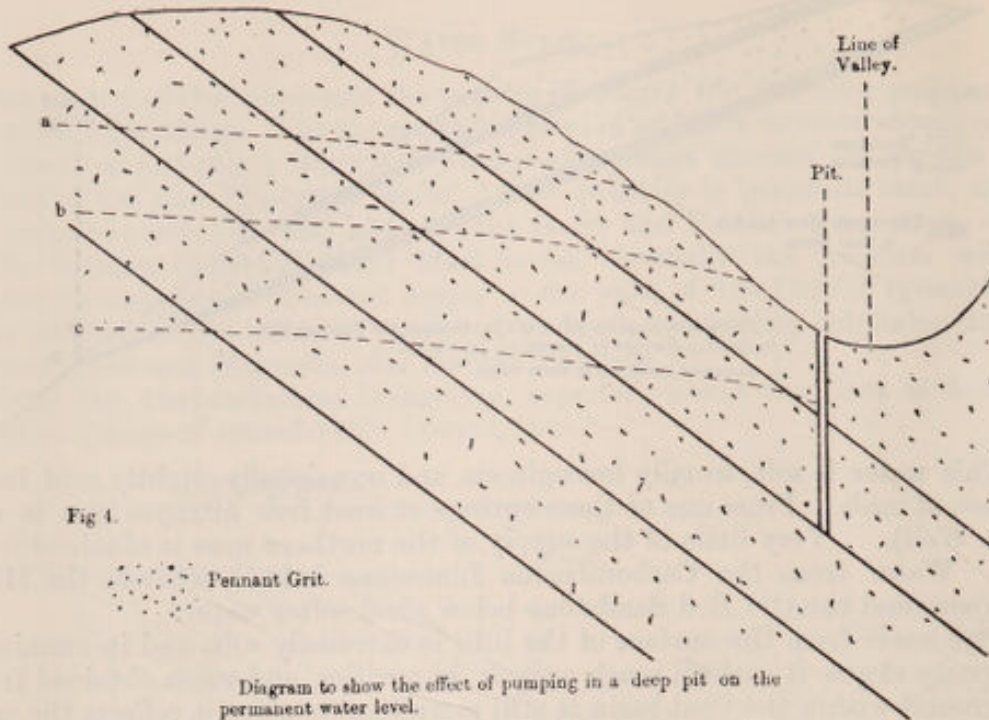


Fig 4.

Diagram to show the effect of pumping in a deep pit on the permanent water level.

a—Level after much rain. b—Level after dry weather.
c—Level reduced by mine pumping.

Cases are numerous, *e.g.* at Llanbradach in the Rhymer Valley.

Llanbradach Colliery in the Rhymer Valley pumps about 32,000 gallons an hour from underground. This is most likely the supply from the hill country to the west—the eastern side of Mynydd Eglwysilan.

If the water level is permanently reduced in this way houses and villages situated on the ground above the valleys are in danger of losing their well water, especially during dry weather.

In the valleys shallow wells are possible occasionally in the gravels formed by rivers and ice. These deposits are irregular in thickness and not likely to give a continual supply, and from their porous nature are certain to take in impurities from sewage, &c.

Even in the lower parts of some of the valleys care is needed with the springs from the limestone, since the water may not be pure spring water, but merely the river supply with all its objectionable soluble contents travelling underground for a while. Such a case is recorded at Pwllloffeiriad in the Ogmore Valley.

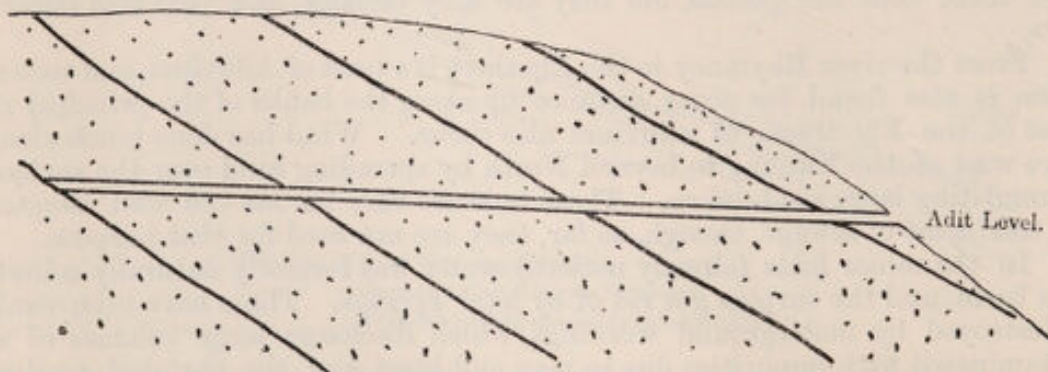


Fig 5. A Diagram to show effect of a level driven into the hill from the valley, slightly rising and crossing several coal seams. The working thereof entirely upsets the water circulation. It is drained out along the level, which is made to slope for that purpose. There are numerous examples of this, *e.g.* at Rudry.

The chief source of danger arises from disturbances of surface produced by underground workings. As far as possible mining officials seek to cause merely a gentle and even subsidence by stowing. This, however, was not done in past time. Subsidences do and must occur, and the greater the number of seams worked the greater the effect, thus:—

(a) Fault lines are disturbed, and since they frequently form the boundaries of a royalty, working tends to exaggerate the surface effect, producing, in some cases a fall of the surface to the extent of 10 to 25 feet. This may cut off the water supply obtained from springs along the line of fault and divert it underground (fig. 6). It may also cause contamination. Smartt proved that a fault in the Chalk under Woolwich contaminated the water supply, and there is reason to believe that faults under the Thames suck in the water when the porous beds beneath are pumped out or if the water level gets low

(b) Workings being local, the subsidence is far from regular over a wide area. When a sudden subsidence takes place, the drainage and water supply are apt to be disturbed by the breaking of pipes, and even when gentle it destroys the gradient and thus produces stagnancy as well as danger of breakage. The danger of leaking water pipes is well known. (See Dr. Spear's Report on Typhoid Fever Epidemic at Mountain Ash in 1888.)

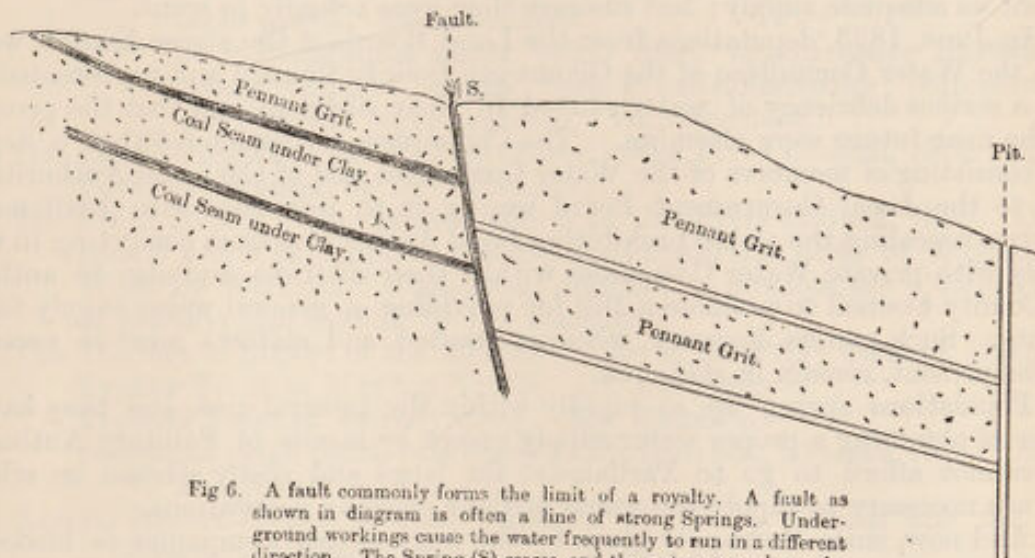


Fig 6. A fault commonly forms the limit of a royalty. A fault as shown in diagram is often a line of strong Springs. Underground workings cause the water frequently to run in a different direction. The Spring (S) ceases, and the water runs down the levels left unshaded, and is pumped in an impure state from the pit. The unshaded parts are supposed to be worked out coal seams.

The water supply of the mineral districts of Glamorgan is a matter of the greatest importance. During the drought of last summer there was a great scarcity in many localities, a condition almost bordering upon a water famine. Now, at present, a great alarm is felt that there may be an absolute water famine in the near future, if some means are not taken to provide an adequate supply.

There are several Water Companies, but the supply provided by some of them is very defective, and inadequate to meet the needs of the inhabitants.

It has been proved that we cannot rely on obtaining a constant supply from the mineral districts, though now most of it is obtained from watersheds situated over this area. This is the experience of Swansea, where some years ago an attempt was made to construct reservoirs and collect water within the mineral basin, with the result that it proved a failure, or at any rate the supply if obtained was very inadequate for the purpose.

In former pages I have endeavoured to show how underground working may disturb or crack the surface, thereby producing loss of water.

Cardiff and Merthyr are supplied from areas north of the Coalfield, but the remainder of the population obtain their water from watersheds over the mineral basin.

The population of the county in 1881 was 511,433, in 1891 it was 687,218, showing an increase of 175,785 in 10 years, *i.e.*, about 34 per cent. This increase was larger than that of any other county in the United Kingdom, except Essex, representing the eastern population of London. These figures refer to the whole county, but excluding the two county boroughs of Cardiff and Swansea they are 352,242 in 1881, and 467,954 in 1891, being an increase in the administrative county alone of 115,652. This increase has mainly taken place over the mineral area. In 1801 the population of the whole county was only 70,879, in 1891 it was 687,218, so that in 90 years the increase has been nearly 10 times. If it increases at the same rate as during the past decade, it would reach over 11,000,000 in 100 years hence.

The above figures show what the population may become, and how absolutely necessary it is to be in readiness to supply it with a sufficient water supply. The question naturally arises—Will the county be able to sustain such a population? The Coal Commission appointed in 1871 reported that there was in the South Wales coalfield 32,241,472,740 tons of available coal for use, and it has been estimated that whatever the increase of population may be, there will be ample mineral wealth to sustain it. The large populations of Ystradfydwg and Pontypridd districts, some 140,000, dependent upon local companies, have at present *no* adequate supply; last summer they were actually in want.

In June, 1893, deputations from the Local Boards of the above districts waited upon the Water Committee of the Glamorgan County Council and represented that then a serious deficiency of water existed in their districts, and that the prospects for the near future were alarming. The Committee recommended that a deputation consisting of members of the Water Committee and of the Local Authorities be sent to the Local Government Board urging it to introduce into Parliament a measure repealing the clause prohibiting Local Authorities from competing in water supply with private Water Companies within their districts, and also to authorise the County Council to promote a Bill for providing a general water supply for the County. Such powers, however, were not granted, and matters must of necessity, for the present, remain in *statu quo*.

Populations spring up so rapidly within the mineral area, and they have no power of obtaining a proper water supply except by means of Sanitary Authorities who cannot afford to go to Parliament for large and costly scheme or schemes that are necessary to supply the wants of their growing populations.

And now, since the supply given by the various local companies is inadequate and in danger at any moment of being disturbed, it is absolutely necessary that the supply of the districts should be obtained by a large and general scheme created by the County Council, or a combination of Local Authorities, from the mountain ranges lying to the North of the Coalfield. Cardiff and Merthyr already obtain their supplies from this area, and Swansea has also promoted a Bill in Parliament to obtain their water from the collecting ground of the Cray, the upper watersheds of the Usk. Until such another scheme is provided for the mineral districts of Glamorgan their present and anticipated future population cannot be said to be adequately provided with a constant and a sufficient quantity of pure and wholesome water, which is the first necessity of life.



PART II.

HEALTH HISTORY AND VITAL STATISTICS.

The literature relating to the subject of Sanitation in Glamorganshire is scarce and fragmentary, and the "Health History" of the County as a whole has not been recorded. As far as I have ascertained the only official record of conditions is to be found in

Sir Henry De La Beche's Report on the Sanitary Condition of Swansea and Merthyr Tydfil, 1844.

Mr. Rammell's Report to the General Board of Health on Cardiff and Merthyr Tydfil, 1850.

Dr. William Kay's Report on Merthyr Tydfil, 1854.

The Second Report of the Medical Officer to the Privy Council, 1859. Cholera and Diarrhœal Mortality at Merthyr Tydfil, Aberdare, and Hirwain, by Dr. Greenhow.

The Fourth Report of the Medical Officer to the Privy Council, 1861.

(a) Districts with excessive mortality from lung diseases. Merthyr and other places. Dr. Greenhow.

(b) The circumstances under which there was excessive mortality of young children among certain manufacturing population at Merthyr and other localities. Dr. Greenhow.

The Eighth Report of the Medical Officer to the Privy Council, 1865. Yellow Fever at Swansea, by Dr. Buchanan.

The Ninth Report of the Medical Officer to the Privy Council, 1866. On the results which have hitherto been gained in various parts of England and Wales by Works and Regulations designed to promote the Public Health at Merthyr and Cardiff, by Dr. Buchanan.

The Thirteenth Report of the Medical Officer to the Privy Council, 1870.

Typhus Fever at Merthyr Tydfil. Dr. Buchanan.

Typhoid Fever at Ystradfydwg. Mr. Radcliffe.

Scarlatina (high death-rate from) at Llangyfelach, Swansea Rural District, and Neath.

Annual Report of the Medical Officer of the Privy Council and the Local Government Board, 1875.

Swansea Rural Sanitary District. Enteric Fever Endemic. Mr. Radcliffe.

Sixth Annual Report (Supplement), 1876-77.

Pontypridd Registration District. Continued prevalence of Fever. Dr. Airy.

Seventh Annual Report, 1877-78.

Neath Registration District. Dr. Airy.

Tenth Annual Report, 1880-81.

Pontardawe Registration District. Dr. Parsons.

Fifteenth Annual Report (Supplement), 1885-86.

Cholera Survey of South Wales, Urban and Rural Sanitary Districts.

Sixteenth Annual Report (Supplement), 1886.

Cholera Survey (continued). Bridgend and Neath Rural Districts.

Seventeenth Annual Report (Supplement), 1887.

Mountain Ash. Enteric Fever. Mr. Spear.

Eighteenth Annual Report (Supplement), 1888.

Bridgend Registration District. Mr. Spear.

Nineteenth Annual Report (Supplement), 1889-90.

Pontypridd Registration Sub-district.

Twentieth Annual Report (Supplement), 1890-91. Neath Rural Sanitary District. Mr. Spear.

The General Sanitary Circumstances of the Ystradfydwg Urban District, and upon Administration by the Sanitary Authority, 1893. Dr. Bruce Low.

The Health History of Merthyr Tydfil, 1885. Dr. Dyke.

Forty Years Sanitation at Cardiff. Dr. Paine.

The Reports of the Registrar-General, 1838—1892.

No reliable account of Sanitation in Glamorganshire is given before the year 1844. Malkin, however, published two volumes in 1807 on the "Scenery and Antiquities of South Wales," and speaking of the "Vale of Glamorgan," he says:—"The antiquity of the cottages is a strongly-marked feature in the appearance of the country, there is little doubt that many of them are as ancient as the castles to which they were attached. Another feature which adds to their respectable appearance is the universal practice of whitening them with lime. This has been the custom of the country from very remote ages, and is extended over the barns and stables and the walls of yards and gardens." The number of inhabitants in the county, according to this authority was then computed at about 60,000.

Of Cardiff, he says:—"Cardiff is the Capital of Glamorganshire, though far from the first of its towns in extent and population. It was built about 1079. The trade of the town is increasing, and consequently, its wealth, population, and prosperity."

Of the Cynon or Aberdare Valley, he remarks:—"A stronger contrast cannot be conceived than between a cottage in the Vale of Glamorgan and a cottage in the valley of Aberdare or Ystradfydwg, though probably there is scarcely ten miles of intervening space between them. The diet of the peasants in the hills is of the coarsest kind. It consists of oatmeal bread, with a relish of miserable cheese; and their beer, when they have any, is worse than none. Their butter and milk are of a more palatable quality. In respect of cleanliness there is a lamentable difference between the peasants of mountains and vale."

Of Merthyr he speaks:—"It remained a very inconsiderable village till 1755, when its iron and coal mines excited more attention. . . . Its population in 1802 was found to be upwards of 10,000. The first houses that were built were very small and simple cottages—for furnacemen, forgers, and miners. They were mostly built in scattered confusion, without order or plan. The streets were many in number—close and confined—having no proper outlets behind the houses. They are consequently very filthy for the most part, and doubtless very unhealthy."

The rivers of the Rhondda are thus described:—"Indeed, the principal beauty of the rivers in this rocky country arises from their perfect clearness, uncontaminated, unless in very heavy floods, by the least tinge of muddy soil."

Pont Nedd Vechan is described as "a miserable collection of dirty cottages."

The population of Swansea is given as 6,831, and that of Morriston as about 1,000.

Aberavon is described as a "dirty and disagreeable village with some copper works in the neighbourhood."

The population of Llantwit-Major is given as 729, and that of Cowbridge as 759.

The first official reference to sanitation in Glamorganshire is heard of in 1844 in connection with the "Health of Towns Commission," in the Reports made by Sir Henry de la Beche, on the sanitary condition of Swansea and Merthyr Tydfil.

In reporting upon Swansea, he describes in detail its situation, climate, sub-soil geology, water supply, house accommodation, industries, &c., &c. Nothing deserving of the name of drainage then existed. A large proportion of the refuse of the town, that is, of the street washings, was permitted in many places to remain on the surface, where it was taken up by evaporation, or allowed to soak into the soil, or both. The sewage was received into cesspits or privies. Dr. Bird, in his reply to the questions of the Commissioners, says:—"The town of Swansea is supplied with water, either by means of pumps (some of which are public pumps), or by means of stream water in the upper part of the town, to which all persons have access who wish to avail themselves of it. Also by means of leaden pipes to Water

Works Company's mains." The reservoir was situated up the Tawe Valley, and at a sufficient height. The water was said to be of a good quality. About 50 low lodging-houses were computed then to exist in the town, and they were overcrowded and ill-ventilated.

The population and death-rates in 1841 in the Registration Districts of Cardiff and Swansea were as follows :—

1841		Swansea.		Cardiff, (including Bridgend & Neath).
Population,	.. ..	38,641	.. ..	86,536
Death-rate	.. ..	17.0	.. ..	20.0
Consumption	.. ..	1 in 4.8	.. ..	1 in 4.9
Typhus...	.. ..	1 in 11	.. ..	1 in 13
Epidemics	.. ..	1 in 3.5	.. ..	1 in 4.3
Other Causes	.. ..	1 in 1.9	.. ..	1 in 2.0

This table showed that Consumption and Typhus Fever were prevalent in Swansea, and that deaths from Typhus Fever were very considerable. The rate of mortality from Epidemics generally, including Typhus, was considered high.

The Report goes on thus :—"There is no over-crowding generally in Swansea, yet but little attention is paid to ventilation of sleeping and dwelling rooms. From this and from the defective drainage of the town, conditions favourable for epidemics exist, and 1 in 3.5 of the total deaths among artisans and labourers is from this cause. Consumption (including decline) is also a marked cause of death, 1 in 4.6 in the town thus dying, a proportion differing but little from that of the whole Union, viz., 1 in 4.8."

Sir Henry de la Beche, reporting on Merthyr Tydfil in the same year, says :—"There was no water supply—there were some privies at the few decent houses, but none to cottages. Slops and refuse were thrown on the unmetalled highways and streets, and on mounds of coal-ashes at every turn. There was a great number of poor as indicated by the fact that between 6,000 and 7,000 persons, out of a population of 37,000 (one out of six), were relieved from the poor-rates annually." The Report concludes thus :—"Merthyr Tydfil, with Penydarren and Dowlais, may be regarded as chiefly a large cottage town without any public care for supply of water, drainage, or cleansing; the open character and small height of its straggling buildings, and consequent exposure to sun and air, saving its population from still greater evils than those to which they are now exposed from the filth so abundant in it."

In 1850, Inspector Rammell, in his Report to the General Board of Health on Merthyr Tydfil and Cardiff, says :—"The town of Merthyr Tydfil was entirely destitute of drainage, no provision was made for excrement removal; there was an utter want of a proper provision for supplying the town with water; in the few wells which existed the water was bad in quality from natural hardness or from impurities which had permeated through the soil into the wells. There were 21 burial grounds in various parts of the town."

In the same year Mr. Rammell, in consequence of a petition by the inhabitants of Cardiff, complaining of the general insanitary condition of the town, held an inquiry and presented a Report to the General Board of Health, in which the town is described as "Built on a low flat, very little above sea level; the highest part, that being near the Town Hall, is not more than 10 feet above that level. It is unfavourably situated as regards its low level and drainage. The surface drainage is insufficient, part of the town being flooded and having at times a large surface of stagnant water exposed. With the exception of a small portion of the town there is no provision for drainage, and even where such provision exists it is extremely defective.

"The privy accommodation is bad; in consequence the streets are in a filthy state from slops and night-soil thrown over them.

"The public water supply is bad, and obtained at great cost and inconvenience by the inhabitants. There is only one public pump of tolerable drinking water, and

this frequently dry, and at some times is locked up. A large number of wells, public and private, are more or less affected and the water contaminated by the leakage of cesspools and filthy surface drains.

There is a great deficiency of house accommodation in proportion to the large increasing population, particularly of the poorer classes, who, encouraged by the facilities of transit, have been attracted to the town in large numbers from the South of Ireland and other places by the public works going on in it. That in consequence the rents of the poorer tenements are invariably high, whilst the accommodation afforded is limited and bad, and that a system of overcrowding is carried on, probably unequalled in any part of the Kingdom, with the most fearful result upon the health and morality of the town.

"The sickness and mortality from fevers and contagious diseases (the zymotic) preventable by ordinary sanitary precautions is excessive, particularly in the lower parts of the town, causing a heavy expense to the Union.

"The result of such a deplorable condition of the town is illustrated by showing that on a decennial period ending in 1849 the rate of mortality was 30 per 1,000 on the total population, and that during the same period the whole deaths exceeded the births."

The population is given as follows:—

1801.....4,672		1831.....6,189		1841.....10,079
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In 1852 Dr. William Kay was temporarily elected Health Officer for Merthyr Tydfil. In 1854 he presented a full report on the condition of the town. It concludes thus:—

"The unhealthiness of Merthyr Tydfil is attributable to local and self-created conditions, the vicious construction of houses, the inadequate water supply, the absence of drainage, and the necessary consequence—accumulations of filth, atmospheric impurity, and excessive and fatal prevalence of disease."

Among other particulars the following are given:—

POPULATION.						
1801....7,705	|	1821.. 17,404	|	1841.. 34,977	|	1852.. 47,778
1811.. 11,104	|	1831.. 22,083	|	1851.. 46,378	|	1853.. 49,178

DEATH RATE.		
1852..... 32·4 per 1,000	|	1853..... 32·2 per 1,000

REGISTERED DEATHS FROM CHOLERA AND DIARRHOEA.	
1849 .. 1,432.	1854 .. 424.

During 1849 Cholera prevailed in almost every town and village of any size through the county, and the loss of life was extremely excessive.

(1859) Dr. Greenhow, in the Second Report of the Medical Officer to the Privy Council, reporting on Cholera at Merthyr Tydfil, says:—"Cholera occasioned 1,683 deaths in Merthyr Tydfil in 1849, and 455 in 1854. With the exception of Hull, this town suffered more severely in the former of these years, in proportion to its population, than any other place in the Kingdom. Exclusive of the deaths from Cholera in these two years 1,075 persons died from diarrhoea and dysentery in Merthyr Tydfil during the 11 years 1848-1858. Of these deaths 725 occurred during the Septennial period 1848-54 and 487 during 1854-1858, being an average of 103 deaths in each of the years 1854-58. The latter number occurred in a larger population and does not, therefore, fairly represent the present amount of diarrhoeal mortality in comparison with that of the previous seven years."

The population in 1851 is given (for the district) as 76,804. The rate of diarrhoeal mortality was 1·35 per 1,000 persons during the seven years 1848-54, and 1·06 during the five years 1854-1858.

The rate of mortality from all causes was 31·84 per 1,000 persons during the seven years 1848-54, and 29·97 during the five years 1854-58.

Dr. Greenhow summarizes thus:—"The disease appears to be attributable in Merthyr Tydfil to causes analogous to those in other places, such as defilement of

courts and lanes, caused by rarity of privies, and numerous collections of offensive refuse."

(1866) Mr. Simon, then Medical Officer to the Privy Council, in his Ninth Annual Report, writing of Merthyr, says:—"In our statistics it showed every possible evidence of sanitary neglect; in Fever, in Diarrhoea, in Cholera, in Small Pox, in Phthisis, and other lung diseases, and in mortality of children, it always was conspicuously bad, and the water supply was cruelly scant and disgustingly foul." The following are the words of Dr. Buchanan, published in the above cited Report:—"During the period 11 years, 1845—1855, before any sanitary works were in actual operation, except the removal of accumulated mounds of ashes, &c., the death-rate from all causes was 33·2 per 1,000 persons; the death-rate of children under one year from all causes 80-1/4th; of persons of all ages from Typhoid Fever (excluding Typhus), 21-1/3rd; from Diarrhoea, at all ages, 11-1/4th; from Phthisis, between ages 15 and 55, 38-2/3rds per 1,000 population."

(1865) Yellow Fever was imported to Swansea in 1865, and Dr. Buchanan investigated its cause and spread. Of this fever, Mr. Simon, in his Report to the Privy Council says:—"In September, there was the fact (hitherto, I believe, unparalleled in the epidemiological experience of this country), that an outbreak of yellow fever, fortunately not on a large scale, was occasioned to the population of Swansea by the arrival of an infected ship from Cuba. This was an event of extreme importance, showing that England is not insusceptible to this tropical infection, but that (at least under favouring circumstances) yellow fever can seriously damage a port side population in England—which truth was conclusively discovered in Swansea at the cost of fully 15 lives."

(1870) In 1870, Dr. Buchanan reported upon an epidemic of fever at Merthyr Tydfil. The following is a précis of his report:—"Epidemic found to be true Typhus Fever, and referred to overcrowding and want of ventilation in the houses of the poorest people. Further hospital accommodation wanted."

In the same year (1870) Mr. Radcliffe reported on an alleged prevalence of Typhoid Fever at Ystradyfodwg. Ystradyfodwg was then a portion of Pontypridd Rural District. The following is a précis given of the Report:—"Great prevalence of enteric fever. Extreme neglect of all sanitary precautions. No due provision for excrement and refuse disposal. Water supply insufficient and liable to pollution."

(1875) In 1875 Mr. Radcliffe, at the request of the Swansea Sanitary Authority, inspected their district. The chief facts reported by him were:—"Enteric fever endemic. Overcrowding. Want of ventilation of houses, especially of bedrooms. Absence of privy accommodation. Water supply exposed to excremental pollution. Want of drainage in vicinity of houses."

(1876) In 1876 Dr. Airy inspected and reported upon the Pontypridd Registration District. The population of the district was 51,921. The chief facts reported by the Inspector were:—

Pontypridd Rural Sanitary District.—"Dwellings damp and crowded together. Drainage very bad. Filthy privies and cesspits. Imperfect removal of excrement by house owners. Water supply mostly liable to *faecal* pollution. Serious outbreak of enteric fever at Heolfach. Want of infectious diseases hospital for non-paupers."

Pontypridd Urban District.—"Drainage imperfect. Part of water supply liable to pollution. Excrement retained in leaky cesspits."

Mountain Ash Urban District.—"Roof drainage imperfect. Sewers imperfectly ventilated. Nuisances from filthy privies."

(1877) In 1877 the Neath Registration District was inspected by Dr. Airy. The chief facts of the report were:—

Neath Rural Sanitary District: "In the older dwellings ventilation, roof-drainage, and privy accommodation imperfect. Privy and slop nuisances in many

places, especially at Cadoxton. In general a want of good water. (Steps being taken to remedy these defects.) Unwholesome water drunk from polluted rivers, canals, and rills. Want of hospital accommodation. Regulations concerning Medical Officers of Health not fully observed."

Neath Urban Sanitary District: "Some want of house ventilation and roof-drainage. No ventilation to the sewers. Part of the sewers have insufficient fall. Water closets in general use; privy nuisances only occasional. Water supply good. Probable nuisance from slaughter yard. Want of hospital accommodation."

Briton Ferry Urban Sanitary District: "A large part of the town built on undrained marsh ground. Tidal water admitted into ditches close to and under houses. All the drainage is into these ditches. Want of proper system of sewerage. Filthy privies. Neglect of excremental removal. Want of house ventilation and roof-drainage. Water supply unsatisfactory. (Improved supply expected.) Want of hospital accommodation."

Aberavon Urban Sanitary District: "Some overcrowding. Some want of house ventilation. General want of roof-drainage, yard and footway pavement and surface channelling. Want of sewer ventilation. Water closet and slop nuisances. Imperfect water supply. (Improved supply expected.) Want of hospital accommodation."

(1880) In 1880 Dr. Parsons inspected and reported upon the Pontardawe Registration District. Population is given as 19,900. The chief facts reported were:—"Enteric Fever present more or less every year, but to a greater extent than usual in 1879. Several distinct outbreaks of that disease in 1879, introduced from Swansea, where it was epidemic at the time, and disseminated by contaminated drinking water and other agencies. Water supply in some cases scanty and exposed to pollution. Offensive ashpit privies. Sanitary improvement is being satisfactorily carried out, but nuisances from excremental refuse and slop water are still frequent in parts of the district. House accommodation for the most part good, but older cottages damp, ill-ventilated, and unwholesome."

[SEE TABLE OPPOSITE.]

(1887) In 1887 Mr. Spear reported upon an Epidemic of Enteric Fever in the Mountain Ash Urban Sanitary District. The population was 10,295. The chief facts reported:—"A sudden and severe epidemic of enteric fever, 515 cases occurring between July and October, 1887. The fever poison shown to have been distributed by water delivered through one particular water main. Of the 396 houses supplied from this main below a certain point in its course 57 per cent. were invaded by fever. Near this point (where evidence of specific contamination commenced) defects in the main were discovered which would lead, during intermissions of water supply, to insuction of air, and probably of liquid, from old drains. Examination of earlier history of enteric fever in the district showed that since the water main in question was laid, in 1885, an endemic prevalence of this disease had existed in the district supplied by it. Further, in 1886 there was, as in the following year, an outburst. Of the houses then supplied from the main, below the point indicated above, 15.6 per cent. were invaded, whilst in neighbouring localities the corresponding proportion was only $\frac{1}{2}$ per cent. Sanitary condition of the district in other respects fair."

(1888) In 1888 Mr. Spear reported on Sanitary Administration in the Bridgend Registration District. The Sanitary Authorities concerned were the Bridgend Urban, Bridgend and Cowbridge Rural, Cowbridge Urban, Maesteg Urban, and Garw and Ogmere Urban. The estimated population was given as 44,130. The chief facts reported were:—"Five Poor-law Medical Officers as Medical Officers of Health for their respective divisions of the rural district, each at a merely nominal annual remuneration. Each of the five Urban districts has its own Health Officer. No official communication or concerted action between these several officers. The Sanitary Administration and condition of the Registration district extremely unsatisfactory in several important respects:—Sewerage

List of names	Rank	Regiment	Company
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A
HARRIS, J. W.	Private	1st	A

defective or entirely absent; water supplies exposed to pollution; method of excrement disposal and removal giving rise to nuisances; much house property damp, dilapidated, and ill-ventilated, and in places altogether unfit for habitation; no efficient means of isolation or disinfection."

(1889) In 1889 Mr. Spear reported on the prevalence of Diphtheria in the Pontypridd Registration Sub-district. The Sanitary Authorities were the Pontypridd Urban and Rural, Mountain Ash Urban, and Ystradyfodwg Urban. The chief facts reported were:—

(a) *Pontypridd Rural District*.—"Epidemic prevalence of diphtheria in the new mining village of Cilfynydd. Disease spread by personal contagion. Sewage and excrement nuisances prevalent. Considerable overcrowding. No measures taken for controlling spread of the disease. Several other villages in the rural district in an unsatisfactory condition as regards water supply, sewerage, means of excrement disposal, and house accommodation."

(b) *Pontypridd Urban*.—"Cases of 'croup' and of severe sore throat. Much contamination of soil and air from defective rubble sewers and drains. Dilapidated yards and foul cesspits. Many houses unfit for habitation from dampness, want of proper ventilation, &c. Slaughter-houses, dairies, and common lodging-houses not properly regulated. No public provision for isolation of infectious disease."

(c) *Ystradyfodwg Urban*.—"A main sewerage scheme (in conjunction with the Pontypridd Urban Authority) in process of being carried out. Improvement effected of late years in street sewers. Some improvement also in means of refuse disposal. Accommodation of lodgers in cottage houses not under proper regulation. Water supply insufficient. A small isolation hospital recently provided."

(d) *Mountain Ash Urban*.—"A few deaths from 'croup.' No recognised diphtheria. Public water supply (of late improved) in general use. District, except an outlying village, all sewered. Accommodation of lodgers in small and poorly-ventilated cottages not under proper regulations. An isolation hospital about to be provided."

(1890) In 1890 Mr. Spear reported upon an epidemic of Scarlatina in the Neath Rural Sanitary District. The estimated population is given as 13,300. The chief facts reported were:—"Sustained prevalence of scarlatina; at first mild, afterwards very severe and fatal. Of 181 attacks and 31 deaths occurring in this division in the first 9½ months of 1890 no less than 81 and 21 respectively happened in the village of Coedfranc, having a population of 4,000 only. Sanitary administration of division lax and inefficient. Certificates received under Notification Act simply filed. Invaded houses not visited by Medical Officer of Health until deaths occurred in them. Disinfection only occasionally practised. No proper means of limiting spread of infection through schools."

(1893) In the summer of 1893 Dr. Bruce Low made a thorough inspection of the *Ystradyfodwg Urban District*, and shortly afterwards presented a Report to the Local Government Board on the "General Sanitary Circumstances of the District and upon Administration by the Sanitary Authority."

This inquiry was ordered in consequence of a representation addressed to the Local Government Board under Section 19, Sub-section 2 of the Local Government (England and Wales) Act, 1888, by the County Council of Glamorganshire, and dated June 26, 1893, to the effect that it appeared to the latter Authority that the Public Health Acts had not been properly enforced in the Urban District of Ystradyfodwg, and that "other matters affecting the Public Health required to be remedied." I cannot do better than quote Dr. Bruce Low's concluding remarks. They are these:—

"As a result of a careful inspection of the district, I am of opinion that the Local Board of Ystradyfodwg have not in the past enforced the provisions of the Public Health Acts to the extent they ought to have done, but that more recently they have displayed a greater activity in this respect, and that they are now taking large and comprehensive measures to improve the condition of their

district. When these measures are carried out, along with others that I have indicated in this Report, the sanitary state of this large and populous district should show a marked improvement. Meanwhile it is not to be denied that the extremely rapid growth of this district, together with its peculiar situation in two long, deep, narrow valleys, has added greatly to the difficulties and responsibilities of the Local Authority."

VITAL STATISTICS, MORTALITY RATES, &c.

The following tables and figures, compiled from the various Reports of the Registrar-General from 1838 to the present, throw some light on the past history of the County.

POPULATION AT DIFFERENT TIMES.

The total population of the Registration County in 1801						was	74,189
"	"	"	"	"	"	1811	89,099
"	"	"	"	"	"	1821	107,263
"	"	"	"	"	"	1831	132,161
"	"	"	"	"	"	1841	178,050
"	"	"	"	"	"	1851	240,095
"	"	"	"	"	"	1861	326,254
"	"	"	"	"	"	1871	405,798
"	"	"	"	"	"	1881	518,383
"	"	"	"	"	"	1891	693,072

Or thus in the registration divisions of—

	1841.	1851.	1861.	1871.	1881.	1891.
Cardiff	32,557	46,491	74,575	76,701	106,164	173,699
Neath	32,636	46,471	58,533	50,191	52,077	56,718
Swansea	38,649	46,907	59,576	64,297	95,001	114,400
Merthyr Tydfil ..	52,863	76,804	107,105	104,239	101,441	117,194
Bridgend	—	23,422	26,465	31,671	38,920	51,453
Pontypridd	—	—	—	51,921	93,493	146,811
Pontardawe	—	—	—	17,488	20,185	21,700
Gower	—	—	—	9,290	11,102	11,026

In the early Reports of the Registrar-General the various figures and rates given refer to Wales collectively, and no data are given for Glamorganshire only.

In 1839 we learn that Typhus Fever was prevalent in the Swansea, Merthyr Tydfil, and Neath Divisions.

In 1840, 54 deaths from Small-pox occurred in Merthyr Tydfil. The hills and valleys of Wales were traversed by the disease.

In 1846 the population and mortality in the various registration districts of the County were as follows:—

Districts.	Males.	Females.	Deaths in 7 years (1837-44).	Annual Mortality per 100.
Merthyr	28,629	24,234	10,020	2·7
	52,863			
Cardiff	44,282	44,256	11,809	1·94
Bridgend				
Neath	88,538			
Swansea	18,519	20,130	4,621	1·7
	38,649			

In 1849 Cholera raged with severity in Cardiff, Merthyr Tydfil, and other localities, where the insalubrious circumstances known to be pernicious had been culpably allowed to remain. The Births in the sub-district of Cardiff were 143 and Deaths 307, out of which 161 were from Cholera.

In the last quarter of 1849, 1,876 lives were destroyed through Cholera in the Merthyr Tydfil Division, viz. :—

41 in Gelligaer,
481 in Lower Merthyr Tydfil,
1,023 in Upper Merthyr Tydfil, and
325 in Aberdare.

The population in this district in 1831 was 34,181, and in 1841 it was 52,863 ; the mortality, therefore, was about 2·5 per cent. higher than in some of the worst districts in London. The indifference with which life was sacrificed and lost in these mining districts is said to have been inconceivable. Down the Taff Valley to Llandaff and Cardiff traces of death were seen on every side. The Canal connecting the two towns had been emptied a short time previously, and the mud and matter at the bottom were exposed to the sun. Cholera appears to have made its inroads through the Port of Cardiff. The first death in Cardiff occurred on the 13th May, and the first in Merthyr on the 21st May.

In Neath the deaths from Cholera were 888, a mortality in excess of 2 per cent. of the population, thus :—

Districts.	Mortality in 3 Months.	Annual Rate of Mortality in the Summer of 1849.
Merthyr	2·5 per 100	10·2
Neath	2·5 „	8·8

In the ten years (1841-50) the density of the population and deaths to 1,000 living in the County were as follows :—

Districts.	Density of Population. (Acre to a Person.)	Deaths to 1,000 living.
Cardiff	2·98	22
Merthyr Tydfil ..	1·74	28
Bridgend	4·89	19
Neath	4·12	22
Swansea	2·43	19

POPULATION OF COUNTY IN 1851.

Districts of Cardiff	46,491
„ „ Merthyr Tydfil	76,804
„ „ Bridgend	23,422
„ „ Neath	46,471
„ „ Swansea	46,907

In 1854, at Cowbridge, 40 families were attacked with Typhus Fever, which originated at a ball, where the guests supped over a stable and on premises which were in a filthy state from want of drainage.

Between the 17th and 25th of March in the same year seven fatal cases of Sporadic Cholera occurred at Cardiff.

The following Table gives the mortality from Cholera and Diarrhœa during the years 1849 and 1854 :—

Districts.	Population,		Cholera,		Diarrhœa,		All Causes, 1841-50.
	1841.	1851.	1849.	1854.	1849.	1854.	
Cardiff ..	32,557	46,491	396	235	75	47	8,822
Neath ..	32,636	46,471	738	54	61	26	8,599
Swansea ..	38,649	46,907	262	17	32	15	7,951
Merthyr ..	52,863	76,804	1682	455	97	125	18,335

In 1856 a great decrease of mortality is reported from Merthyr Tydfil.

The deaths, which until very lately had been nearly equal to the births in the town of Cardiff, were greatly reduced. Fevers and other epidemics were rare. This result was attributed to the excellent drainage of the town, which had been recently effected, and also to an abundant supply of pure water.

Population in 1861.			Mortality Rate from all Causes, 1851-60 per 1,000 living.	
Cardiff ..	..	74,575	23	
Merthyr Tydfil ..	..	107,105	29	
Bridgend ..	..	26,465	20	
Neath ..	..	58,533	22	
Swansea ..	..	51,260	20	
Gower ..	..	8,316		
The Mortality rate for England (same period)			22	

In the Spring of 1866 Cholera again prevailed in Great Britain, and Glamorgan did not escape, as the following table shows :—

DISTRICT.	DEATHS FROM CHOLERA.			DEATHS FROM DIARRHŒA.		
	1849.	1854.	1866.	1849.	1854.	1866.
Cardiff ..	396	225	76	75	47	41
*Pontypridd ..	—	—	48	—	—	28
Merthyr ..	1682	455	229	97	125	44
Bridgend ..	87	17	80	8	9	12
Neath ..	738	54	520	61	26	56
Swansea ..	262	17	521	32	15	22
Gower ..			29			7

* Included in Cardiff and Merthyr for these years.

The epidemic of 1866 was very widely distributed through the County, thus:—

LOCALITIES.	Number of fatal cases of Cholera.	Number of fatal cases of Diarrhœa.
Cardiff Town	37	—
Whitechurch	4	1
Pentyrch	1	—
Pontypridd	10	11
Llantrissant	7	7
†Ystradyfodwg	34	7
Merthyr Tydfil—Gelligaer ..	5	4
„ „ Lower	61	14
„ „ Upper	72	4
„ „ Aberdare	92	22
Bridgend—Maesteg	29	10
„ Cowbridge	2	0
„ Bridgend	49	1
Neath—Margam	123	21
„ Neath	94	16
„ Ystradfellte	49	3
„ Ystradgynlais	163	15
„ Cadoxton	54	0
„ Llansamlet	45	0
Swansea—Llandilo Talybont ..	45	0
„ Llangyfelach	151	1
„ Swansea	326	19

† The epidemic was most severe at Treorky, where 17 deaths occurred (14 being Colliers). The supply of water was obtained from surface wells liable to pollution.

In the summer of 1870 Scarlet Fever was prevalent at Merthyr Tydfil, Margam, Neath, Llansamlet, Llangyfelach, and Swansea; also very fatal at Cardiff, Pontypridd, and Aberdare.

Population in 1871, with mortality rate for four decennial periods (1841—1870).

POPULATION IN 1871.	ANNUAL MORTALITY TO 1,000 LIVING.			
	1841-50.	1851-60.	1861-70.	1841-70.
Cardiff .. 76,701			21	
Pontypridd .. 51,921	22	23	23	22
Merthyr Tydfil 104,239	28	29	25	27
Bridgend .. 31,671	19	20	20	20
Neath .. 64,619	22	22	22	22
Swansea .. 67,359			22	
Gower .. 9,290	19	20	20	20

Annual Rate of Mortality from all causes in each of the years 1871-80.

DISTRICTS.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
Cardiff ..	20.8	22.5	19.5	23.3	22.8	20.1	19.5	18.8	17.6	19.2
Merthyr ..	24.3	26.7	26.0	31.5	22.6	20.4	21.7	21.5	20.2	23.6
Swansea ..	22.2	21.3	23.6	28.8	25.0	20.7	20.0	21.4	21.4	23.3

Annual Rate of Mortality to 1,000 living from the seven zymotic diseases for each of the years 1871-1880.

DISTRICTS.	1871.	1872.	1873.	1874.	1875.	1876.	1877.	1878.	1879.	1880.
Cardiff ..	4.5	5.4	2.6	4.4	4.5	4.5	3.1	2.2	1.6	3.1
Merthyr T.	5.2	7.4	4.5	7.6	3.1	1.6	3.0	1.9	1.1	3.4
Swansea ..	4.0	3.3	4.0	7.7	4.1	2.1	2.3	3.1	3.4	6.0

Density of Population and Annual Mortality, 1841-80.

DISTRICTS.	ACRES TO A PERSON.				Annual Mortality to 1,000 living.			
	1841-50	1851-60	1861-70	1871-80	1841-50	1851-60	1861-70	1871-80
Cardiff ..	2.98	1.95	1.21	0.87	22	23	21	19.8
Pontypridd			1.91	1.02			23	23.2
Merthyr ..	1.74	1.23	0.71	0.74	28	29	25	24.2
Neath ..	4.12	3.10	2.64	2.42	22	22	22	23.0
Bridgend ..	4.89	4.39	3.77	3.06	19	20	20	21.0
Pontardawe	—	—	—	2.93	—	—	—	19.3
Swansea }	2.43	1.95	0.74	0.45	19	20	22	22.4
Gower }			6.77	4.00			20	17.3

The appointment of Medical Officers of Health as now existing is of recent date.

The Towns Improvement Clauses Act, 1847, which extended to such districts in England or Ireland, as should be comprised in any Act of Parliament subsequently passed which should declare it, or any part, to be incorporated therewith, provided for the appointment of a salaried "Officer of Health" by the Commissioners under the Special Act if they thought fit.

The Public Health Act, 1848, gave power to any Local Board of Health of any district constituted under it, to appoint a legally qualified Medical Practitioner as "Officer of Health" for their district, who had to perform those duties which the then existing General Board of Health might direct. A code of regulations specifying such duties were issued in 1851.

Dr. Duncan was the first Medical Officer of Health, having been appointed under the Liverpool Sanitary Act in 1846. In 1852 Dr. William Kay was appointed temporary Health Officer for Merthyr Tydfil. He was the first Health Officer appointed for any portion of Glamorgan. Dr. Paine was appointed for Cardiff about 1853, Dr. Michael for Swansea in 1854, and Dr. Dyke for Merthyr in 1865. Also in 1865 Dr. Ebenezer Davies was appointed for Swansea.

The Merthyr Local Board of Health was formed in 1850, that of Aberdare in 1854, and that of Maesteg in 1858, but these two latter localities were not under medical supervision until 1875 and 1876 respectively.

Mountain Ash became under medical supervision in 1867.

It was after the Public Health Act of 1872 that the duty of appointing Medical Officers of Health was imposed upon Local Authorities in all parts of England and Wales outside the Metropolis, and it was after this date that a great number of districts in this county became under medical supervision, thus:—

DISTRICTS.	Date of Formation of Sanitary Authority.	Became under Medical Supervision.
URBAN.		
Aberavon	1861	1876
Aberdare	1854	1875
Barry and Cadoxton ..	1888	1874 (Cardiff Rural)
Bridgend	1851	1874
Briton Ferry	1864	1864
Caerphilly	1893	1874 (Cardiff Rural)
Cowbridge	1888	1873 (Bridgend and Cowbridge Rural)
Garw and Ogmore	1888	1873 (Bridgend and Cowbridge Rural)
Glyncorrwg	1893	1876 (Neath Rural)
Maesteg	1858	1876
Margam	1884	1876 (Neath Rural)
Merthyr	1850	1852
Mountain Ash	1866	1867
Neath	1872	1873
Oystermouth	1874	1874
Penarth	1875	1876
Pontypridd	1873	1873
Porthcawl	1893	1873 (Bridgend and Cowbridge Rural)
Ystradyfodwg	1877	1880

DISTRICTS.	Date of Formation of Sanitary Authority.	Became under Medical Supervision.
RURAL.		
Bridgend and Cowbridge	1872	1873
Cardiff	1872	1874
Gower	1872	1872
Merthyr	1872	1873
Neath	1876	1876
Pontardawe	1875	1875
Pontypridd	1873	1873
Swansea	1872	1873
Llanelly (Boroughs of Loughor)	1848	1873
Newport (Parishes of Llanfedw and Rhydywern)	1872	1872
Borough of Cardiff	1848	1853
Borough of Swansea	1848	1854

PART III.

THE SANITARY CONDITION OF THE VARIOUS DISTRICTS.

ADMINISTRATIVE COUNTY OF GLAMORGAN.

URBAN SANITARY DISTRICTS:—

Aberavon.
 Aberdare.
 Barry and Cadoxton.
 Bridgend.
 Briton Ferry.
 Caerphilly.
 Cowbridge.
 Garw and Ogmore.
 Glyncoed.
 Maesteg.
 Margam.
 Merthyr.
 Mountain Ash.
 Neath.
 Oystermouth.
 Penarth.
 Pontypridd.
 Porthcawl.
 Ystradgynlais.

RURAL SANITARY DISTRICTS:—

Bridgend and Cowbridge—Bridgend Division.
 „ „ Cowbridge „
 Cardiff.
 Gower.
 Llanelli—Loughor Borough and Loughor Parish.
 Merthyr.
 Neath.
 Newport—The Parishes of Llanvedw and Rhydywern.
 Pontardawe—Eastern Division.
 „ Western „
 Pontypridd.
 Swansea—Llangyfelach Division.
 „ Llandilo-Talybont Division.

ABERAVON.

		1881.		1891.
Population	..	4,859	..	6,281
Area in Acres	..	2,060		

The ancient borough and market town of Aberavon stands at the foot of a hill (Mynydd Dinas) on the Swansea Bay, opposite the Mumbles Head. The older and larger portion of the town is built on level ground, slightly elevated above the sea, whilst the more modern portion, of recent construction, is on the elevated hillside. The area is very limited. The River Avon skirts the town, separating it from Taibach. Geologically it stands on alluvium, sand, and clay. The chief industries of the district are the various coal pits, tin-plate and iron works.

WATER SUPPLY.—Water is derived by mains from a reservoir above Cwmavon, some few miles away, at a considerable elevation and free from sources of pollution.

The water is good and plentiful, except in dry weather. It is supplied to the various houses continuously, except in the dry seasons it is supplied intermittently. A part of Cwmafon (in the Neath Rural District) is also supplied by the same reservoir.

EXCREMENT DISPOSAL.—The greater portion of the borough is sewered and drained. In the older parts the sewers are made of bricks, whilst the branches are pipes. There are two main sewers, one for Aberavon proper, and another for Sandfields, beyond the railway. Both discharge into the Avon (tidal water), half a mile from its mouth, and well away from all dwellings. The part of the town called Corlannau is undrained.

HOUSE ACCOMMODATION.—Much of the old and small house property is very dilapidated and of a wretched description—damp, floors below level of the ground, ill-ventilated, dirty, the w.c.'s not flushed except by hand, spouting generally wanting, the back yards confined and unpaved, gullies and drains blocked or untrapped; *e.g.*, at Charlotte-street, many of the houses in their present condition are unfit for habitation, sanitary defects and nuisances abound.

COMMON LODGING-HOUSES.—These are numerous at Aberavon, and mostly to be found in Charlotte-street. They are registered, and licensed for a certain number of lodgers. At the time of my visit there was no overcrowding noticed, but many of the houses were dirty, damp, dark, and ill-ventilated. The privies were generally out of order.

The Authority possess no means for the isolation of cases of infectious disease, nor have they any disinfecting apparatus. Recently there have been two cases of small-pox in the borough, one of which was fatal. The first case happened in a public-house, but the patient could not be removed because of the want of provision for his reception. Such precautionary measures were adopted as the circumstances allowed, *viz.*, the place was partly isolated, and there was gratuitous vaccination and re-vaccination once every week. It should be mentioned that the public-house was all through allowed to remain open.

The Authority have wisely adopted the "Infectious Disease (Notification) Act, 1889," and the "Infectious Disease (Prevention) Act, 1890."

SANITARY ADMINISTRATION.—The Authority and their Medical Officer of Health seem to be on good terms and to work well together, and generally they carry out his instructions. A Sanitary Inspector, who will also act as Surveyor, is about to be appointed. From the Report of the Medical Officer of Health for the year 1892 I find that "In the summer and autumn, when an invasion of cholera was possible, the Council appointed a temporary assistant-inspector, and a house-to-house inspection of the district was carried out and many unwholesome revelations brought to light, and the condition of some houses and streets were discovered to be deplorable in the extreme. The state of Charlotte Street is a reproach to the town, and the condition of many of these houses inside only revealed what obtained in many others in the borough, *viz.*, leaking roofs, exposed laths, rotten woodwork, damp floors, walls stripped of plaster, doors without panels, broken windows admitting draughts, wind, and rain, with many defects besides."

There is a vast amount of work to be done in the borough, and a great deal can be done by an energetic Sanitary Inspector.

The Medical Officer of Health has described in his various Reports the sanitary condition of the borough, and my own inspection allows me to confirm his statements in every particular.

The conditions to which the attention of the Authority is specially needed are the following:—

- (1) The provision of means for the drainage of Corlannau, and its connection with the main sewer.
- (2) The removal of objectionable accumulations and the improvement of houses, which, in their present condition of dampness, dilapidation, insufficient ventilation, and the conditions of their surroundings, are unfit for habitation.

- (3) The provision of means for isolation and disinfection.
- (4) The better scavenging of streets and areas about dwellings and groups of houses.
- (5) The necessity of further provision for frequent inspection for sanitary purposes of the district.
- (6) The adoption of Clauses I. and II. of the "Housing of the Working Classes Act, 1890."
- (7) The desirability of having the Sanitary Inspector under the direct supervision and control of the Medical Officer of Health.

13th March, 1893.

ABERDARE.

	1881.	1891.	1893.
Population ..	33,804 ..	38,418 ..	40,000 (estimated).

Area in acres, 15,127 (the area in acres of the whole Parish being 16,619).

The Aberdare Board of Health was formed in 1854. The district is situated in the north-east portion of the county, and occupies some six or more miles of the Cynon Valley. It is bounded on the north by the County of Brecknock and Merthyr Rural District, on the east by the Merthyr, on the south by the Mountain Ash, and on the west by the Ystradfydwg Urban, Districts. It comprises nearly the whole Parish of Aberdare, and covers the extensive area of 15,127 acres. The area extends very considerably beyond the populous centres, and includes many farms, and some pasture and mountain land on the hilly slopes of the Cynon Valley. The important centres are Hirwain, Trecynon, Aberdare, Aberaman, and Cwmaman. There are several other smaller groups of houses, such as Tregibon, Penywain, Robertstown, Cwmdare, Abernant, and Capcoch. The elevation of Hirwain is 627, whilst that of Capcoch is 400 feet above Ordnance data. Some of the hillside villages are on a higher level than Hirwain, so that there is a good gradient in all directions. The Cynon flows the whole length of the district, and is joined by several tributaries. Along their several banks are situated the various villages. The entire district is on the coalfields, the neighbouring hills being composed of Pennant rock, whilst towards the rivers and their tributaries there is some depth of alluvium. The greater part of the population is of the artizan class, and coal-mining the chief industry. There is one tin-plate works in the district. There is a railway and high road communication in most directions.

The following table gives important information concerning the district:—

Rateable value of the district (General District Rate), £147,754 15s. 0d.

Rateable value of Parish, £163,853 10s. 0d.

Population (April, 1893), 40,000.

Number of houses, 7,497 (occupied) and 75 (unoccupied); total, 7,572.

Streets and roads repairable by Board, over 40 miles.

Capacity of Nanthir Reservoir, 40 million gallons.

	Bwllfa		7		
		Birth-rate.		Death-rate.	Rainfall.
1875	..	46.75	..	22.95	62.78 inches.
1876	..	41.87	..	18.97	83.63 "
1877	..	39.90	..	21.00	85.75 "
1878	..	36.40	..	19.60	62.36 "
1879	..	36.30	..	18.80	55.83 "
1880	..	32.70	..	21.60	58.10 "
1881	..	35.60	..	20.10	61.64 "
1882	..	33.80	..	19.60	79.95 "
1883	..	33.00	..	20.80	66.13 "
1884	..	36.30	..	20.90	58.88 "
1885	..	37.70	..	24.70	61.27 "

		Birth-rate		Death-rate.		Rainfall.
1886	..	31.68	..	22.36	..	67.10 inches.
1887	..	33.50	..	21.46	..	42.67 "
1888	..	33.53	..	18.44	..	57.68 "
1889	..	32.41	..	22.40	..	41.40 "
1890	..	34.62	..	18.78	..	47.51 "
1891	..	38.60	..	27.01	..	73.18 "
1892	..	39.10	..	24.89	..	44.35 "

HOUSE ACCOMMODATION.—The house accommodation is barely sufficient for the demand, and there is considerable building going on. The number of houses within the statutory distance, and not connected with the sewers, is 96, which is less than one per cent. The number of houses not within the statutory distance and not connected, is 348. Many of the latter include several farms and cannot be connected. Generally, the houses are of good construction, and the properties, on the whole, are in a very fair order; the houses, as a rule, are eave-spouted, and the yards paved. Some over-crowding of persons is said to exist, but when detected is immediately remedied. There is some crowding of houses upon area in the older places, but this is not the rule.

COMMON LODGING HOUSES.—There are several in the district, and I inspected all of them. They were well regulated and clean, but there was overcrowding in one instance. They are under the police and not the authority's control. The principle of police inspection of lodging-houses is a wrong one, and the remnant of an administrative system existing before the appointment of Sanitary Inspectors. The only reason why this important duty should be intrusted to the police, is that they have a chance of keeping a watch on persons frequenting such houses, but might it not be arranged that that they should retain this power.

SLAUGHTER HOUSES.—The slaughter-houses are well and satisfactorily managed. There is a recently-built Public Slaughter House at Aberdare that the district might well be proud of. It is admirably fitted up with all conveniences—hot and cold water, cooling rooms, &c. Its ventilation and drainage arrangements are satisfactory. The blood and offal are removed daily in iron tumble carts to certain farms, where it is made use of as manure.

DAIRIES, COWSHEDS, AND MILKSHOPS.—No regulations have been made under the Dairies, Cowsheds, and Milkshops Order, so that these buildings, as such, are not under any special control of the Authority. Under this Order it is unlawful for anyone to carry on the trade of cowkeeper, dairyman, or purveyor of milk unless registered by the Local Authority. Local Authorities may make regulations for the inspection of cattle and dairies; for prescribing and regulating the lighting, cleansing, draining, ventilation, and water supply of dairies and cowsheds; for the cleansing of milk stores and shops and milk vessels, and for prescribing precautions to be taken against infection and contamination. This subject requires the Authority's attention.

WATER SUPPLY.—The water supply of the district is obtained from two main sources:—

- (1) The Old Water Works.—The storage reservoir of which is at Bwllfa, Cwmdare; its capacity is seven million gallons. It has a gathering ground or watershed of 560 acres. From here it is conducted to the Graig Service Reservoir and filtered before distribution. It supplies the districts of Aberdare, Aberaman, Capcoch, Gadlys, and Trecynon.
- (2) The New Water Works.—These are on the Nanthir stream, partly in Breconshire and partly in Glamorganshire. The reservoir has the storage capacity of 40 million gallons, with a gathering ground or watershed of 470 acres. It supplies Hirwain, Cwmdare, Penywaen, Abernant, Cwmbach, and Cwmaman. The Board are now promoting a Bill in Parliament for the construction of an additional storage reservoir, to be erected on Nantmelyn stream, in the County of Brecon, the capacity of which will be over 50 million gallons. When this new reservoir is completed there will then be a sufficient storage for 160 days.

SEWERAGE.—The whole district is sewered. The sewerage of Hirwain and Penywaen was completed during 1893, and the house connections are being carried out. The flushing of water-closets is accomplished by hand, and not by means of cisterns, except in the better class of houses. This arrangement is not altogether satisfactory as it is difficult to educate the people to flush the closets regularly, as evidenced by the encrustation frequently noticed adhering to the pans. The flushing of sewers is accomplished by filling the manholes with water from the mains, until they are three-fourths full, and then withdrawing the flap valves. I am informed that the construction of automatic flushing tanks is being contemplated, and will, doubtless, be carried out shortly. On the whole, it is said that the sewers have been very free from obstruction or leakages. The catchpits are cleaned out weekly. The sewage is conveyed by the "main carrier" to the farm between Aberdare Junction and Pontypridd. It is said that each house is separately connected with a sewer, and there are no connections with any of the old culverts leading to the Cynon or any other brooks. The number of houses within the statutory distance of a sewer and not connected is about 50 (less than 0·5 per cent.). This is very satisfactory.

The surface water finds its way by means of the old culverts into the Cynon.

DISPOSAL OF HOUSE REFUSE, ETC.—This is wisely undertaken by the Authority, and efficiently performed by means of ten carts and horses, under the personal supervision of a sub-inspector. The refuse tips are a source of continuous trouble, and I noticed a large one in the immediate vicinity of the Infectious Diseases Hospital—a very undesirable position. Cremation is the only radical course for effectual disposal of refuse.

BYE-LAWS AND REGULATIONS.—The bye-laws at present in force at Aberdare are obsolete, having been framed in the following years for the following purposes:—

For the regulating of street cleansing, removal of refuse, and the cleansing and emptying of water-closets, privies, and cesspools.—(1859).

For the regulation of slaughter-houses.—(1859).

For the level, width, and construction of new streets, and the provisions for the sewerage thereof.—(1868).

It is satisfactory to find that the Authority are now framing new bye-laws with a view to their adoption, subject to the approval of the Local Government Board.

No Regulations under the Dairies, Cowsheds, and Milkshops Order have been made.

ADOPTIVE ACTS.—The Infectious Disease (Prevention) Act, 1890, the Public Health Acts (Amendment Act, 1890), and the Private Street Works Act, 1892, have been adopted. The special powers conferred by the Public Health Acts (Amendment Act) include the adoption of bye-laws for regulating the removal of refuse, provisions for keeping courts and passages clear, extension of the powers relating to unsound meat, to all articles exposed for sale, special powers for the regulation of slaughter-houses, and the keeping of closets supplied with sufficient water for flushing.

The Infectious Disease (Notification) Act has not been adopted. It is most desirable that this Board should adopt this Act, for gratuitous information can no longer be reasonably expected from the various medical practitioners of the district. The Chairman and the Medical Officer of Health and other members of the Board are in favour of its adoption, and with the rest it is admittedly a matter of expense only. It is to be hoped that the Board will reconsider their decision and put the Act into operation.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—The District is supplied with a Fever Hospital, built some 20 odd years ago. It is a spacious wooden structure, in good order, under the supervision of a man and his wife, whose daughter acts as nurse. It is beautifully clean, well regulated, and in good order. A laundry, mortuary, and an ambulance have been provided. There is no disinfecting

apparatus, and it is certainly not unreasonable to expect that a district with 40,000 inhabitants should possess one; for the effectual disinfection of articles of bedding and clothing cannot be performed by the burning of a little sulphur or the indiscriminate use of disinfectants.

POLLUTION OF THE RIVER CYNON.—The Cynon Tin Plate Works pollute this river to a considerable extent, and this pollution is much complained of by the farmers on its banks lower down, whose cattle refuse to drink the water. I visited the works and ascertained that the pickling tank was emptied twice daily direct into a culvert leading to the river. This culvert also receives the water from the engines used for condensing the steam. No copperas is manufactured, and no attempt whatever made at purifying the contents of the pickling tank before it is allowed to enter the culvert. In the vicinity of the works and over the culvert I noticed two water privies.

Ashes from the Glan Cynon Foundry are also tipped into the same river some distance lower down.

I beg to make the following suggestions concerning a few matters requiring the further attention of the Authority:—

- (1) That the Authority should consider the desirability of making and adopting regulations under the Dairies, Cowsheds, and Milkshops Order, 1885. Also to make bye-laws under section 23 of the Public Health Amendment Act, 1890.

With regard to "the keeping of water closets supplied with sufficient water for flushing." A further provision of this act is to enable bye-laws with respect to closets and drainage to be retrospective as well as prospective.

- (2) The adoption of the Infectious Diseases (Notification) Act.
- (3) The provision of a suitable apparatus for the efficient disinfection of articles of bedding and clothing.
- (4) That the authority consider the pollution of the Cynon, caused by the Tin-plate Works.

31st January, 1894.

BARRY AND CADOXTON.

	1881.	1891.	1892.	
Population.. ..	165 ..	12,665 ..	13,881	(estimated)
Inhabited houses ..	— ..	2,007 ..	2,626	
Area in Acres ..			3,323	

The towns of Barry, Barry Docks, and Cadoxton have sprung up almost entirely during the last ten years, and are now almost continuous. The area included in the district extends considerably beyond the most populous parts, and is essentially rural in its nature. The district is undulating and hilly. Geologically Barry is built on Lias formation, and Cadoxton on the Carboniferous and Dolomitic Limestone. Nearly all the houses are well built, and of modern construction. The streets are broad, clean, well paved, channelled, and kerbed.

WATER SUPPLY.—Spring water impounded in a reservoir on the hillside, at a slight elevation, and a few miles away, but within the district. It is distributed in mains, and nearly all the houses are supplied. According to the analysis of Mr. Hughes, Public Analyst, Cardiff, it contains no lead or iron.

Hardness ..	{ Temporary .. 15.3 }	Total .. 26.6
	{ Permanent .. 11.3 }	

REPORT.—"This water contains a rather excessive proportion of solid matter in solution, consisting chiefly of carbonates and sulphates of lime and magnesia, which render it somewhat hard, and to this extent not well suited for such domestic purposes as washing, &c. Organically considered the water is in a very fair condition, and is otherwise free from evidence of animal or sewage pollution. Its present condition is favourable for dietetic use."

The excessive hardness of the water is evidently due to its solvent action on the dolomitic limestone through which it has percolated. The chlorine (as chlorides) and the nitrogen (as nitrates and nitrites) are somewhat excessive. This excess is probably not due to sewage contamination, but to the fact that the water is obtained from deep wells. It is not filtered before distribution.

SEWERAGE.—The main outlet of the Barry sewer is about to be carried further into the sea. The main sewers of the district are well ventilated and have proper gradients. They are periodically flushed and kept in good order.

EXCREMENT AND REFUSE DISPOSAL.—Excrement is disposed of by means of water-closets, and what privies did exist (except in the rural parts of the district) have been done away with. It is to be noted that many of the water-closets are not provided with flushing apparatus. The Medical Officer of Health has called the attention of the Authority to this want and the desirability of enforcing the provision of a water supply to each closet in the district by means of a two-gallon "Waste Preventor Cistern."

The removal of refuse is in the hands of the Authority, and is efficiently executed.

HOUSE ACCOMMODATION.—At the present time the house accommodation is more than sufficient for the district, there being many uninhabited houses. There are no insanitary areas as defined in Part I. of the Housing of the Working Classes Act, 1891, and no back-to-back houses. The houses all through the district are frequently and thoroughly inspected by the Chief Sanitary Inspector (Mr. Leyshon) and his assistant.

There is but one common lodging-house in the district, and this under police supervision.

SEAMEN'S LODGINGS.—These are numerous, and bye-laws as to seamen's licensed lodging-houses under the Merchant Shipping (Fishing Boats) Act, 1883, are about to be put in force. The Authority are waiting for the sanction of the President of the Board of Trade.

ADOPTIVE ACTS.—The Authority have wisely adopted:—

- (1) The Infectious Disease (Notification) Act, 1889.
- (2) The Infectious Disease (Prevention) Act, 1890.
- (3) The Public Health Acts Amendment Act, 1890.
- (4) The Contagious Diseases (Animals) Act, 1886, and the Dairies, Cow-sheds, and Milkshops Order of 1885.
- (5) The Merchant Shipping (Fishing Boats) Act, 1883.

Bye-laws exist with respect to—

- (1) Public bathing.
- (2) Decent conduct of persons using sanitary conveniences.
- (3) Houses let in lodgings or occupied by members of more than one family.
- (4) Common lodging houses.
- (5) New streets and buildings.

and are strictly enforced.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority have provided a temporary isolation hospital, where six beds are available. The building was formerly used as offices. It is, perhaps, smaller than would be desirable, but apart from its small size, is well suited for the purpose under ordinary circumstances. It is conveniently situated, and under the management of a caretaker and his wife. It is in good repair and very clean and well kept.

There is also a suitable disinfecting apparatus (heat chamber) where the disinfection of articles of clothing and bedding is thoroughly performed.

During the latter part of last year fears were entertained of the introduction of cholera, owing to the constant and extensive intercourse between Barry and the infected ports on the continent of Europe. As to the precautionary measures adopted to guard against the introduction of the disease, I cannot do better than quote the words of the Medical Officer of Health:—"A steamer in charge of the Medical Officer of Health and Inspector Leyshon was employed from September

3rd to October 15th, 1892, to intercept all vessels arriving here from any of the infected ports during the cholera scare. Printed instructions were issued by the Pilotage Board to all Pilots, who, on boarding a vessel from any of the infected ports, caused the yellow flag to be hoisted on arriving in the roads. The vessel was then boarded by your Inspector, the Quarantine Officer, and myself, the quarantine questions were put to the master in the usual manner by the Customs officer, and in the event of the replies being unsatisfactory, the vessel was required to proceed to the mooring station (between Sandrick's Works and Sully Island) and there detained until stricter inspection had been gone through. After examining the crew and finding them in good health, and no sickness having occurred on board while lying in the infected port, or during the voyage to this port, I gave instructions to your Inspector to see that all the ballast and bilge water was discharged, casks and tanks containing drinking water were emptied and cleansed with Condyl's fluid, and fresh drinking water supplied, they were then allowed to enter dock during the same tide; but all vessels from Hamburg—19—were detained for one tide (about 12 hours) to undergo a thorough disinfection and cleansing. In compliance with the cholera regulations of the Local Government Board, the names and addresses of all persons who landed from the vessels were taken by me and forwarded to the clerks of the authorities in whose districts their several destinations were situate. Our own temporary hospital for infectious disease is in a satisfactory condition for receiving cases of cholera, but the Flat Holmes being so well adapted for such cases, arrangements were made with the Cardiff authorities to permit the Local Board to rent an acre of land there, on which we erected a tent hospital for six beds. This arrangement was made to the end of December, 1892."

The precautionary measures adopted last year can at any moment be again put in operation, with the exception that the Flat Holmes is not available, for the Board cannot come to an agreement with the Cardiff Corporation.

The great wants of Barry and Cadocston are a permanent isolation and a cholera hospital.

21st March, 1893.

BRIDGEND.

	1881.	1891.
Population ..	4,200	4,896
Area in acres ..	629	

This district covers an area of 629 acres, and has a population of about 4,900. Bridgend is an important market town, with railway communications on the north, east, and west, and converging high roads on all sides. It is about four miles from the sea, and the elevation of its lowest portion is only eighty-two feet above mean water level. It is an important centre on account of its proximity to the popular mining valleys of the Llynvi, Garw, Ogmore, and Ogmore Fach, while nearer still are Aberkenfig and Tondy. Through the town flows the river Ogwr, dividing it into two parts, locally known as Old Castle and New Castle. The Ogwr is formed by the union (about three miles to the north) of the several streams of the above-mentioned valleys. It is a broad, shallow river even during floods, and in dry seasons a mere streamlet occupying but a small portion of its bed. In the highest parts of the district the geological formation is mostly the Lias limestone, whilst on both sides of the river alluvium predominates. The greater portion of New Castle is on a considerably elevated hill. The natural drainage is into the river.

THE WATER SUPPLY.—The water supply is in the hands of a private company (the Gas and Water Company). The water is obtained from springs in the rocks at the base of Ogmore Down near the river Ewenny (before it enters the Ogwr) about three miles below, and is pumped into a reservoir in the immediate vicinity of the town. On analysis it is stated to give satisfactory results. It is distributed on the constant principle. The Medical Officer of Health in his Annual Report of

1892, advises the authority to have the water again analysed, for he had ascertained that the supply was at times cut off during the night, and that was most unsatisfactory. I quite agree with the following remark of his:—"A modern water supply ought to be uninterrupted." For the health of the community it is essential, especially in an old town like Bridgend, that the water supply should be on the constant service principle. Cases of typhoid fever are of common occurrence in this district. Typhoid fever is a sign-post of cholera, and wherever it is prevalent there also cholera may be looked for, and by the same means that typhoid spreads by the same means cholera will also make itself felt.

SEWERAGE AND DRAINAGE.—The great want of the district is a proper system of sewerage and drainage. The old main sewers of the town are several in number and constructed of rough masonry, originally doubtless intended for the conveyance of surface and storm water. In Old Castle is a dilapidated brick sewer under the greater length of the town, and flushed direct from the river, into which it discharges lower down. There is yet another at almost right angles to the former, draining different areas, and consisting of the natural rough bed of a more or less stagnant stream (Coity Brook) that has been arched over. There is also a sewer of a similar construction for New Castle. Into these various channels and direct into the river most of the pipe sewers that have been constructed discharge. The destiny of all the sewage is the river and underlying soil. The flushing is done by floods, which, luckily, are very frequent. In wet seasons, when the river is full, no complaints arise, and the sewage is carried to the sea and forgotten, but during dry weather these various culverts and sewers are nothing but elongated, unventilated, underground cesspools, and the nuisances arising from this cause are said to be very serious. What sewers exist are very imperfectly ventilated by a few narrow shafts here and there. One sewer, intended for the populous locality of Old Castle, is so shallow that the houses in several branch streets cannot be connected. The Medical Officer of Health has repeatedly called the attention of the Authority to this question of the ventilation of the main sewers and their branches, and in his last report he says:—"The ventilating shafts at the terminals of main drains recommended in my last report (for 1891) have not been erected." A great number of the houses in Old Castle are not connected with any sewer, cesspools and cesspits being used, and as a rule I found them overflowing, unventilated, sometimes against the walls of dwellings, and but seldom emptied. This obnoxious sewage in so many places, standing for prolonged periods in leaky receptacles in the immediate vicinity of dwellings, must be a source of great danger to the inhabitants of the district. In the report of the Medical Officer for 1892 I find that he begins thus:—"I cannot but express my regret at the slight progress made by your Authority in carrying out a drainage scheme for the town, and the supineness evinced in your refusing to adopt the Infectious Disease Notification Act, and this, in face of the increased prevalence of small-pox and a probable invasion of cholera in the ensuing spring or summer, I cannot but regard as a grave responsibility to incur." The W.C.'s that do exist in the poorer parts are unventilated and not provided with water for flushing purposes, and at the times of my visits I saw many that were acting as efficient ventilators to the main sewers and drains, and considering the defective ventilation of the various sewers and their branches, and, consequently, the high pressure obtaining therein, this must of necessity be the case.

DISPOSAL OF REFUSE, SLOP AND SURFACE WATER.—The Authority provide for the disposal of house refuse, and scavenging seems to be fairly well carried out, but much attention is yet required in the small lanes and areas of Old Castle, North Street, New Castle Hill, the Gutter, &c. The slop and surface water is disposed of by the various drains, and eventually it reaches the Ogwr.

BYE-LAWS AND REGULATIONS.—Bye-Laws and Regulations exist with respect to

- (1) New streets and buildings.
- (2) Cleansing of footways and pavements; prevention of nuisances arising from snow, filth, dust, ashes, and rubbish; prevention of the keeping of animals on any premises so as to be injurious to health.

(3) Common lodging-houses.

(4) Slaughter-houses.

And generally they are said to be enforced. On the 30th March, when I visited the place, there were three new houses being built in North Street, whereas no proper plans had been submitted to, or approved of, by the Authority. No regulations have been adopted under the Dairies, Cowsheds, and Milkshops Order. In view of the increasing importance of milk supplies as carriers of disease, it is essential that all available means should be used to exercise supervision over it.

ADOPTIVE ACTS.—The Infectious Disease (Notification) Act has not been finally adopted, but the necessary 28 days' notice of intention to adopt has been given, and the Act will soon be in force.

COMMON LODGING-HOUSES.—There are several of these houses, especially in Old Castle, and with a few exceptions they are dilapidated, dark, and dirty. They are under police supervision, and all licensed.

HOUSE ACCOMMODATION.—The house accommodation is said to be sufficient for the district. The smaller house property generally is in a wretched condition. Many of the cottages are thatched, excessively damp, confined, dilapidated, dirty, and ill-provided with privies. There are many houses without through ventilation, but in several instances improvements have been made by the Authority's order, and some years ago several rows of individual houses were closed as unfit for habitation. There are many others at Nolton Street, Nolton Street Passage, and Chapel Street (Old Castle) that require to be similarly dealt with. All of these have been reported by Dr. Randall as unfit for human habitation. Overcrowding is frequently observed.

THE PAVING OF STREETS, &c.—Most of the public streets are in a very good condition as to pavements, channels, &c. They are kept in good order and repair. Some of the smaller streets, house-yards and areas about dwellings are neglected.

RIVER POLLUTION.—The receptacle for the sewage discharged is the bed of the Ogwr, and until a proper system of sewerage and drainage is carried out this must inevitably be the case. The Bridgend Urban Authority, however, are not solely responsible for the pollution of the stream, for it and its branches receive, directly or indirectly, most of the sewage of the populous mining districts of the valleys above.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority are about to adopt the Infectious Disease (Notification) Act, but up to the present the precautionary measures adopted, *i.e.*, the gratuitous supply of disinfectants and the disinfection of houses, &c., have been altogether inadequate. No hospital is provided, neither is there a disinfecting apparatus. It is, however, gratifying to find that the Authority, acting upon the advice of their Medical Officer of Health, are about to erect a permanent Isolation Hospital for the treatment of cases of infectious disease. In its present condition the Board possess no means whereby to combat such diseases.

Recently there were several cases of small-pox treated under much difficulty in the Union Workhouse, and, notwithstanding the fact that all possible precautionary measures were taken to isolate the first case (imported by a tramp from a common lodging-house in a neighbouring town) the disease did spread to one aged inmate, and proved fatal.

I should have mentioned that the Authority have from time to time considered various schemes for the sewerage and draining of the town—one contemplating the construction of a culvert for carrying the sewage to the sea; another its application to land at some intermediate spot. But since all the sewage of the Llynvi, Garw, and Ogmore Valleys passes into the river above Bridgend, they naturally feel indisposed to spend a large sum of money on the disposal of their own sewage, but now that the various Authorities of the Valleys are actively engaged in constructing means for similar purposes it is to be hoped that the Bridgend Authority will again give the matter their further consideration.

The conditions to which the attention of the Authority is specially needed are the following:—

- (1) The provision of a proper system of sewerage and drainage.
- (2) The better ventilation of sewers, drains, privies, and cesspools.
- (3) The closure or repair of houses that, from dilapidation, want of ventilation, want of proper privy accommodation, and the unhealthy conditions of their surroundings, are unfit for habitation.
- (4) The provision for the more effectual flushing of the existing sewers and drains.
- (5) The better regulation of common lodging-houses and of dairies and cow-sheds.
- (6) The strict enforcement of bye-laws relating to new houses.
- (7) The provision of means for isolating the first cases of infectious diseases.
- (8) The provision of proper flushing tanks for the existing water-closets.

1st April, 1893.

BRITON FERRY.

	1881	1891
Population ..	6,061	5,778
Area in Acres ..		1,381

The small town of Briton Ferry, two miles south of Neath, is situated on the Swansea Bay, close to the estuary of the Nedd. The district, which is most beautiful, was once much celebrated for the attractive charms of its scenery, but which are now somewhat impaired by its iron, steel, and tin-plate works. The climate is said to be very mild; the situation is completely sheltered from the north and east, but open to the south, facing the Swansea Bay and Bristol Channel. The district is of but a limited area, covering only 1,381 acres, and surrounded on the north, east and west by the Neath Rural District. It was constituted into an Urban District in 1864.

It has a population of over 6,000, which consists essentially of the industrial classes, the various industries above enumerated affording employment. It has a railway communication, and main high roads east and west. It boasts of a small but convenient dock, capable of floating vessels of 1,500 to 2,000 tons. The imports are mostly iron ore (from Spain) and timber (from Russia and America), whilst the export is coal. The town generally is built on alluvial deposit, and in some parts is eight to ten feet below high water level. Naturally the soil is damp and boggy. The district generally is undulating and hilly, and its natural drainage towards the estuary of the Nedd. In the higher and hilly parts, the principal geological formation is the Pennant sandstone, whilst in the lower parts alluvium is found.

HOUSE ACCOMMODATION.—The houses are well built, in fairly good repair, generally provided with spouting, but barely sufficient for the increasing demand of the district. Nearly all are supplied with water-closets, many of which, however, are without proper flushing apparatus and out of repair. Throughout the town there are several back-to-back houses, such as at The Square, Regent Street West, Slaughter-house Row, and Silon Road. They are all companies' houses, and mostly together in one corner of the town. As there is no impediment to the free circulation of air in their environments, they cannot be considered as unfit for habitation. The house drains are mostly ventilated, trapped, and disconnected from the houses. There are no common lodging-houses, and houses let in lodgings are said not to be overcrowded.

The w.c.'s, courts, alleys and areas about dwellings are thoroughly lime-washed once yearly. The lime is supplied by the Authority. It is a very excellent practice, and certainly conducive of better health. There are no insanitary areas as described in Part I. of the Housing of the Working Classes Act.

WATER SUPPLY.—The water supply is the same as that of the Borough of Neath, and impounded in a reservoir some short distance above that town. On

analysis it is said to yield good results, and is generally supplied on the constant service principle, but lately on account of the general scarcity of water caused by this long-continued dry weather, the supply has been intermittent, and only for a few hours daily.

Previously there were several wells here and there in the town; they are now all closed as being dangerous and liable to pollution. There are, however, several springs on the neighbouring hills, all yielding excellent water, which is now in great demand and found most useful.

Briton Ferry possesses a water supply of its own, impounded in a reservoir at a considerable elevation, and not far distant. This supply has been condemned as unfit for drinking purposes because of its liability to become polluted above the intake. It seems a pity that when other water is scarce it is not made use of for flushing purposes.

SEA WATER is used for watering the streets; the idea is an excellent one, for not only does salt water keep down the dust, but it is a powerful disinfectant and a strong germicide.

REFUSE DISPOSAL.—In the first instance street and house refuse is deposited in various fixed iron receptacles conveniently placed throughout the district; these are emptied twice weekly, and their contents disposed of at a considerable distance away, with the refuse from the various works. The scavenging is undertaken by the Authority, and well performed.

SEWERAGE AND DISPOSAL OF SEWAGE.—There is a regular system of sewerage and drainage, laid in 1868. The whole of the town is pipe-sewered and drained, and all the houses are said to be properly connected. The gradient of the main sewer is about 1 in 1,400, and that of its tributaries 1 in 800, so that flushing becomes an important element in their efficient working. The out-fall of the main sewer is at dead low water in the middle of the river, right at its outlet into the channel, far away from all dwellings. It is provided with side flaps and pen-stocks. The means made use of and provided for flushing purposes are two-fold, viz., the natural by the tidal water, and the artificial by self-acting tanks. As a rule the sewers and their branches pass under the various back lanes, and are ventilated by open man-holes. For the artificial flushing of sewers, there are provided thirty-five automatic flushing tanks (Adams) of various capacities, placed at convenient elevated points and other points along the outskirts of the district, and emptying at certain intervals according to their capacities, &c.

Connected with this system there is also one main large culvert running the length of the district, but skirting the town, for storm and surface water only, but generally, slop and surface water enter the main sewers.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—This authority have not adopted the Infectious Diseases (Notification) Act, or the Infectious Diseases (Prevention) Act, and there are no means whatever provided for the isolation of cases of dangerous infectious diseases, such as cholera, &c., and should they gain entrance into the district there are no means provided to resist their ravages. It is quite true that the district has for some time been wonderfully free from epidemic diseases, but this is no criterion that this freedom will be extended into the future. During an interview with the Vice-Chairman of the Local Board, I endeavoured to explain the benefit to be derived by the adoption of the Notification and other Public Health Acts, and I have reason to believe that the authority will soon adopt the same.

Besides, there is no apparatus provided for the efficient disinfection of articles of bedding and clothing. Disinfection of such articles is impossible at home, and without such an apparatus the efforts of the Medical Officer of Health and the Sanitary Inspector, to limit the spread of infectious disease, will necessarily, to a large extent, be defeated.

The Medical Officer of Health has drawn the attention of the Authority to the practical impossibility of effectually isolating such cases at their own houses, especially when relatives and friends are allowed to go in and out as they please, and who, in many cases, it must be said, are totally ignorant of the dangers attendant

upon such cases, and are undoubtedly often the means of spreading them broadcast. Besides, these people are of opinion that illness in whatever shape or form is a visitation, and never a personal matter. It is much to be regretted that the various provisions of the Public Health Acts, against the spread of infectious diseases, are not more often put into operation here and elsewhere.

PRECAUTIONS AGAINST CHOLERA.—To quote from the Annual Report of the Medical Officer of Health for 1893:—"Precautions were taken during the summer with regard to the threatening of cholera, and notices were posted throughout the district giving the necessary advice and warning to the public. A number of cases of diarrhoea occurred about the time, but were mostly not of a severe nature. I was not called to visit any vessel arriving in our port during the year."

The Port of Briton Ferry is under the jurisdiction of the Swansea Port Sanitary Authority, and the Medical Officer of Health (Dr. Pegge), acts as Assistant Medical Officer of Health for the Port of Briton Ferry.

BYE-LAWS AND REGULATIONS.—Bye-laws on the lines of the Model Bye-laws of the Local Government Board have been drawn out and adopted, and are now being published but not ready. Regulations have also been adopted under the Dairies, Cowsheds, and Milkshops Order of 1885.

The Bakehouses and Cowsheds of the District are said to be frequently inspected, and found clean and in a sanitary condition.

The death-rate for 1892 was 15·5 per thousand inhabitants as compared with 21·5 for 1891.

The attention of the Authority should be called to the following matters:—

- (1) The desirability of adopting the Infectious Diseases (Notification) Act, the Infectious Diseases (Prevention) Act, and other Public Health Acts.
- (2) The provision of means for the isolation of cases of infectious diseases, and of disinfecting articles of bedding and clothing.
- (3) The desirability of making use of the water of their own reservoir for flushing purposes.
- (4) The provision of suitable flushing apparatus for the various w.c.'s in the district that are at present without such conveniences.

11th May, 1893.

CAERPHILLY.

		1893.
Population	.. ..	14,000 (estimated)
Area in Acres	.. ..	17,000

This district, comprising parts of the two parishes, Eglwysilan and Llanfabon, was up to recently included in the Pontypridd Rural District. It is situated towards the south-east of the county, its boundaries abutting on the Cardiff and Newport Rural Sanitary Districts towards the south and east; on the Merthyr Rural and Mountain Ash Urban Districts, towards the north; and on the Pontypridd Urban District, towards the west.

It covers an area of 17,000 acres, and has a rateable value of £46,738. The northernmost, and the most extensive, area stands upon the South Wales Coalfield. The surface is composed of Pennant sandstone rock, whilst the soil is peat, with a sub-soil of gravel and alluvium (especially in the valleys). Extending from the Rhymney to the Taff, south of Caerphilly and at Taff's Well, the millstone grit, a narrow belt of which surrounds the South Wales Coal Basin, crops out; but more southwards the district consists geologically of mountain limestone. Parts of the Taff and Rhymney Valleys are included within the area, together with the valley of Aber, north of Caerphilly.

The population, which approximately numbers some 14,000, is engaged almost exclusively in the coal industry, and aggregated in towns, villages, and hamlets, situated chiefly along the above-named valleys. The important centres are Caerphilly, Llanbradach, Ystrad-Mynach, Nelson, Aber, Groeswen, together with

Nantgarw, Glanllyn, Taff's Well, and Tongwynlais (in the Taff's valley). There is a railway communication between these centres and Cardiff, Merthyr, Pontypridd, Newport, and Swansea.

CAERPHILLY.

The ancient town of Caerphilly is built partly on the slope and partly at the foot of an extensive range of hills facing the Rhymney Valley, at a point a little below where it opens out on its approach to the sea. Nantcledyr bisects it, and on the outskirts of the town receives most of its sewage, to be deposited into the River Rhymney some short distance down the valley. It consists of one main street (Cardiff Road), on each side of which, in the higher parts, are houses with fairly extensive gardens at the back. Towards the foot of the hill, and middle of the town, are several cross streets, and the dwellings are more clustered and irregular. The elevation of the station bridge is about 350 feet above ordnance data, whereas the elevation of the sewer outfall is 241 feet, so that there is a considerable fall for this short distance, but between the latter point and the Rhymney River it is much less.

HOUSE ACCOMMODATION.—The house accommodation is said to be sufficient, but nevertheless there is overcrowding. There are several back-to-back houses, many without through ventilation, and some cellar dwellings. The absence of spouting is general, and dampness a common occurrence. Several of the dwellings, which in their present condition of dampness, dilapidation, want of through ventilation, headroom, spouting, and defective flooring, are unfit for habitation.

In many instances there is need for a better privy accommodation and trapped gullies, for occasionally rough untrapped gullies are situated close by the doors and windows of houses. In several localities the state of the back passages, lanes, areas about dwellings, and buildings, is bad, and their paving and channelling urgently needed.

There is but one common lodging-house in the town, which is kept exceedingly clean, but when full is certainly overcrowded and out of repair.

SLAUGHTER-HOUSES.—There are several slaughter-houses, the arrangements of which, as to water supply, drainage, disposal of offal, and lime-washing are defective. They require much care and frequent inspection.

REFUSE DISPOSAL.—The removal of ashes and house refuse is provided for by the Authority, and it is said that they are removed daily. However, there is much room for improvement, as evidenced by much house refuse collected and strewn here and there indiscriminately about corners and back lanes.

WATER SUPPLY.—In his last Annual Report the Medical Officer of Health writes thus:—"There is, however, serious need to have a more plentiful supply of water brought to the place as there is a good deal of building going on."

The present supply is obtained from two underground springs, impounded in two properly-constructed reservoirs at a considerable elevation and away from sources of pollution, conducted by means of cast-iron pipes, and distributed in the various houses by taps.

On the 15th July last the yield of these was gauged by Mr. Daniel, the present Surveyor, and found to be about 18,000 gallons per 24 hours, *i.e.*, about nine gallons per head per day. It is said that the springs were not affected during the recent drought.

At Waengledyr Ucha (near Groeswen) there is a borehole which yields approximately 12,000 gallons per 24 hours, and I am informed that this water gives satisfactory results on analysis, and that there are no engineering difficulties to prevent the present supply being augmented from this source.

SEWERAGE.—DISPOSAL OF SEWAGE, ETC.—Some years ago a main-pipe sewer was laid. This serves the greater part of the town and empties direct into Nantcledyr in a field just below the town. This much-polluted brook joins the Rhymney River, near Bedwas. The greater number of the houses have closets connected with the public sewer, but as no flushing apparatus is provided their condition is often very unsatisfactory. The sewer is inadequately ventilated by a few ventilators

here and there. Storm and surface water finds its way to the sewers by means of the roadside gullies provided.

Many of the houses are provided with the old-fashioned privy pits, which are often neglected and not emptied, and when they are emptied their contents are buried in the soil of the gardens, which method is a violation of all sanitary principles in the disposal of sewage in thickly-populated localities.

NELSON.

The mining village of Nelson is situated some six miles north-west of Caerphilly, in the extreme north of the district, in the parish of Llanfabon, and has a population (mostly coal miners) of some 2,000, that of the whole parish being about 3,500. It consists of several streets, all converging to the same point near the Royal Oak.

It was once in a flourishing condition, but now presents a destitute appearance with evidence of former neglect. It has a railway communication with all the important centres in the County. The soil is alluvial in character, and a short distance from the village there is much boggy land.

House accommodation is said to be fairly sufficient. The houses generally are old but fairly good; some, however, are defective as regards proper privy accommodation, and there are a few which, in their present condition of structural defects, want of light, and through ventilation, are unfit for habitation.

There is no common lodging-house, but the practice of taking in lodgers is general, and requires to be regulated.

There are a couple of slaughter-houses, defective as regards flooring, limewashing, and provisions for the reception of garbage and offal.

There is no system of sewerage; slops find their way into the Caiach Brook, close by, and this in turn empties itself into a tributary of the Taff at Quaker's Yard.

EXCREMENT DISPOSAL is by means of ash-closets and cesspit privies, which are unventilated, seldom emptied, and often overflowing (such is notably the case at the back of Penuel Street). There are also a very few hand-flushed water-closets, and they also empty their contents into the same drains.

The scavenging of refuse is let on contract, and appears to have been neglected.

THE WATER SUPPLY is surface collected, impounded in a reservoir on the hillside some distance away, carried in pipes and distributed by means of suitable taps, and is said at present to be plentiful. During the recent drought it was deficient. The yield, as recently estimated by Mr. Daniel, is about 20,000 gallons per 24 hours.

ABER AND SURROUNDINGS.

The Medical Officer of Health in his last Annual Report remarks:—"This village is still very free from sickness, and, although destined to be a rising and flourishing place, is now in its infancy."

A short distance above Aber a new pit is being sunk, and several scores of men are employed. There is already a row of wooden huts put up, and some sixty or more houses about to be built, so that the place promises to become an important mining village.

Although yet small and in its infancy, now is the most opportune time to care for and nurse it, for it is well-known that mining villages generally spring up so rapidly that their growth is often neglected. It is, therefore, of the greatest importance that the Bye-Laws relating to new streets, buildings, privies, water supply, &c., should be rigidly enforced.

The soil is in many parts boggy, and the houses, unless very carefully constructed, will be liable to dampness and its attendant evils.

There is abundance of available water in the neighbourhood.

LLANBRADACH.

This is another coal mining village with about 1,000 population. It is situated in the valley of the Rhymney (about $3\frac{1}{2}$ miles north of Caerphilly) at the foot of an

extensive range of hills, on the slope of which the coal pit has been sunk. It consists mainly of one long street extending along the valley, the part below the Railway Station being called Pwllpant. All the houses are modern and recently built, and many more are in course of construction.

There is no proper sewerage; slops find their way by means of a few drains and the channels into a neighbouring brook. In the case of a row of houses at Pwllpant hand-flushed closets have been supplied. These empty their contents into a sewer in the field behind, at the outfall of which, in the vicinity of the end houses, there is a large accumulation of semi-liquid stagnant filth, which is a nuisance and the source of danger.

The water supply of Llanbradach is from a spring on the adjoining hill, away from all sources of pollution. It has to be carried for a long distance, but could be piped into the village without much difficulty. It is said to be of excellent quality. There is abundance of water for washing purposes pumped from the pit, and it is so used.

At Pwllpant water is less plentiful, and derived from a spring on the slope of the field above.

The removal of house refuse should receive more attention.

There is much building going on, and the remarks made in connection with Aber apply equally in this case.

NANTGARW, GLANLLYN, TAFF'S WELL, AND TONGWYNLAIS.

The villages of Nantgarw, Glanllyn, Taff's Well, and Tongwynlais are situated in the valley and on the east bank of the river Taff, Tongwynlais being at a point just below where the valley opens out on its approach to the sea. Geologically the sub-soil consists of alluvium for some depth near the river bank.

At Taff's Well the millstone grit and limestone appears, whilst Tongwynlais is partly built on limestone and partly on the old red sandstone. The part of Tongwynlais north of the brook separating the parishes of Eglwysilan and Whitchurch belongs to the Caerphilly District, whilst that south of the brook belongs to the Cardiff Rural District. The population is mostly of the artizan class, colliers, tin-plate workers, &c. At one time these small villages were in a most flourishing condition, Nantgarw being celebrated for its potteries, and Taff's Well and Tongwynlais for their chain, anchor, and cable works. And it seems as if there was a future in store for them in another direction.

NANTGARW.

Nantgarw, with a population of some 400, is situated at the foot of a range of hills on the east bank of the Taff River. It consists mainly of one street, together with a cluster of irregularly-built houses between the main street and the canal behind.

The houses are old, some dilapidated and out of repair, and there are some without through ventilation. There are no new buildings now being erected.

EXCREMENT DISPOSAL is partly by means of cesspit privies and partly by privy drains. The contents of these cesspit privies when emptied are deposited in the gardens, and as much of the excrement as gets removed from the vicinity of dwellings finds its way to the river by means of privy drains. Slop and surface water find their way in the same direction by means of drains and other channels discharging at various points into the same receptacle. The drainage and privy accommodation generally are defective and insufficient.

THE REMOVAL OF HOUSE REFUSE seems to have been neglected as evidenced by various heaps here and there.

THE WATER SUPPLY is obtained from several springs in the neighbourhood, and has to be carried some distance. It is much complained of by the inhabitants as being deficient and inconvenient. There is, however, abundance of water available some short distance above the village.

GLANLLYN.

Glanllyn (which is almost continuous with Taft's Well) consists mainly of one row of houses, with their gardens abutting on the river's bank. The closets in many instances are at the ends of the gardens and discharge direct into the river. Most of the house refuse also is thrown into the ill-fated Taff.

THE WATER SUPPLY is obtained by means of a pump from a deep well sunk in one of the gardens. Whether the water is liable to be polluted or not is uncertain, but it has been analysed on several occasions and with satisfactory results.

TAFF'S WELL.

Taff's Well is a short distance lower down. This village consists of one main street facing the river, and between the main street and the river there are comparatively few houses. On the other side are several cross streets at right angles with the main street. There is no proper system of sewerage; slops and surface water find their way to the river by drains from the backs of the various rows of houses and from street gullies.

EXCREMENT DISPOSAL is by means of cesspit privies, usually situated in the gardens or back yards. Most of the house refuse is also thrown into the river.

THE WATER SUPPLY is derived from several deep wells situated in the gardens and often close to the houses. According to the testimony of the inhabitants this supply is generally plentiful, and they all agree that the supply was appreciably diminished during the operations preparatory to laying the pipes of the "conjoint main sewerage scheme." This shows conclusively that it is derived not from the river, but from an underground current from the adjoining hill, besides, when the river is almost dry, as has frequently of late been the case, these sources did not fail.

Having regard to the nature of the soil, and the presence of cesspits and drains in the vicinity of many of the wells, it seems probable that pollution can take place; besides, it is quite possible that pollution does take place, and that there will be no evidence that such is the case until contaminated with the germs of some infectious disease spread by water.

TONGWYNLAIS.

As I have mentioned above, the village of Tongwynlais is under the jurisdiction of two Sanitary Authorities. The greater portion of it, north of the brook, belongs to the Caerphilly district. It is situated on a considerable elevation on the east bank of the Taff River and the Glamorganshire Canal.

There are many houses in this part of the village that are very dilapidated and out of repair; several also without through ventilation. There is no proper sewerage system; slops find their way by means of drains and other channels into the adjoining canal, brook, and river.

EXCREMENT DISPOSAL is by means of cesspit privies, which at the time of my visit showed evidence of neglect. It does not seem that any effectual method is adopted for the removal of house refuse and ashes.

This part of the village is badly supplied with water. Most of the inhabitants get their water from two sources, viz., from a tap conveniently placed in the main street, and also from a pipe at the back of Mill Road. This latter supply is obtained gratuitously from a deep spring on the hillside, well away from any pollution, and which source, I am informed, is never known to fail. It is to be noted that both these supplies are in the Parish of Whitchurch, in the Cardiff Rural District.

ADOPTIVE ACTS.—I learn that this recently-constituted Board are about to adopt the "Infectious Disease (Notification) Act," which, I feel confident, is a step towards progress. I would also suggest for the consideration of the Authority the adoption of the "Infectious Disease (Prevention) Act" and the "Public Health Acts Amendment Act, 1890." The former it would be wise, on account of the extended powers it confers, to adopt in its entirety, and Part III. of the latter is likely to be of great use to the district.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—There are no means provided for the isolation of the first cases of infectious diseases, and in a scattered urban district such as this it is difficult to know how best to proceed in this matter, but it is to be feared that if an epidemic of an infectious nature, such as of cholera, broke out the Authority would find itself at a loss to know how to combat it. There is also no disinfecting apparatus available.

Amongst other matters I would suggest for the consideration of the Authority the following as deserving of their attention:—

- (1) The adoption of the various Acts (mentioned above) relating to the Public Health.
- (2) The provision of means for the disposal of house refuse, and the better and more effectual scavenging of the district generally.
- (3) The strict enforcement of bye-laws and regulations (when framed) relating to new buildings, streets, privies, water supplies, common lodging-houses, and slaughter-houses.
- (4) The better sewerage and drainage of the several localities mentioned.
- (5) The more plentiful supply of water in the localities mentioned.

I am aware that the Board has only recently been constituted, and that there is a vast amount of work to be done before the district can be brought into anything like a sanitary condition, that these various improvements cannot be expected at once, and that the expenditure will be great, but at the same time it is clearly my duty to mention those matters which, in my opinion, call for the consideration and attention of the Authority.

28th August, 1893.

COWBRIDGE.

	1891.	1892.
Population ..	1,360	1,250 (estimated).
Area in Acres ..	84	

The ancient borough and market town of Cowbridge is situated in the centre of an agricultural district. It was once enclosed within town walls. In 1887 the town was incorporated under the Municipal Acts, but until then the Bridgend and Cowbridge Rural Sanitary Authority exercised jurisdiction. The population is almost stationary, and about 1,300. The area is very limited, consisting of 84 acres. There are several schools in the borough, viz., the old well-known Grammar School, several private schools, and one elementary school. The town is built on alluvial soil over the lias and limestone formations, and is in somewhat of a hollow, and surrounded on all sides by hills, but at some distance away. It consists of one main street (High Street), about a mile in length. Along the street the houses are continuous, and with the exception of a few cross streets, and a few detached houses here and there, this constitutes the town.

The little river Thaw crosses the main street, not far from the middle of the town, dividing it into two parts, locally known as the West and East Villages.

The death-rate for the year 1892 was 23·6 per 1,000, and the year before it was still higher. This is very unusual, an exceedingly high death-rate for a town of such a size and description in the centre of an agricultural area.

THE WATER SUPPLY.—This supply is chiefly obtained by means of pumps from four public wells, one in the West Village, one in the East Village, one by the Brewery, and another by the Town Hall. Some of the inhabitants drink the rain water, and others resort to the river water. The water obtained from the Town Hall pump is piped from a well, called "Silver Well," on the hillside about half a mile away, and is not liable to be polluted, and is considered good. All the other wells, on account of the nature of their immediate surroundings, such as overflowing cesspools and privies, dilapidated untrapped drains and surface channels, are liable to pollution at any time. The East Village well is in the immediate vicinity of cesspools and stables, and the inhabitants declare that the water is most offensive to taste and smell. Doubtless the water of all the wells, except the Town

Hall Pump Well, is most dangerous, besides being very deficient in the summer months.

EXCREMENT REMOVAL.—There are but a few water-closets in the place. I only saw one that was properly flushed. The privies generally consist of mere holes dug in the soil. These empty their contents into cesspools of the most objectionable kind, imperfectly built and imperfectly covered over, thus admitting rain and surface water. These cesspools are for the most part bottomless, made large and deep, with a view to the soaking of their contents. They are often close by and even against the walls of houses, and one I noticed was inside a stable. They are but seldom ventilated. In two instances there are most objectionable and filthy cesspools within a few feet of slaughter-houses. They are very seldom emptied, and when emptied the Medical Officer tells me that the results produced are often serious, giving rise to cases of diphtheria, typhoid, &c. From the nature, construction, position, and the way in which they are kept, they must, of necessity, pollute both the atmosphere and the water, probably also articles of food. In fact, there is no provision for the removal of excrement at Cowbridge, and the nuisances arising from cesspools, manure heaps and accumulations of filth from slaughter-houses, pigstyes, &c., are very numerous and most objectionable. There are a few hopper hand-flushed closets situated mainly in the vicinity of the town sewer (to be presently described); these act as ventilators to the sewer, and foul gases gain admittance into the dwellings, especially when there is scarcity of water, *e.g.*, in the house of one Phillips, at the end of Verity Court, there is one of these hand-flushed closets close by the kitchen window, in a small, confined, unpaved, and damp backyard. It drains into the town sewer under and immediately beneath the hearth. The smell therefrom is unbearable in dry weather, and the inhabitants of this house are always complaining of sore throat and diarrhoea. This is unquestionably due to the fact that the closet acts as a ventilator to the sewer. This is but one instance of other similar ones in the locality. There is one sewer (the town sewer) along the back of the houses north of High Street in the West Village. Into this sewer about 16 houses are most imperfectly drained, the closets generally acting as ventilators. This sewer discharges into the river at a point about a hundred yards from the centre of the town, and in the summer the offensiveness produced is much complained of, not only by those who live near the spot, but also by the inhabitants of Llanblethian, in the rural district, a short distance down the brook. Some of the inhabitants of this village even drink the polluted water. Such other sewers as do exist are simply stone drains, most primitive in structure, emptying into cesspools or into the river direct. The old ditch from behind the town is also a source of a great nuisance.

PROVISIONS FOR THE REMOVAL OF SLOP AND SURFACE WATER.—The means at the disposal of the Authority for removal of slop and surface water are open channels of a dilapidated nature along each side of the main street; these are fed by badly constructed and often untrapped drains passing underneath many of the houses, and, indeed, the slop water is thrown anywhere about the premises.

HOUSE ACCOMMODATION.—The smaller house property is generally of a wretched description all through the town. At Llewellyn's Row in the main street of the west village, though now much improved, the houses are dilapidated, below the level of the street, ill-ventilated, and damp. Up to recently diphtheria was always prevalent in these houses. The houses in the various cross streets, such as Verity Court, Taff Street, Church Street, and Wesleyan Court, are much worse. At Verity Court there are three houses very damp, dark, dirty, and ill-ventilated. A death from diphtheria occurred in one of these houses some months ago, but the Medical Officer of Health was never informed of it. "The Infectious Diseases (Notification) Act" not being in force.

COMMON LODGING-HOUSES.—There are four of these lodging-houses in the town. They all are registered and fairly clean, but in the matter of privy accommodation are badly provided. At the time of my visit there was overcrowding and want of separation of the sexes, in one instance four married couples occupying one room. The chimney was also blocked and ventilation defective.

SLAUGHTER-HOUSES.—There are several in the town, but they are neither registered nor licensed, and all most inadequate for the purpose—they are faulty in position, structure, and management. In one instance, a few feet from the door, there is a huge overflowing cesspool, resting on this a filthy pig-stye, close by is a manure heap; also a stable under the same roof—the partition separating the two compartments does not reach the roof. In another instance, in the adjoining badly-paved yard, and within a few feet of the door, there is found a pig-stye, a privy, and cesspool, whilst along the other side of the building flows the polluted stream.

SANITARY ADMINISTRATION.—The Medical Officer of Health is not consulted by the Authority, and seldom attends their meetings—in fact, he is encouraged not to attend. When his Reports are presented, no notice whatever is taken of them, and, notwithstanding his frequent solicitations, very little has been done to ameliorate the evil and dangerous conditions existing in the town. He has reported in strong terms, and at frequent intervals, on the condition and wants of the town generally.

The Authority has not adopted “The Infectious Disease (Notification) Act,” and now that the law has provided means wherewith this information can be acquired, medical practitioners cannot be expected to furnish the information gratuitously.

The Authority possess no means of isolating infectious disease, nor have they any disinfecting apparatus, and should the place happen to be invaded by an epidemic of cholera, small pox, &c., I consider its position a most defenceless one—there are no means whatever to combat such a disease, but on the contrary there is everything ready for its propagation, viz., the water supply is polluted and deficient, the soil soaked with excremental filth, and the atmosphere with dangerous emanations from the same source.

The “River Pollution Prevention Act, 1876,” the “Infectious Disease (Notification) Act, 1889,” and the “Infectious Disease (Prevention) Act, 1890,” are dead letters, and the latter not adopted. The bye-laws are utterly ignored.

I have described briefly the sanitary condition and administration of the Borough of Cowbridge, and my inspection allows me to confirm in each instance the various statements set forth in the Report of the Medical Officer of Health.

The conditions to which attention is specially needed are:—

- (1) The dangerous and deficient water, and the necessity of securing a wholesome and constant supply.
- (2) The desirability of having a proper system for the disposal of sewage, and of slop and surface water.
- (3) The occupation of houses that for their position, dampness, dilapidation, and the condition of their surroundings are unfit for habitation.
- (4) The sodden condition of yards about dwelling-houses.
- (5) The prevalence of excremental nuisances arising from privy cesspools, from untrapped, unventilated drains, and water-closets.
- (6) The further regulation of the existing slaughter-houses, or, better still, the provision of a new public slaughter-house, properly constructed, registered, and managed.
- (7) The more frequent and careful inspection of lodging-houses and a better privy accommodation.
- (8) The better keeping of animals, more especially of pigs.
- (9) The provision of means for isolating the early cases of epidemic or infectious disease.
- (10) The adoption of various Acts relating to public health, such as:—
 - (a) “The Infectious Disease (Notification) Act, 1889.”
 - (b) “The Infectious Disease (Prevention) Act, 1890.”
- (11) The necessity of further provision for more frequent inspection for sanitary purposes of the district.
- (12) The enforcement of the existing bye-laws.

20th February, 1893.

GARW AND OGMORE.

	1881.	1891.	1893.	
Population ..	6,893	12,000	13,000	(estimated).
Area in acres ..		17,926.		

This district was formed in September, 1887, being prior to that date part of the Bridgend and Cowbridge Rural Sanitary District. It lies to the north of Bridgend, and covers an extensive area of 17,926 acres, and, according to the census of 1891, had a population of 12,000, now estimated at 13,000. The district comprises the three parishes of Bettws, Llandyfodwg, and Llangeinor, and includes three main valleys, the Garw, Ogmore, and Ogmore Fach, giving passage respectively to three streams having the same names. The several valleys are separated by high hills of Pennant sandstone. There are also several small cross valleys here and there—unimportant because not thickly populated. The main valleys converge towards a junction to the south. The several streams unite—first the Ogmore and Ogmore Fach at Blackmill, and lower down at Brynmenyn—this joins the Garw stream (some few miles north of Bridgend) to form the combined Ogwr, on which the important and populous towns of Tondy, Aberkenfig, and Bridgend, and the important institution, the Glamorgan County Asylum, stand. The Garw and Ogmore Valleys, running north and south, are deep and narrow and about four miles in length, whilst the Ogmore Fach extending from Blackmill at first to the east, but afterwards to the north, is more irregular, broader and much shallower. At its top is the important mining town of Gilfach-Goch, a portion of which, east of the river, is in the Pontypridd Rural District. Each valley possesses a railway communication. The system of main and railroads are much on the same plan. At Blackmill, the Ogmore and Gilfach Railways join, and at Tondy, more to the south, there is another junction for the Garw Valley and Maesteg Branches, and another for both these with the main Great Western line at Bridgend, three miles further south again. The population of the important centres is almost exclusively an industrial one, coal mining affording employment.

The houses are of recent construction, built in rows and terraces on the steep banks, where the valleys are deep and narrow as at Blaengarw, Pontycymmer, and Pontyrhyl. The natural drainage is into the various streams. The Pennant sandstone is the geological formation, overlaid when the houses are built by alluvium near the river level, and by broken sandstone (Garw Valley), and occasionally by peat (Nantymoel and Gilfach Goch), where the soil is damp and boggy.

The principal centres are as follows:—

GARW VALLEY.—Blaengarw at the summit, about nine miles from Bridgend, population 2,500; Pontycymmer and Pontyrhyl, one to two miles below, combined population 3,000. Still lower down are the villages of Bettws, with a population of some 150; Llangeinor, the old village of the valley has a population of about 100, and a part of Brynmenyn has a population of about 100.

THE OGMORE VALLEY.—Nantymoel, near the top, about 9 miles above Bridgend, with Newtown, Blaenogwr and Aber just below; combined population 3,000. Tynewydd a mile lower, population 3,000.

OGMORE FACH VALLEY.—Gilfach Goch at the top, with a population of 800; Llandyfodwg, an old-fashioned country village three miles lower down, population, 100; Blackmill, at the junction of the Ogmore and Ogmore Fach streams, with a population of some 150.

The remainder of the population, some 200, is collected in smaller hamlets and scattered localities.

The towns named, with the exception of the villages Llandyfodwg and Bettws, are purely industrial, and most of the house property belong to the large companies whose coal mines afford employment.

HOUSE ACCOMMODATION, &c.—A large proportion of the houses in the district are modern (such as at Blaengarw, Nantymoel, and Gilfach), and built in the style of colliery houses generally in the county. The houses at Pontycymmer, Pontyrhyl,

Tynewydd, &c., are older and more dilapidated. Dampness is a very common occurrence, the houses being often built against the damp and unprotected hillsides, and occasionally imbedded; and from the nearness of the steep banks and plots of gardens at the rear, deficient ventilation of the lower rooms is frequently observed. Houses of this description are plentiful at Pontycymmer, and in their present condition unfit for habitation.

GARREG ROAD.—Privies out of order; plots of ground in front soaked with excrement and filled with all sorts of refuse; the back kitchens imbedded; no closets ventilated; the ground is so steep at the rear that when it rains nearly all the confined back yards are flooded, especially when the gullies are blocked, as is generally the case; the house drains in many instances are not connected with the main sewer laid by the Authority; dampness prevails; the pigstyes and hen-pens in the immediate vicinity are filthily kept, and certainly a nuisance dangerous to health.

CELLAR DWELLINGS.—Many of these cellar tenements facing the river, under the Oxford Street houses, are in their present condition most unhealthy.

THE RIVERSIDE HUTS.—Five in number, are, from their position, dilapidation, dampness, and want of through ventilation, dangerous to the health of the inmates, and on enquiry I found that rheumatism was much complained of.

TYNEWYDD (BACK OF HIGH STREET).—The cellar tenements of some of these double houses have no through ventilation, they are dark and generally overcrowded, but can easily be remedied.

The house accommodation is said to be insufficient throughout the district generally, more than one, and sometimes more than two families occupying the same house. The practice of taking in lodgers is universal in the district, and should be carefully regulated. No Bye-Laws have been made by the Sanitary Authority as to houses let in lodgings.

There are no common lodging-houses in the district.

WATER SUPPLY.—Above the summit of each of the larger valleys, waterworks, established by private companies, exist, and the mains are carried to each of the populous districts therein situated, *e.g.*, the Garw Waterworks supply Blaengarw and Pontycymmer; it is surface collected and not filtered. The Ogmere Waterworks supply Nantymoel, Aber, and Tynewydd. At Gylfach Goch a similar work has recently been accomplished by a private company, but it only supplies a part of the place (the part in the Garw and Ogmere Urban District).

This water is altogether surface collected, impounded in an open reservoir, and on analysis is found to be exceedingly soft, and, further, to have a solvent action on lead. According to the analysis of Mr. E. R. Mintz, F.C.S., a sample of water from one of the taps was found to contain 1/70th grain per gallon of dissolved lead. Even the smallest quantity of lead in drinking water is dangerous, and several cases of lead poisoning have been observed in that part of Gylfach supplied by this water, but no cases have been noticed amongst those of the inhabitants who use another supply, as is the case on the other side of the valley; besides, this water before distribution is found not to contain lead, so that it must therefore be dissolved out of the lead pipes used for its distribution. On enquiry I am told that each house does not receive its water direct from the main, but that several houses are supplied from one lead pipe common to a row or terrace; in other words, that a greater length and a larger surface of lead are exposed than would be necessary had the various houses been supplied direct from the main. I consider that the best process for preventing contamination in this instance is to prevent the contact of the water with lead. This can be done by using substitutes for the lead pipes, such as iron pipes, tin-lined, or glass-lined pipes; the latter are perfectly safe, and are not costly. I may state that I shall be very pleased to investigate the matter further.

The water supply of the smaller villages and hamlets of the district call for greater attention, *e.g.*:—

PONTYRHYL.—Supplied by good well water from the opposite hill, which, however, is deficient in dry weather.

BRYNMENYN has no supply of water, which is sadly wanted. I may mention that the Asylum main is within less than one mile from the place.

BLACKMILL derives its water from the Asylum main, which runs through the village.

LLANGEINOR is supplied by spouts from the hill behind. It is said to be good and sufficient.

LLANDYFODWG is badly provided with water. It is said to be bad in quality, and during the summer months there is none.

EXCREMENT AND REFUSE DISPOSAL.—Through the greater part of the district the system for dealing with the excrement is highly unsatisfactory, although a great deal has been done recently in this direction, and a new main sewer has been laid for draining the Ogmore Valley. At Blaengarw most of the houses are provided with water closets having flushing apparatus. At Pontycymmer, Tynewydd and Blackmill some of the houses are provided with water closets (most being simply hand flushed), but in addition there is a large number of the most objectionable cesspits, cesspools and utterly neglected pail closets in use. The emptying of these various receptacles is not undertaken by the Authority, and, consequently, not performed, but left to the tenants, and their only practicable plan is to bury the contents in the tiny plots of gardens, generally uncultivated, and often rising steeply from the backs of their houses, or descending steeply to those of their neighbours. The result of this arrangement is that the soil becomes sodden with excrement, and the back premises soon assume a filthy condition, constantly evolving noxious putrefactive gases which render the air surrounding the houses very unwholesome and injurious to health. Privies, even with properly constructed receptacles, and frequently emptied, cannot be said to be wholesome appliances for populous districts such as these are, and when the removal of their contents is neglected, they become most unwholesome and dangerous. At Pontycymmer, typhoid fever is said to be indigenous, and at Tynewydd also the same disease frequently makes its appearance, whilst the better-drained Blaengarw is said to be free. The Authority themselves undertake the removal of house refuse and ashes, and with great advantage.

It is satisfactory to find that the Authority are encouraging the erection of new closets which are automatically flushed, and are considering the whole question of excrement and refuse disposal with the object of completely abolishing cesspits, cesspools, and the pail closet systems. At the present moment, the sewage, or such of it as is removed from the neighbourhood of dwellings, finds its way into the streams. Slops and the other liquid refuse from piggeries, stables and slaughter houses also follow in the same direction. At Blaengarw there is a complete system of sewers provided, but the sewage is discharged direct into the stream. At Pontycymmer there is no system whatever, the sewerage is piecemeal, natural water courses and surface water drains being made use of for disposing of the sewage. The banks and sides of the stream are filthy, and covered with imperfectly removed sewage. At Pontyrhyl, Llangeinor, and Brynmenyn, cesspits and cesspools are made use of.

It is gratifying to find that the condition of the Ogmore Valley, as regards a system of sewerage and drainage, is rapidly assuming a very different appearance. The main sewer and its various subsidiary branches, extending from Nantymoel to about a mile below Tynewydd, have been completed and are ready to be connected with the various house drains. The Authority find great difficulty in persuading the various owners to connect with their mains; but it is to be greatly hoped that all the possible connections will be made in the course of a few months, and this will be an inestimable boon to the inhabitants. Regulations have been made by the Board as to the connection of private drains with their sewers (in pursuance of the Public Health Act, 1875). A footnote is added which reads thus:—"If you do not comply with this notice within the time specified (*i.e.*, 32 days) the Local Board will cause the necessary works to be carried out and charge you with the expense thereof, according to Section 23 of the Public Health Act."

It is proposed to dispose of the sewage on a plot of ground below Tynewydd, on the principle of intermittent filtration, and which promises to turn out satisfactorily.

The mode of the disposal of the sewage of that part of Gilfach-Goch within this district is by broad irrigation, over an extensive surface of land, well adapted for the purpose, and at some considerable distance above and from the stream. At the time of my visit most of the sewage, as a matter of fact, eventually reached the stream. This was through no fault of the Authority, but of the farmer who had undertaken the care and supervision of its proper distribution along his fields. With care and judgment the sewage can be disposed of and with benefit to the land, but without this care and supervision the system will turn out to be a complete failure.

A similar system for the disposal of the sewage of the Garw Valley is now under the consideration of the Board.

It ought to be mentioned that the Authority are doing all in their power, but in many instances the owners of property are very slow in doing their share. During the last six months the Authority have spent several thousands of pounds in private improvements. At Blaengarw, £600; Garreg Road, Pontcymmer, £800; Nantymoel, £900; and it is estimated that the Ogmere Sewerage Scheme will cost about £6,000.

It should also be mentioned that the Chairman of the Local Board has generously spent large sums on private improvements—paving, channelling, constructing sewers, &c.—in Oxford Street, High Street, and Meadow Street, &c., Pontcymmer, whereas such improvements ought to have been partly executed by the owners of the property.

With all these improvements, there yet remains a vast amount to be done in these rapidly-increasing and populous centres.

THE SLAUGHTER HOUSES.—During my various inspections I visited several slaughter-houses, and, with a few exceptions, it must be said that they are in a most disgraceful condition. In one instance, at Pontcymmer, a certain slaughter-house, used by two butchers, was in the following condition:—The floor most imperfectly flagged, with huge crevices, allowing soakage; no water supply; the walls dirty and never whitewashed, stinking offal allowed to accumulate on the premises. The adjoining portion for the keeping of animals before slaughtering was in a similar disgraceful, dirty condition.

In another slaughter-house, at Tynewydd (near the bridge), I noticed the following conditions:—Floor and roof dilapidated, foul smell, walls not whitewashed, offal and blood allowed to accumulate on premises, and when disposed of it was the custom to throw them bodily into the adjoining river.

They are all licensed, but there exist no bye-laws as to their proper regulation.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—The Authority are to be congratulated upon the fact that the Compulsory Notification of Infectious Disease Act has been in force in the district since 1890. No hospital accommodation is available for the isolation of the first cases of dangerous or infectious disease, nor is there any proper apparatus for the disinfection of bedding and clothing. Articles of bedding and clothing infected by puerperal patients and their attendants, and by other infectious cases, cannot be efficiently disinfected without such an apparatus. The Authority provides disinfectants gratuitously, but besides this, little is done, and I find that it was not customary to pretend to disinfect in the cases of puerperal septicaemia which has recently been so fatal in the district. It is to be hoped that the Authority will at once provide a building where the first cases of infectious fevers may be isolated, and where articles of bedding, clothing, &c., can be efficiently disinfected.

Should cholera happen to gain entry into these valleys, it is to be feared that their sanitary condition is such as to foster rather than resist its ravages.

BYE-LAWS AND REGULATIONS.—Bye-Laws and Regulations exist with respect to

- (1) The cleansing of footways and pavements.
- (2) The cleansing of earth-closets, privies, ashpits, and cesspools.
- (3) New streets and buildings.
- (4) Street sewers and sewer works.
- (5) The abatement of nuisances.
- (6) Dairies, cowsheds, and milkshops.

The condition of the roads throughout the district is very unsatisfactory, but it is now receiving every attention.

The conditions to which the Authority's attention is specially needed are the following:—

- (1) The provision of means for isolation and disinfection.
- (2) The more strict enforcement of existing Bye-Laws and Regulations.
- (3) The desirability of having the Sanitary Inspectors under the direct supervision of the Medical Officer of Health.
- (4) The prevalence of excremental nuisances arising in connection with cesspits, cesspools, and imperfectly trapped drains.
- (5) The disinfection of bedding, clothing, and rooms used by infectious cases and midwives.
- (6) The better regulation of slaughter-houses.
- (7) The provision of a scheme of sewerage for the Garw Valley.
- (8) The provision of water supply for Brynmenyn and Llandyfodwg.
- (9) The covering in and filtration of the Gilfach-Goch reservoir, together with the substitution of service pipes that are not chemically acted upon by the water.
- (10) The better management of the "broad irrigation" sewage farm at Gilfach.

17th April, 1893.

GLYNCORWG.

	1881.	1891.
Population.. .. .	1,280	3,800
Area in acres	10,220 ; or	
Cymmer has a population of about		500
Glyncorwg		1,200
Aber and Blaengwynfy		2,000

The population of the rural area being some 100 or thereabouts.

Up to the present year this district was included in the Neath Rural Sanitary District. Its most populous and important centres are Cymmer, Glyncorwg, Aber-, and Blaengwynfy. Besides these the district includes several small groups of houses and a number of individual farm houses and cottages. It covers the extensive area of 10,220 acres, the greater proportion of which is pasture and mountain land. The district generally is very hilly and undulating, with its natural drainage towards the various streams. It comprises the valleys of Corwg (at the summit of which is Glyncorwg) and a part of the Avan (at the summit of which are Aber- and Blaengwynfy), together with the surrounding hills. Besides the few people engaged in agricultural pursuits the population is almost exclusively industrial, some half-a-dozen coal mines affording employment.

CYMMER.

Cymmer is a small village of 40 or 50 houses, with about 400 inhabitants. It is situated at the confluence of the Avan and Corwg rivers, about eight miles north-east of Aberavon, and about two miles from Glyncorwg and Aber- and Blaengwynfy respectively. It nestles at the foot of several high hills, at an elevation of 630 feet above mean sea level. The houses are well built and of good construction. It has a railway communication with Rhondda and Aberavon by the Swansea Bay

Railway, with Bridgend by the Great Western, and with Briton Ferry by the South Wales Mineral Railway. The scavenging is well performed, and there are no nuisances.

WATER SUPPLY.—The water is obtained from spouts, of which there are several. It is derived from springs with their origin in the various hills. There is one small storage tank in the lower portion of the village. On analysis the water of these various springs is said to give satisfactory results and to have been fairly abundant during the recent drought; at any rate, there is abundance available if only collected and stored.

THE DISPOSAL OF EXCREMENT, SLOP, AND SURFACE WATER.—The excrement is received into cesspit privies, some of which are properly built, whilst others are not. It is disposed of in the soil of the gardens, most of which are cultivated. Slop, surface, and rain water finds its way into the river by means of surface channels and covered drains.

There is one slaughter-house in the village. It is situate on the river, is somewhat small, and might be kept cleaner.

GLYNCORWG.

Glyncorwg is $2\frac{1}{2}$ miles north-east of Cymmer, at the top of the Corwg Valley, occupying the lower portions of several smaller valleys, and at the confluence of their various streams which join to form the river Corwg. It is at an elevation of about 800 feet above mean water level, and surrounded by high hills on all sides. Its natural drainage is into the river Corwg. It contains some 220 odd houses, with a population of over 1,200, mostly of the industrial class, and employed at the various coal mines of the adjoining neighbourhood. The soil consists of alluvium and debris from the hillsides. There is a main high road, and a railway communication by means of the South Wales Mineral Railway, between it and Cymmer, and thence in the various directions above-named (under Cymmer).

HOUSE ACCOMMODATION.—The houses generally are fairly good, and belong to the various mining companies; some, however, are somewhat dilapidated and out of repair. There is but little building going on. Some overcrowding is said to exist. The houses are well provided with privy accommodation of some kind or another, and in most cases with fairly extensive gardens, most of which I noticed were cultivated.

THE STREETS, &c.—The streets and areas are much neglected, and up to the present have not been handed over to the Sanitary Authority. They are neither paved, channelled, nor kerbed, and abound with huge stones and rocks, and their condition is most dangerous to the young, aged, and infirm. In some instances there are gullies for the disposal of surface and rain water.

WATER SUPPLY.—The supply of water available is plentiful and of good quality. The supply made use of is derived from various springs on one of the adjoining hills at a very considerable elevation, and free from all dangerous pollution. It is impounded in a reservoir, which is properly built, covered over, and isolated. It is conveyed to the village by cast-iron pipes, and distributed by means of stop taps at various convenient points in the streets. It is said to have been sufficient during the recent drought, and no complaints of its scarcity were made. Should the place happen to grow there is an ample supply for further storage.

THE DISPOSAL OF EXCREMENT, SLOP, AND SURFACE WATER.—The means provided for the reception and disposal of excrement are:—

- (1) The privy system.
- (2) The privy drain system.

The privy system prevails in the village. The privies are situated generally at the far ends of the gardens, some of them are properly built, whilst others are not. They are emptied by the owners, and their contents buried in the soil of the gardens, which, as a rule, are cultivated. In some instances these garden plots are on the steep hills behind the houses.

The privy drain system is also made use of for several rows of houses. The excrement is received direct into box-drains, *i.e.*, rubble stone drains, through which water flows, and is eventually disposed of in the river, causing much offensiveness. I consider the privy drain system a very unsatisfactory one.

SLOP AND SURFACE WATER, &c.—In the back yards of most houses drains are provided for slop and surface water. They are but seldom trapped, and their contents eventually reach the river, thereby polluting it.

For the reception of rain and storm water, there are several large gullies provided at the tops of the streets. These also empty into the river. In front of the Elementary Schools there is a most objectionable uncovered watercourse which, during times of floods is effectually flushed, but in dry weather it becomes most offensive and highly dangerous, not only to those who live in the immediate vicinity, but also to the great number of children who attend these schools. It is the receptacle of decomposing filth, and much complained of by the inhabitants and others who have the care and welfare of the children at heart.

The practice of taking in lodgers is universal and requires to be regulated.

There are no common lodging-houses.

ABERGWYNFY AND BLAENGWYNFY.

This town is built amongst the hills. The part right of the river is Abergwynfy, and that on the left and extending towards Cymmer, is Blaengwynfy. It is some $2\frac{1}{2}$ miles east of Cymmer, and occupies the top of the Avan Valley, where it divides into the two smaller valleys above, along which flow the Blaen-Avan and Nantgwyn streams, which here join and form the Avon river. It is situated on the steep hill-sides, and surrounded by high mountainous ridges. The soil is damp and boggy, overlying alluvium and the carboniferous strata. The place has been built entirely during the last twelve years. Some parts are quite recent, and there is some building now going on. Abergwynfy station is some 850 feet above mean water level. Most of the house property belongs to the various companies, whose coal mines afford employment. It possesses a railway communication with the Rhondda Valley and Aberavon by means of the Swansea Bay Railway; with the Llynvi Valley and Bridgend by the Great Western; and with Briton Ferry by the South Wales Mineral Railway. It has a population of some 2,000, mostly of the industrial class. The contour of the neighbourhood is hilly and undulating, with its natural drainage towards the various streams.

HOUSE ACCOMMODATION.—House accommodation is said to be very limited. About one-third of the houses belong to the various companies. They are generally of good construction, and well built. There are no back-to-back houses, but several cellar dwellings which were not originally intended to be so used. In these the staircases connecting the ground with the first floors are blocked up, and the ground floors forming separate tenements are inhabited as cellar dwellings by different families. These ground floor cellars (in their present condition) are unfit for habitation, and often overcrowded. Such is the case at the back of High Street, Abergwynfy, and (in several other instances) as at the back of Lower Jersey Street, Blaengwynfy. Most of the houses are supplied with privies of some description or another. The bucket system is adopted in most of the companies' houses.

WATER SUPPLY.—The water is derived from two different sources on the adjoining hills, and conveyed by means of iron pipes to stand taps conveniently placed. There is abundance of water available if only properly stored. The Abergwynfy supply is derived from springs on the hill at a considerable elevation, and not liable to any dangerous pollution. It is fenced in by means of a few wires, but not filtered, and no provision is made except a small tank of some nine cubic feet capacity for storing a reserve supply which is greatly needed. The supply for Abergwynfy is said to have been very deficient during the recent drought, and this is doubtless due to the fact that very inadequate means were provided for storage.

The water supply for Blaengwynfy is from a different source, impounded in a covered reservoir, and distributed by means of similar pipes and stand taps.

DISPOSAL OF EXCREMENT, SLOP, AND SURFACE WATER.—Throughout the district the various means provided for the reception of sewage is highly unsatisfactory. They are :—

- (1) Cesspit privies.
- (2) The pail or bucket system.
- (3) The privy-drain system.

Many of the cesspit privies are mere holes dug in the ground; some are properly built and covered. Their contents are buried in the steep gardens.

The companies' houses are mostly provided with buckets, the contents of which are emptied through various large untrapped openings into the surface water drains, to be conveyed into the river. There are some rows of houses provided with privy drains, *i.e.*, the excrement is received into rubble stone box drains through which water diverted from the hillside flows in order to carry their contents into the river. The result of these arrangements is that the soil, which is naturally boggy, becomes further sodden with excrement. Privies, even with properly constructed receptacles, frequently and systematically emptied, cannot be said to be wholesome appliances in thickly populated districts such as this.

SLOP AND SURFACE DRAINS.—There are a few main drains (not a regular system) provided for the disposal of slop, surface water, &c. They are neither trapped nor ventilated, but are flushed by water diverted from the adjoining hills.

When this district formed a part of the Neath Rural District, the Authority had under their consideration the urgent necessity of providing a regular system for the disposal of sewage. It is to be hoped that the new Board will undertake to provide suitable and efficient means for this purpose. In a growing district such as this is, it is of the greatest importance that the soil and air be not impregnated with dangerous excremental filth and the noxious gases evolved therefrom.

There is one slaughter-house at Abergwynfy, which on the day of my visit was found in an unsatisfactory condition.

The streets, roads, and areas about dwellings are much neglected and in many cases unmade and impassable. They are neither paved, channelled, nor kerbed, and their present condition is highly dangerous to the public health. They are not under the Authority's control.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—It is to be hoped that the new Board will forthwith adopt the Infectious Diseases (Notification and Prevention) Acts, and also provide means for the isolation of first cases of dangerous infectious diseases, and for the disinfection of articles of clothing, &c., for should the place in its present defenceless position be invaded by an epidemic such as cholera, there is reason to fear that its ravages would be assisted rather than resisted by the conditions now existing in the district.

The practice of taking in lodgers is universal, and requires to be regulated.

There are no common lodging houses.

The conditions to which the attention of the Authority is specially needed are the following :—

- (1) The provision of means for the better storage of water for Abergwynfy and Cymmer.
- (2) The condition of the streets, &c., at Abergwynfy, Blaengwynfy and Glyncorwg.
- (3) The provision of a system of sewerage and drainage at Abergwynfy and Glyncorwg, together with a re-arrangement of the privies now made use of.
- (4) The occupation of certain houses sub-let as cellar tenements, which, in their present condition are unfit for human habitation.
- (5) The provision of properly trapped slop-water gullies for the various houses which are so far without such conveniences.

13th June, 1893.

MAESTEG.

	1881.	1891.	1892.
Population ..	8,316 ..	9,417 ..	12,000 (estimated).
Area in Acres ..	..	..	6,705.

Maesteg was constituted a Local Board of Health in the year 1858, and is, therefore, one of the oldest in the county. The district occupies the upper portion of the Llynvi Valley, some nine miles north of Bridgend, and is surrounded by the Bridgend and Neath Rural, the Margam, and the Garw and Ogmore, Urban Districts. It covers an area of 6,705 acres, and is situated in the parish of Llangynwyd, on both sides of the Llynvi (which in summer is a mere brook, but during rainfall a rapid river), and extends from Blaencaerau (the highest centre) to Llwydarth (the lowest centre), a distance of about $4\frac{1}{2}$ miles. The district, generally, is very scattered, and consists of the following centres, which are almost continuous:—Blaencaerau (about 600 feet above mean water level); Blaenllynvi, Spelter, Nant-y-Ffyllon, Maesteg (proper), Garth, and Llwydarth (about 340 feet above mean water level). Its lower parts stand on alluvial deposit, and the upper on the broken Pennant sandstone and detritus of the neighbouring hills. The situation of the district is excellent, and its natural drainage is into the Llynvi and its tributary brooks.

It has a railway communication with Bridgend and the neighbouring valleys, and main high roads on much the same system.

The population is almost exclusively an industrial one, coal mining and tin-plate working affording employment.

Owing to the closure of the large iron works some years ago the district bears obvious traces of impoverishment, has experienced much failing prosperity, and its rateable value has much decreased. There is now, however, every prospect of immediate improvement on account of the new Caerau Pits which were lately sunk and are now ready for work.

HOUSE ACCOMMODATION.—The house accommodation is said to be sufficient for the present demand, and over-crowding is said not to prevail. Recently some building has been going on, especially towards the top of the valley and in the neighbourhood of the new Caerau Pits. The houses generally throughout the district are old, dilapidated, and in a state of disrepair; indeed, many are so dilapidated, ill-ventilated, ill-provided with proper privy accommodation and means for the disposal of surface and slop water, as to call for the attention of the Authority with a view to their repair.

Areas about dwellings are generally uncared for and much neglected, and the convenient receptacles of much dangerous filth—manure heaps, slaughter houses, pigstyes, overflowing and unflushed privies.

A large number of the houses belong to the various companies and are occupied by their workmen and their families, and much complained of; and, indeed, the stench arising from the open privies provided is unbearable. They are generally provided with privies of some kind or another, but of a very unsatisfactory description. There are no back-to-back or double houses, but several cellar dwellings.

The practice of taking lodgers is universal and requires to be carefully regulated. No bye-laws have been made by the Authority as to houses let in lodgings.

COMMON LODGING-HOUSES.—There are two common lodging-houses within the district, which are under police supervision and unsatisfactory.

SLAUGHTER-HOUSES.—There are several slaughter-houses in the district, and, with a few exceptions, they are unfit and inadequate for the purpose—they do not comply with Board's bye-laws or with the requirements of the Public Health Act, and the greater number have been previously condemned by Dr. Thomas, the Medical Officer of Health. Most of them are clean and well looked after, others are less satisfactorily kept.

They generally consist of only one room, they are too small and not supplied with adequate conveniences and appliances, not sufficient provision made for the removal of filth and garbage, no cooling houses of any description, no proper receptacles for blood or offal, no water supply, not suitably provided with lairs, not properly drained, too near dwellings, and with the adjoining yards often in an unsatisfactory condition. Besides, there are no rules drawn out by the Authority and posted in the various buildings, to be observed in the proper management and regulation of the same.

WATER SUPPLY.—The water supply of the district is undertaken by the Authority, and derived from various sources, thus :—

- (1) The Tonnau Springs.
- (2) No. 1 Garn Well Level.
- (3) Brynmawr Springs.
- (4) Llest Fach Springs.
- (5) Arosafa Spring.
- (6) Roderick's Well.

THE TONNAU SPRINGS, towards the top of the valley, occupies the highest elevation, and in connection with it is a small storage reservoir, which, however, is seldom made use of as it serves only as a means for storing the overflow, and during dry weather, as at present, there is none, and barely sufficient to fill the pipes, which are in direct connection with the main. The water from the various sources gives satisfactory results on analysis, and is fit for dietetic purposes. It is altogether derived from springs on the hill-side, considerably elevated, and so situated as not to be liable to any dangerous pollution. The various springs thus used are connected direct with the main, and thence conveyed to stand-pipes (valves as they are called), of which there are some forty in the town and district.

The means provided for storage are inadequate, and the flow at many of the stand-points is slow owing to insufficient pressure, and to the fact that the overflow from the main is situated at a low elevation. An increase in the number of stand-pipes is greatly needed, and further the use of fragile earthenware pipes in a general water service within a populous locality such as this is inadmissible, for under high pressure they are liable to burst, with the consequence that the water becomes foul. The Authority have had the question of the improvement of the supply under consideration for many years, but beyond the acquisition of several springs, no progress has been made.

Those who are acquainted with the locality state that the various springs have not been known to fail, and now, after fourteen weeks' drought, the supply is considerable.

There are no wells within the district.

EXCREMENT AND REFUSE DISPOSAL.—The systems adopted for the removal and disposal of excrement are unsatisfactory. They are many, and as follows :—

- (1) Water-closets.
- (2) Privies (of various descriptions).
- (3) The pail system.
- (4) Earth or ash closets.

THE WATER CLOSETS, which are numerous, consist of a hopper-pan and syphon, and are all hand flushed. A great difficulty is experienced in keeping them clean and in educating the people to flush them systematically; and unless the syphons always contain enough water to render them trapped they become drain ventilators, often very dangerous and the means of spreading disease. Had there been mechanical means and water provided for their proper flushing this danger would be done away with, and until the Authority shall have provided their district with suitable reservoir and redistribution of the water supply, things must, of necessity, remain in their present condition.

THE PRIVIES made use of are very numerous and of various descriptions. These are simple privies, some provided with proper receptacles, others not so provided, and allowing their contents to flow over and sink into the adjoining soil.

Their emptying is left to the occupiers, and, consequently, most imperfectly performed, their only practicable plan for disposal being to bury their contents in their small plots of gardens or to throw them into the adjoining fields or streams.

Privies of this description, even with properly-constructed receptacles, cannot be considered as wholesome appliances for populous districts.

Many streets and rows of houses, such as Grove Street, Brown Street, John Street, Union Street, Duffryn Row, Macgregor Row, Charles Row, and Caven Row, are provided with open (without pans) untrapped privies over culverts and box-drains, flushed with water from the hillside or diverted from the Llynvi or neighbouring brooks. Some 200 or more houses are provided with such an accommodation, and I consider this privy-drain system a very unsatisfactory one, and the foul smell evolved in many instances is unbearable and highly dangerous. It was much complained of by the inhabitants of these dwellings.

One of these box-drains passes along the back walls of a number of houses in Macgregor's Row, and its contents, by capillary attraction, soak up into the walls, creating a source of much danger to the inhabitants. The contents of these culverts and box-drains eventually reach the river.

There are also many bucket and earth or ash-closets in various parts of the district, often overflowing and badly managed.

In that portion of the district above Castle Road the culvert and box-drain systems prevail, and there are no pipe sewers of any kind.

The means provided for the removal of slop and surface water consist of a few drains here and there, but generally there are no means whatever, except for some rows of houses, where open rubble drains are provided; these objectionable channels for the removal of slop and surface water are placed along the various confined back yards.

There is no regular system of sewerage and drainage in the district, but from the commencement of Castle Street downwards there is a disjointed system of pipe sewers, emptying at different points into the river, the brooks, or on their banks. There are a few isolated houses and groups of houses unconnected.

None of the sewers are of a very great length, and they are not ventilated. Provision is, however, made for their flushing by means of the different water-courses from the hill-sides.

THE GARN is badly provided with privy accommodation, and is not properly sewered, the sewage of some sixty houses being received into an open brook (Garn Brook), to be eventually deposited in the Llynvi. At the times of my visits this brook was in a most offensive condition, almost dry, and evolving offensive effluvia, which were certainly dangerous to, and much complained of by, the inhabitants.

PROVISIONS AGAINST INFECTIOUS DISEASE.—The Authority have made a partial provision for dealing with epidemic and infectious disease. Some years ago a convenient cottage, well isolated on an elevated position, was acquired, with the intention of using it in case of need. It is now occupied by a man, his wife, and three children. It contains four bedrooms. The cottage is not properly furnished for the purpose, and has never been used for isolation, and requires to be repaired. Should the district be visited with an epidemic of cholera, there is every reason to fear that its results would be most disastrous. Besides, the Authority have not adopted the Infectious Disease (Notification) Act of 1890, though their attention has been called by the Medical Officer of Health to the great desirability of adopting such an Act. At the monthly meeting of the Local Board, the latter end of 1892, a report was read from Dr. Thomas, the Medical Officer of Health, in which he remarked:—"I would strongly advise the Board, in the face of the possible visitation of cholera, to wake to a sense of its duty and responsibility under the circumstances and be prepared for such a contingency. The inactivity in matters sanitary which has hitherto characterised your Local Government must tell disastrously on the public health if the district should unfortunately be visited by the epidemic now so near to us. All cesspits and other closets, sewers and drains should be thoroughly cleansed and disinfected. All refuse and garbage should also be dealt with so as to

become harmless. The number of water taps should be considerably increased, all over the district, and a full supply of water maintained. The prevailing habit of throwing into the street ashes, garden refuse, and other decomposable matter should be stopped. The roads should be kept clean, and all the stagnant waters removed and not allowed to recur, and all undrained premises should be sharply looked after. Scavengers' rubbish should be deposited in suitable places, and occasionally disinfected. Some twelve months ago I reported and condemned the practice of shooting refuse of that description among inhabited houses. I regret to say no action seems to have been taken on the report. I allude more especially to the enormous heap shot on the Garn Hill. I again beg to draw the Board's attention to the fact, and to enter a personal protest against its continuance."

Instructions were then issued by the Board with a view of perfecting local sanitation.

Disinfectants are supplied gratuitously to infected households, but there is no disinfection of articles of bedding and clothing, unless it be under the directions of the medical attendants.

The Authority possess no disinfecting apparatus.

BYE-LAWS AND REGULATIONS.—The Authority's bye-laws are on the same lines as the model bye-laws of the Local Government Board, and were adopted in 1885. They refer to—

- (1) Cleansing of footways and pavements. Removal of house refuse. Cleansing of earth closets, privies, ashpits, and cesspools.
- (2) Prevention of nuisances arising from snow, filth, dust, ashes, and rubbish.
- (3) Common lodging-houses.
- (4) New streets and buildings.
- (5) Slaughter-houses.

But their enforcement is not observed.

Regulations have recently been adopted under the Dairies, Cowsheds, and Milkshops Order, 1885.

ADOPTIVE ACTS.—The Board have adopted the Private Street Works Act, 1892, but no others.

SCAVENGING, &c.—The scavenging of the district is imperfectly performed, the various lanes and areas about dwellings and rivers' sides being the convenient receptacles for filth. The various scavenging tips are too near dwellings, and among inhabited houses. The practice of throwing into the streets ashes, waste paper, and house refuse generally, is observed everywhere.

Scavenger's rubbish should be deposited in suitable places, away from dwellings, and should occasionally be disinfected, but the most efficient method of its disposal is by burning.

RIVER POLLUTION.—All the Authority's culverts, box-drains, and sewers discharge their contents direct into the various brooks and river; in other words, as much of the sewage as gets removed from the neighbourhood of dwellings enters the river, or rather, in dry seasons, when the water is low, to the bed and banks of the river only, and in the latter case until the next heavy fall of rain. The river is much further chemically polluted by the tin-plate works at Llwydarth.

The roads are much neglected, and generally the bye-streets are unmade and imperfectly scavenged.

The conditions to which the attention of the Authority is specially needed are the following:—

- (1) The adoption of the Infectious Disease (Notification) Act, and other Acts relating to the Public Health.
- (2) The more strict enforcement of the existing bye-laws.
- (3) The provision of means for the better storage and distribution of the water supply.
- (4) The provision of better slaughter-houses, or one central slaughter-house, sufficient for the whole district.

- (5) The better scavenging of streets and areas about dwellings.
- (6) The better management of the scavenging tips.
- (7) The provision of better privy accommodation.
- (8) The provision of a regular system of drainage and sewerage.
- (9) The paving, channelling, &c., of the bye-streets.

16th May, 1893.

MARGAM.

	1891.	1892.
Population ..	6,274	7,000 (estimated).
Area in acres ..	18,347.	

This Urban District contains the town of Taibach, Pen and Gwarycae, two villages in the immediate neighbourhood, the village of Oakwood, about two miles up the country on the river Avon; Bryntroedgam, about four miles up the country on a small tributary of the river Ffrwdwyllt, which flows through Taibach; and also the villages of Groes and Margam, about two miles away, in the direction of Bridgend.

The largest, and by far the most important part of this peculiarly constructed Urban District is Taibach. Taibach is an old, dilapidated town, partly built on a damp level ground, and partly in various rows and terraces, on the slope of a steep hill-side. It has a population of about 4,000, that of the whole district being 7,000. The inhabitants are mostly of the working classes, and engaged in the various collieries, tin-plate, and copper works of the district. The river Ffrwdwyllt bisects the town, and the Avon skirts its western boundary.

THE DISPOSAL OF SEWAGE.—Up to six or seven months ago (when our country was threatened with a visitation of cholera) the sanitation of Taibach was in a deplorable condition. The town was only partly and most imperfectly drained into old brick sewers. The main brick sewer discharges into the sea, well away from any dwellings. This sewer and its various branches were constructed and distributed over the level part of the town in the year 1850-51, after the cholera epidemic of 1849, which proved so disastrous and fatal in this neighbourhood. From the year 1851 up to last summer very little was done to ameliorate the sanitary condition of the place, but matters were allowed to remain in *statu quo ante*. It is true that the more modern portions of the town, such as Maesycourt, Courtuchaf Terrace, and West End, had in the meantime, been pipe-sewered and drained, but both sewers and drains were most defective in character—without disconnections, traps, or ventilation. The privies in the older parts of the town were placed in many instances right above the sewers without traps or disconnections of any kind whatever, and thus acting as ventilators to the sewer and its branches. The privies on the hillside were mere holes dug in the ground, the contents of which were allowed to soak in the soil or sometimes into imperfectly-constructed cesspools. For many years this condition of affairs was allowed to go on, the soil becoming more and more sodden with excremental filth, and thus encouraging the growth and development of the germs of dangerous infectious disease. Typhoid fever is generally very prevalent at Taibach, and Dr. Davies, the Medical Officer of Health, informs me that at one time, not many years ago, he remembered an epidemic of over 400 cases. This undoubtedly was due to the old dilapidated brick sewers, which were directly ventilated in the neighbourhood of the houses by means of the untrapped pans situated thereon, and also to the condition of the soil between and under the various rows of houses on the hillside. Again, there were no provisions made for waste water and surface drainage. The amount of work recently executed is very considerable. During the last six or seven months 93 houses have been wholly drained into the main sewer, whilst new sewers have

been laid for over 50 more. In addition to the above 130 notices have been served for defective and insufficient drainage, and most have been complied with.

PROVISIONS FOR THE REMOVAL OF SLOP AND SURFACE WATER.—Up to a recent date there were but slight provisions for the removal of slop and surface water. It was heedlessly thrown on the ground in the streets and back yards over untrapped gratings connected with the main sewer. On the hill side there were no provisions whatever made, and so it was allowed to soak into the soil. Lately, however, new closets have been provided for most of the houses, and in connection with each closet there is a waste water gully, into which the house slop and waste water is thrown, thus flushing the various closets and house drains.

HOUSE ACCOMMODATION.—Much attention is required to the house accommodation generally of the district, and more especially to the houses of the working classes. At Taibach, in the older property of the poorer class, such as is found at Water Street, Greenfields (upper and lower), Stamboul and Pera Rows, Colliers' and Miners' Row, &c., the houses are old damp, dark, with small, badly-lighted bedrooms; the floors are often sunk below the level of the ground surface, while roof spouting is commonly wanting, and the necessary result is excessive dampness. The better ventilation of, and larger windows for, sleeping rooms likewise call urgently for improvement—occasionally bedrooms of this description were found to be excessively close and dark.

WATER SUPPLY.—This has for some time engaged the attention of the Authority. The present supply is obtained from a reservoir at Galltfræd, on the hillside, about a mile above the town, in the direction of Maesteg. It is conveyed by mains to the town, and distributed at various points by means of stand pipes. It is mostly surface collected, and, on the whole, it is said to be good. In quantity it is very deficient. It is supplied intermittently for two or three hours out of every 24, and during dry weather it almost ceases. Some of the inhabitants drink the water of the river Ffrwdwyllt, which is certainly polluted with excremental filth. The villages of Pen-y-cae and Gwar-y-cae receive their water supply from an adjoining well at the foot of the hill, and distributed by stand pipes. I find that Miss Talbot through her great generosity and kindness, has provided these two villages with their water supplies.

It is contemplated to secure another supply for Taibach from a stream and certain springs of unquestionable purity and not liable to pollution at Cwm-gwynedd. The new reservoir when built will be on a lower level than the old one, so that it will conveniently supply the older portions of the town, whilst the old reservoir would supply the portions on the hill.

SLAUGHTER-HOUSES.—There are four in the district, two at Taibach, one at Aberavon Bridge, and another at Abottalwg Farm. They are not registered or licensed.

THE DISPOSAL OF REFUSE.—The arrangements for the disposal of house refuse are not so complete as they might be. It is collected by the Authority and deposited in the nearest and most suitable place at hand.

It is very gratifying to find that such improvements have recently, within a few months, been carried out in Taibach. They should be continued. The amount of work done since the appointment of the present Sanitary Inspector is as follows:—

- (1) Ninety-three houses have been wholly drained into the sewer.
- (2) New sewers laid for fifty houses.
- (3) One hundred and thirty notices have been served for defective or insufficient drainage, and all have been complied with.
- (4) About a hundred pig-styes have been done away with.
- (5) Over forty notices have been served and complied with for the abatement of nuisances arising from dirty houses, &c.
- (6) A house-to-house inspection is being made, six hundred and forty-seven houses have been inspected and reported upon. Over two hundred and thirty notices served. One house has been pulled down as unfit for habitation.

- (7) Notices have been served upon thirteen occupiers for the abatement of nuisances arising from overcrowding: nine have been complied with, but in four the notices have not expired.

The Board is to be congratulated on the improvements recently executed at Taibach, and the attention of the Authority should be drawn to—

- (1) The want of means for isolation and disinfection.
- (2) The want of a more plentiful water supply.
- (3) The unhealthy areas at
 - a. Back of Water Street.
 - b. Green Fields (Upper and Lower).
 - c. Stamboul and Pera Rows.
- (4) Houses unfit for habitation—No. 3 and No. 27 Water Street.
- (5) The adoption of various Acts relating to Public Health, such as
 - a. "The Infectious Disease (Prevention) Act, 1890."
 - b. "The Public Health Acts (Amendment) Act, 1890."

OAKWOOD.

This is a small village of about 40 houses.

OAKWOOD Row.—Thirty houses, all back-to-back, but with open spaces on both sides—all in a fairly good condition and clean.

The pail system is adopted.

The water supply is plentiful and good. From a well some distance away on the hillside, and distributed by means of outstanding taps.

There is a large elementary school for the district. A very good building, well kept, well ventilated, but somewhat damp in some parts. There is no overcrowding, and the scholars are said to be quite free from any infectious disease.

BRYNTROEDGAM.

This village is built amongst the hills, about four miles from Taibach, and at a considerable elevation. About 14 years ago it was in a flourishing condition, there being then several coalpits in full working order. Since that date nothing has been doing here. The village looks destitute, deserted, and poor. Through it runs a small stream, a tributary of the Ffrwdwlth. It possesses one elementary school in good condition, and two chapels. The inhabitants, numbering in all about 200, are of the working classes, and those that are able to work are employed some miles away at the Oakwood, Dyffryn, Maesteg, and Garw Valley Coalpits.

The houses are clean but dilapidated, many uninhabited, some in ruins, and generally they are very damp; in some cases so damp as to be injurious to health. The dampness is due mainly to open joints, want of spouting, and to ground damp.

The water supply is surface collected, and conveyed in open streams from the adjoining hillside. It is much complained of as being dirty, objectionable, and during the summer months it is very deficient. A good supply is available if properly collected, stored, and distributed.

There is no system of drainage. The privies are mere holes in the ground, covered over by wooden sheds, often they are on a higher level than the houses, but in most places on the brook, into which their contents soak. They do not appear to be ever emptied.

There is no provision for the disposal of slop and surface water.

The house refuse is not removed, but allowed to accumulate in various heaps.

Though the village is a part of the Urban Sanitary District of Margam, I am told that it is a rare occurrence to see a scavenger's cart in the neighbourhood.

23rd February, 1893.

MERTHYR TYDFIL.

	1881.	1891.
Population ..	48,861	58,080

The estimated population for 1892, as given by Dr. Dyke, the Medical Officer of Health, is as follows:—

Upper Merthyr	28,565
Lower Merthyr	34,590
Total	63,135
Area in Acres	17,400

I have frequently visited this District, and am satisfied that the Authority, under the able guidance of Dr. Dyke, are making every effort to keep it in a sanitary condition.

HOUSE ACCOMMODATION AND THE CHARACTER OF THE DWELLINGS.—The old part of the town is largely made up of small dwellings built nearly a century ago. For the most part the leases are nearly run out, and it is not easy to get the lessees to do anything to the houses. The Inspector constantly gives notice to the owners to do the necessary works, and frequently the Board have had to apply to the Justices and have obtained orders under the Public Health Act, 1875. The provisions of the Housing of the Working Classes Act are being utilised.

WATER SUPPLY.—This is derived from the stream of the Taff Fechan River, seven or eight miles north of the town. The geological formation is the old red sandstone. On analysis, it gives satisfactory results.

PRECAUTIONS AGAINST CHOLERA AND OTHER INFECTIOUS DISEASES, HOSPITAL ACCOMMODATION, &c.—I visited the two fever hospitals of the District, and found them in every respect ready for the reception of patients. One patient suffering from small-pox and one from typhoid fever were then under treatment.

THE DOWLAIS FEVER HOSPITAL, where 24 patients can be received and treated, was found clean, well arranged, managed, and regulated. It was built in the year 1871, and planned by the late Mr. Nitten Radcliffe. The cubic space allowed for each patient is 2,000 feet.

THE MERTHYR FEVER HOSPITAL.—This hospital has accommodation for twelve patients. It has been recently altered. Hot water and bath rooms are provided.

DISINFECTING APPARATUS.—At the Dowlais and Merthyr Fever Hospitals hot air stoves have been provided many years ago, and during the cholera epidemic of 1866, the small pox epidemic of 1872, and the various typhoid fever outbreaks, they have acted efficiently.

During last autumn a special inspection of the various streets, courts, and lanes was made, and discovered imperfections ordered to be abated and carried out. Bills were issued and posted warning the inhabitants of the district of the necessity of perfect cleanliness, and the avoidance of creating any nuisance. The state of closets and closet-accommodation was enquired into, and, when found insufficient, new ones were directed to be built, or when found filthy the occupiers of the houses using them were summoned and fined. The drains and sewers leading to the main were watched, and the street gullies inspected and disinfected. The filtration areas and the irrigated farm land, were cleansed and repaired.

COMMON LODGING HOUSES.—There are some ten or twelve of these houses in the district. I visited some of these and found them clean and well regulated. They are all registered, and licensed for a certain number of lodgers.

BYE-LAWS AND REGULATIONS.—The bye-laws in force in the Merthyr Tydfil Urban District are framed on the lines of the model bye-laws of the Local Government Board, and were adopted in 1889. They refer to:—

- (1) The cleansing of footways and pavements. The removal of house refuse. The cleansing of earth closets, privies, ashpits, and cesspools.
- (2) Nuisances.
- (3) Common lodging houses.

- (4) New streets and buildings.
- (5) Slaughter-houses.
- (6) Hackney carriages.

ADOPTIVE ACTS.—The following is a list of the Public Health Acts adopted by this Board :—

- (1) The Infectious Diseases (Notification) Act, 1889.
- (2) The Infectious Diseases (Prevention) Act, 1890.
- (3) The Public Health Acts (Amendment) Act, 1890.
- (4) The Private Street Works Act, 1892.

May 1st, 1894.

N.B.—I hope to report more fully upon this district soon.

MOUNTAIN ASH.

	1891.	1893.
Population ..	17,495	20,976 (estimated)
Area in acres ..	10,554.	

The Mountain Ash Urban District includes portions of three parishes—Llanwonno, Aberdare, and Llanfabon; of three valleys—Aberdare, Clydach, and Taff. It comprises a string of villages, all of which (except Ynysybwll) occupy one or other bank of the river Cynon, within a stretch of some four miles in the lower part of the Aberdare Valley. Aberdare Junction is at the confluence of the Cynon with the Taff, and built almost entirely within the last 18 months, while Ynysybwll is on the Clydach, some three miles to the west. The valleys are somewhat deep and narrow, and the various collections of houses stand partly on the alluvial deposits of the river banks, but chiefly on the steep hill sides, on soil composed of broken and disintegrated Pennant sandstone of neighbouring hills, or occasionally on peaty deposits.

Other villages besides these occupy the valley of the Cynon, and the town of Aberdare stands at its summit. The highest village (within this district and in Aberdare Valley) is Cwmpennar, with an elevation of some 500 feet, and the lowest is Aberdare Junction, at an elevation of some 320 feet above Ordnance data. The elevation of the highest part of Ynysybwll (old village) is some 600 feet.

The entire district stands upon the coalfields. It is hilly and undulating, with its natural drainage towards the various valleys and their rivers. The population is of the mining class, and coal mining is almost the exclusive industry. There is a railway and high road communication with all the centres.

Aberdare Junction is now in its infancy, but promises to become an important coal mining district, whilst Ynysybwll is already in a flourishing condition, affording employment to numerous hands. The relative contributions of the three parishes (named above) to the district in question, as regards area, houses, population, and rateable value are shown in the following tables :—

CENSUS, 1891.

Parish or Township.	Statute Acres.	Houses.	Persons.
Aberdare (part of Parish) ..	1,650 ..	445 ..	2,393
Llanwonno (part of Parish) ..	8,304 ..	2,479 ..	15,102
	9,954 ..	2,924 ..	17,495

Estimated population of Llanfabon (part of district) as per General District Rate, May, 1893, was as follows :—

Statute Acres.	Houses and Farms.	Population.
600 ..	45 ..	270

Houses and population (estimated as 6 per house) in district, as per General District Rate, May, 1893, as follows:—

		Houses.	Population.
Mountain Ash Proper,	Llanwonno Parish	698	4,188
"	Aberdare Parish	269	1,614
Caegarw	"	366	2,196
Newtown	"	198	1,188
Cympennar	"	107	642
Miskin	"	319	1,914
Penrhiwceiber	"	512	3,072
Near Cefnglas Tunnel	"	2	12
Aberdare Junction	"	256	1,536
Ynysybwł	"	670	4,020
Llanfabon	"	39	224
Farms (Llanwonno Parish)	..	48	288
" (Aberdare	"	6	36
" (Llanfabon	"	6	36
Total	..	3,496	20,976

DWELLING ACCOMMODATION.—The dwelling accommodation is described as barely sufficient, and overcrowding is said to exist, though to a small extent. There is no crowding of houses upon area in any part of the district. Most of the houses at Miskin, Penrhiwceiber, Aberdare Junction, and Ynysybwł are almost new, of substantial construction, and provided with closet accommodation. They belong, in most cases, to the various companies, and are occupied by their employees and families. In many instances, in these new localities, each dwelling is not in direct communication with the main sewer, but groups of houses and streets are connected by means of an intervening common cesspool, the overflow from which is received direct into the Authority's sewers. This is an objectionable arrangement, and according to the Authority's bye-laws, revised in 1892, it is stated that "no cesspool shall be constructed so that it shall have, by drain or otherwise, any outlet into, or means of communication with, any sewer."

Nearly all the houses are of one type, and consist of two rooms on the ground floor and three bedrooms above. The rooms generally are small, and the bedrooms open on a tiny landing at the top of the staircase, are often without a fireplace or any special means of ventilation. In the older localities of Cardiff Road and Newtown there are several cellar dwellings in a dirty and dilapidated condition, the interior and immediate surroundings of which present a neglected appearance. This state of affairs is due, in a great measure, to the slovenly habits and ignorance of the inhabitants, who do not realize the dangers arising from the hidden foes of filth. Eave spouts have been provided in most instances. At Ynysybwł and other places I noticed that drains passed underneath the floors of houses, and emptied their foul contents on the street, to find their way to the nearest sewer. In some parts of Ynysybwł this nuisance was complained of, and was said to have caused some illness.

Occasionally, alleys, courts, and areas about dwellings are not paved and neglected; but, generally, this is not the case.

There are no back-to-back, or back-to-earth houses, and none as far as could be ascertained in such a condition as to be unfit for habitation. There is no registered common lodging-houses in the district, but it appears that a few at the Barracks, Mountain Ash, offer shelter and accommodation to visitors of the tramp class.

The practice of taking in lodgers is universal here as in similar districts elsewhere, and requires to be regulated by the Authority.

SLAUGHTER-HOUSES.—I visited most of the slaughter-houses and found them clean, lime-washed, well managed, and provided with the necessary conveniences of water supply, efficient drainage, ventilation, means for the removal of blood, offal,

and garbage, and suitable shelter for animals prior to slaughtering. In some instances the floors allowed soakage, and were not all that could be desired. A public slaughter-house is about to be provided at Ynysybwl, which will doubtless prove most useful and convenient.

They are frequently visited and inspected.

DAIRIES, COWSHEDS, AND MILKSHOPS.—The Authority have made and adopted regulations under the Dairies, Cowsheds, and Milkshops Order, 1885. These have been in force since March, 1888. The cowsheds and dairies are not situated in the densely populated localities, but at the various farms of the neighbourhood. They are 35 in number, all registered, and frequently inspected. The milk vendors obtain their supply partly from these farms and partly by train from a distance.

Having regard to the fact that milk frequently acts as the vehicle whereby disease is carried and spread, it becomes of the highest importance that the Board should make itself acquainted with the various sources (at a distance) of their milk supply, and that due vigilance be exercised to prevent the infection and contamination of milk from whatever source obtained.

SEWERAGE AND DRAINAGE.—That portion of the district above Aberdare Junction possesses a proper system of sewerage, the sewage being discharged at various outlets into a main "carrier" which passes down the valley from the Aberdare district above, to be treated at the Merthyr and Aberdare Sewage Farm, between the Junction and Pontypridd, in the valley of the Taft. Here and there are a few groups of houses not yet connected, which drain into cesspools or some neighbouring water course. The sewers are well constructed, of glazed socketted pipes, and possessed of excellent gradients. Formerly they were ventilated by means of street openings, most of which are now covered over, and 4-inch pipe shafts substituted in convenient places. As a rule the branch sewers are laid along the back lanes of the rows of houses, and the w.c.'s almost invariably situated at the far ends of the gardens, although unprovided with flushing apparatus, are fairly clean, but cannot be considered satisfactory. The newer houses, are, however, provided with flushing apparatus, such as at Aberdare Junction. But here again there is no water supply, and so far they are useless.

A daily removal of house refuse is provided for, and carried out under the Authority's supervision.

STREETS, ROADS, &c.—At Aberdare Junction and Ynysybwl in particular, and in other places also, the private streets are in a most unsatisfactory condition, and, so far, they have not been taken over by the Authority. At Aberdare Junction their condition is such as to render it dangerous for the young and aged to travel there.

WATER SUPPLY.—Little need be said under this head, except that the present supply provided by and under the control of the Authority, is at all times plentiful pure and wholesome.

It has, so far, not been extended to Aberdare Junction, where it is much needed. I find that preparations are being made for this much-desired extension of the water service, and that a service reservoir is to be erected just above the village.

The water and gas works are under the control of Mr. Williams (the Surveyor to the Board), and seem to be admirably supervised.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—Not only has this Authority, acting under the advice and guidance of their Medical Officer of Health (Dr. Evans), adopted the Infectious Diseases (Notification and Prevention) Act, but they have lately, and very wisely, provided suitable means for the isolation, care, and treatment of the infected sick. A suitable Isolation Hospital, well constructed, conveniently situated, and supplied with all necessary conveniences has been built.

It provides accommodation for 16 or 20 patients, and several have already been treated there. It will, doubtless, confer an inestimable boon on the district.

In this connection it should be mentioned that so far no apparatus for the efficient disinfection of articles of bedding and clothing has been provided by the Authority. Further, it seems that there is no attempt made to disinfect dwellings,

bedding, clothing, &c., after infectious sickness, and it seems to me that some improvement is desirable in this particular, which should receive the attention of the Authority in due time.

BYE-LAWS AND REGULATIONS.—The Authority possess a code of bye-laws sanctioned by the Local Government Board in 1892. They refer to

- (1) New streets and buildings.
- (2) Nuisances.
- (3) Common lodging-houses.
- (4) Offensive trades.
- (5) The cleansing of footways, pavements, earth-closets, privies, ashpits, and cesspools.

Regulations have been made and adopted under the

- (1) Dairies, Cowsheds, and Milkshops Order.
- (2) Mountain Ash Local Board Water Works Act (1893).

The following particulars, kindly supplied me by Mr. Williams, the Board's Surveyor, show the works recently executed by this Board:—

- a.* Sewerage system extended to Cwmpennar.
- b.* Water supply to Cwmpennar and Cefnpennar, which were supplied before from local brooks, &c.
- c.* Water supply extended to Aberdare Road District.
- d.* Water supply extended to the Charlestown houses on the Tir Arlwyd Estate, Miskin.
- e.* Sewerage extended to Llanwonno Road houses.
- f.* High Street, Thompson Street, Cribbinddu Street, Crawshay Street, Ynysybwl—paved, metalled, and sewered.
- g.* Nearly all the houses in Ynysybwl have been connected with the Board's water mains. The few that have not been so connected have another supply, and up to the present time the Board have not had adequate grounds for prohibiting and for enforcing a supply from their works.

I beg to make the following suggestions concerning matters requiring the further attention of the Authority:—

- (1) *Sewerage.*—That the Authority should extend the present or prepare a separate system for the Sewerage of Aberdare Junction.
- (2) *House Drainage.*—That the Authority should compel owners of houses (in several places, such as Ynysybwl) to connect their drains with the Authority's sewers (Sections 21 and 23, Public Health Act, 1875, and Sections 18 and 19, Public Health Acts Amendment Act, 1890).
- (3) *Adoptive Acts.*—That the Authority should consider the desirability of adopting (especially Part iii. of) the Public Health Acts Amendment Act, 1890. By this Act Section 157 of the Public Health Act of 1875 is so extended as to enable Urban Sanitary Authorities to make Bye-Laws concerning buildings on the following points:—
 - a* Adequate water supply of closets.
 - b* The structure of floors, hearths, and staircases.
 - c* The paving of yards and open spaces in connection with dwellings.
 - d* Provision of secondary means of access to houses for the purposes of removing refuse and other matters.

A further provision of this Act is to enable Bye-Laws with respect to closets and drainage to be made applicable to old as well as new houses.

- (4) *Water Supply.*—The provision of adequate water supply for Aberdare Junction.
- (5) *Disinfection.*—The disinfection of houses, after infectious sickness, is a matter for the consideration of the Authority. Also the provision of a suitable apparatus for the efficient disinfecting of articles of bedding and clothing.

10th January, 1894.

NEATH.

	1881.	1891.	1893.
Population ..	10,409 ..	11,157 ..	11,500 (estimated).
Area in Acres ..	1,427.		

The Borough of Neath is a place of great antiquity. It is situated on the east bank of the river, and at the mouth of the Vale of Neath, and is surrounded by hills and valleys teeming with mineral wealth. It has a population of some 11,500, consisting essentially of the industrial class—coal-mining, chemical works, &c., affording employment. There is a railway, high road, and canal communication in various directions, in addition to the ready access to a harbour and docks. The district is of a limited area, covering only 1,427 acres, and is surrounded by the Neath Rural District. Geologically, it stands upon the coalfields, with a subsoil consisting chiefly of some 14 to 16 feet of alluvial gravel. The greater portion of the district is low-lying and flat along the river margin, but it extends over a small area of the surrounding hills.

HOUSE ACCOMMODATION.—House accommodation is said to be very limited, and cottages suitable for the working classes are much needed. In the older parts of the Borough, especially on the canal and river banks, house property is dilapidated and out of repair. Overcrowding of houses upon area and of persons exist to a serious extent in several places. The dwellings in many of the confined courts and alleys (which are numerous), are, in their present condition of dampness, want of light, through ventilation, eave-spouting, paved and drained yards, closet accommodation, and structural defects, unfit for human habitation. There are many cellar, back-to-back, and back-to-earth dwellings in the courts and alleys. The insanitary conditions of Jenkins', Smith's, Davies', Stick's, Courts, &c., Penydre, of Hart Lane, Joseph's, Phillips', and Jolly, Courts, and of the various courts and lanes of the Green, have been reported upon and brought to the notice of the Authority, and it is to be hoped that the evils of overcrowding, and other defects, will be effectually dealt with. This overcrowding of persons and of dwellings upon area is the worst feature of this district.

There are four common lodging-houses in the town, affording accommodation for about 100 persons. The inspection of these is in the hands of the Borough Police.

On the occasion of my visits I made an inspection of each lodging-house, in company with the Medical Officer of Health and Inspector, and the following is an account of what I noticed:—

1.—Lodging-house in Tinman's Court, registered for 29. Premises were dilapidated and dirty. New closets were recently erected. One room set apart for married couples and single women. Windows not opened at one o'clock.

2.—The Old Gadlys Arms, registered for 12, all males. Clean and satisfactory

3.—Common lodging-house kept by Thomas Williams. Accommodation for 38—28 males, 5 married couples and children. This is a model house, exceedingly clean and well arranged.

4.—Common lodging-house in Castle Street. Dilapidated and dirty. Windows not opened.

THE PUBLIC SLAUGHTER-HOUSE.—This is the only one within the Borough. A man is employed for the sole purpose of keeping it clean. It is supplied with water, and is well drained. There are two cooling rooms and three cattle sheds. The refuse and offal are removed daily to farms in the vicinity and made use of for manuring purposes.

WATER SUPPLY.—Formerly the water supply of Neath, Briton Ferry, and parts of the Neath Rural District was in the hands of a private company—the Neath Water Company—but now the Company's undertakings have been practically purchased by the Sanitary Authority, but in the event of the Neath Rural Sanitary Authority taking over the Skewen part of the undertaking the sum to be paid will be considerably reduced. This latter matter also has been practically arranged.

The present reservoirs are situated on the Gnoll Estate, and have a storage capacity of twenty-and-a-half million gallons. The water is conducted in iron

pipes, and distributed to the majority of the houses within the district, except in some of the courts, where one tap serves more than one family. A new reservoir is soon to be constructed with a storage capacity of twenty-six million gallons, which, with the present storage, will give an ample supply.

The overflow from the reservoir is made use of for flushing the sewers.

The water has been repeatedly analysed, and with satisfactory results.

SEWERAGE, &c.—The whole district is well sewered, but the fall in some parts is very trifling, so that the ventilation and flushing of sewers is a matter of great importance, and has received the best attention of Mr. Jenkins, the Borough Surveyor. Hand flushed water closets have been provided in most cases; a few of the better class dwellings have flushing tanks. The sewage is disposed of in the tidal river (Neath) at three different points. The old system was brick built, but those recently laid, together with the house connections, are pipes. No house within the statutory distance is undrained, and there are only about a dozen privies in the district, and these beyond the statutory distance. The system is flushed by means of a few conveniently placed automatic flushing tanks, fed by the overflow from the reservoirs, and ventilated by Keeling-Holman's process, where the sewer gases are brought into intimate contact with jets of burning coal gas placed within the hollow basis of lamp pillars.

The Borough Surveyor has given this matter his most careful attention, and further remarks are unnecessary, except that it might be mentioned that there has been a marked decrease in the number of typhoid fever cases within the borough since this process of ventilation has been adopted, and one cannot help thinking that it is, to a great extent, due to this more efficient plan of sewer ventilation. I am informed that the system will soon be extended and more burners added.

Surface and slop water is allowed to enter the sewers.

SCAVENGING, &c.—The scavenging is let on contract at about £600 a year, and well performed.

SYSTEMATIC INSPECTION.—Mr. Davies, the recently appointed inspector, makes frequent and systematic inspections of the district, and nuisances are sought out and the provisions of the Public Health Act for their suppression enforced, independently of any complaints from the inhabitants.

MORTALITY STATISTICS FROM 1882 TO 1893 (12 YEARS).

	DEATHS FROM											Deaths in Public Institutions.	Annual Rate per 1,000 persons living.			
	The Seven principal Zymotic Diseases.	Small Pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping Cough.	Fevers.	Diarrhoea.	Diseases of Respiratory Organs.	Phthisis.	Violence.		Births.	Deaths.	Deaths from Seven Zymotic Diseases.	Deaths from Diseases of Respiratory Organs.
1882.....	8	...	...	1	...	...	6	1	32	32	6	2	35.5	16.1	0.61	5.9
1883.....	26	...	13	1	...	11	1	1	34	43	6	35	30.7	21.9	2.4	7.0
1884.....	10	...	...	6	4	...	...	...	24	26	11	16	31.4	16.6	0.78	3.4
1885.....	13	...	...	2	3	6	2	...	46	21	6	32	33.7	20.3	1.2	6.1
1886.....	8	...	...	...	...	6	1	1	35	25	5	32	34.2	19.6	0.61	5.5
1887.....	49	...	24	...	...	19	4	2	41	36	4	18	...	21.9	4.5	7.0
1888.....	8	...	...	7	...	...	1	...	25	23	2	7	32.1	15.2	0.61	4.4
1889.....	12	...	...	1	...	6	4	1	31	26	4	21	30.0	16.8	1.1	5.2
1890.....	29	...	7	13	...	2	7	...	42	16	4	12	28.8	19.7	2.7	5.3
1891.....	16	...	1	2	1	9	1	2	64	24	2	27	34.1	21.8	1.5	8.0
1892.....	13	...	1	4	3	4	1	...	47	23	6	17	...	19.6	1.2	4.6
1893.....	12	...	...	2	...	2	1	7	39	19	8	12	36.8	18.9	1.1	5.3

ADOPTIVE ACTS.—The following Acts have been adopted :—

- (1) The Infectious Disease (Notification) Act, 1889.
- (2) The Infectious Disease (Prevention) Act, 1890.
- (3) The Public Health Acts Amendment Act, 1890.

BYE-LAWS AND REGULATIONS.—The Authority possess a Code of Bye-laws sanctioned by the Local Government Board in 1893. They refer to :—

- (1) The prevention of nuisances arising from snow, filth, dust, ashes, and rubbish, and of the keeping of animals on any premises so as to be injurious to health.

No Regulations have been made under the Dairies, Cowsheds, and Milkshops Order of 1885. This is one of the few sanitary districts that have not made regulations under this Order. Without precise Regulations it is impossible to insure that premises, cattle, and milk are kept clean and in order.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—The Notification, Prevention, and the Public Health Acts Amendment Acts have been adopted, and during the year 1893 a building belonging to the Corporation has been converted into an Isolation Hospital. It provides accommodation for seven patients. It is suitably furnished, and includes a disinfecting apparatus (Frazer's), an ambulance, and a bath-room. It is always in readiness, so that the first persons attacked may be promptly isolated. A tent hospital can also be erected on the shortest notice, which will provide accommodation for 12 or more patients. The building and grounds are under the care of one of the Corporation officials, and there is a standing arrangement with a Bristol Institution for the supply of nurses whenever needed.

16th February, 1894.

OYSTERMOUTH (Mumbles).

	1881.	1891.	1893.
Population ..	3,183	3,598	4,000
Area in acres ..		2,615.	

The small district of Oystermouth is a well-known watering place, and comprises the greater portion of the parish of Oystermouth. It is one of the residential suburbs of Swansea, situated along the shore of the western horn of Swansea Bay, and bounded on the north-east and west by the Rural District of Gower. The district has a rateable value of £1,270, and covers the limited area of 2,615 acres, and is backed by a range of limestone cliffs. The town consists of a long street fronting the bay, with a number of other streets at right angles and on a higher ground. The villages of Norton and Newton are entirely on the hills. The soil consists of clay and sand. Along the principal street, where the main sewer runs, there is but a very slight gradient. It has a constant population of some 4,000 inhabitants, which is considerably increased during the summer months. There is a high road and steam tram communication with Swansea.

HOUSE ACCOMMODATION.—Many of the houses are of the better class, and occupied by business people. The smaller houses are in a fair condition, except some in the villages of Norton and Newton, and in Village Lane. There are no common lodging houses within the district, no back-to-back, no cellar, and only a few back-to-earth dwellings. There are some houses without through ventilation.

The streets, lanes, and areas about dwellings present a neglected appearance, and are often found unpaved and not sufficiently drained. Many of the smaller ones are damp from want of eavespouts.

There are four slaughter-houses, and, with one exception, they cannot be said to be fit for the purpose. They have been lately registered.

WATER SUPPLY.—The water supply of the district is in the hands of a private Company, and is pumped from Caswell Bay to a reservoir above Newton, the

elevation of which is 280 feet. The storage capacity of the reservoir is not sufficient, and the supply was intermittent during the drought of last summer.

During 1893, the mains were extended to Dickslade and Tichborne. Norton and Newton are still inadequately supplied. There are several wells within the area, close to habitations, and open to much suspicion, and may at any time be a source of danger. These should be condemned and closed.

DISPOSAL OF EXCREMENT, REFUSE, &c.—There are about 280 water closets, 500 pails, and some 130 privies within the district. The contents of the water closets enter the Authority's sewers, but the pails are periodically emptied and their contents disposed of with the street and other refuse. The villages of Norton and Newton are entirely unconnected, and without the statutory distance. Slop and surface water is allowed to accumulate or to flow in open surface channels.

The pail closets are emptied twice weekly by the sanitary staff.

SEWERAGE, &c.—There is one long sewer about a mile or more in length, laid under the main street. From this there are cross branches connected with the side streets and dwellings on the higher level. The main sewer has but a slight gradient, and extends from West Cross to South End. At West Cross there is a flushing tank, which is said to be emptied only once a fortnight. At the South End the sewage is collected in a tank and emptied into the sea at every spring tide. The villages of Newton and Norton are not sewered. The slight gradient of the main sewer is a source of much annoyance, and this renders flushing the more necessary.

ADOPTIVE ACTS.—The Authority have wisely adopted :—

- (1) The Infectious Disease (Notification) Act, 1889, since November, 1892.
- (2) The Infectious Disease (Prevention) Act, 1890, since November, 1892.

The Public Health Acts Amendment Act has not yet been adopted.

No Regulations have been made under the Dairies, Cowsheds, and Milkshops Order of 1885. This is one of the few districts in the County that have not made regulations under the Order. Without precise regulations it is impossible to insure that premises, cattle, and milk are kept clean and in order.

There are 12 dairies and cowsheds in the district.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—There is no isolation accommodation provided by the Authority, nor is there an apparatus for the efficient disinfection of articles of bedding and clothing. Arrangements have been made, however, whereby the infected sick of the district may be received and treated at the Swansea Fever Hospital, and where infected articles of bedding, etc., are disinfected.

The conditions to which the attention of the Authority is specially needed are the following :—

- (1) The provision of means (within the district and in readiness) for the isolation and treatment of persons suffering from infectious disease.
- (2) The extension of the water supply to the villages of Norton, Newton, &c.
- (3) The closure of suspicious wells.
- (4) The provision of a suitable slaughter-house that would meet the requirements of the whole district.
- (5) The yards about premises should be properly paved, and where open channels exist for the conveyance of slop water they should be displaced by pipe drains provided with trap gullies.
- (6) Condition of Streets.—The Authority should keep the streets in proper repair, and with regard to private streets the powers obtained by the Authority through the adoption of the Private Street Works Acts, 1892, should be enforced.
- (7) The extension of the sewerage system to the village of Norton and Newton.

17th February, 1894.

PENARTH.

	1881	1891	1892
Population ..	5,997	12,000	12,500
Area in acres ..		2,507	

Penarth is about two miles south of Cardiff, and separated therefrom by the estuaries of the Ely and Taff rivers. The Penarth Urban District comprises the parishes of Penarth, Cogan, and Llandough. Penarth proper is beautifully situated on a hill, the highest point of which is about 200 feet above mean water level; Cogan is more in a hollow. Penarth is essentially a residential town. Cogan is inhabited by the industrial class, whilst Llandough is essentially rural and agricultural, extending considerably beyond the populous parts. The contour of the district is undulating and hilly, the natural drainage of Penarth being into the sea, that of Cogan into the Ely. The geological formations appearing in the district are the lower lias clay and limestone, red marl, and the Penarth beds. The Penarth Docks are under the control of the Cardiff Port Sanitary Authority.

WATER SUPPLY.—Penarth is fortunate in possessing the same supply as that of Cardiff. This water is considered excellent in quality, and is generally plentiful in quantity. All the houses in the populous parts are connected with it.

SEWERAGE AND DRAINAGE.—Penarth and Cogan are well sewered and drained. There are two main outlets for the Penarth sewers, both into the sea, one at the Kymin and the other on the opposite side of the town, whilst the main outlet for the West Cottages and Cogan is into the Ely. The Authority are at present negotiating to carry the Penarth outlets further out, as they are at present a source of considerable nuisance. There are no separate sewers provided for storm and surface water. The sewers are periodically flushed from the highest points in the various localities. There is no provision for automatic flushing, but as the sewers have a good fall it may not be necessary. They are also well ventilated, there being provisions by open manholes for a free circulation of air throughout the system, and no complaints are made of sewer emanations. It is to be noted that most of the water closets provided for the houses of the working classes are not provided with flushing apparatus, and the attention of the Authority has been drawn to the desirability of enforcing the providing of a water supply to each closet by means of a two gallon "Waste Prevention Cistern."

The village of Morriston is drained into two large cesspools, and the overflow therefrom is disposed of by broad irrigation on a field a sufficient distance away, and is not complained of so far. The water closets here also are hand-flushed, and the flushing is said to be effectual. These cesspools are well covered in, but not ventilated—they are periodically emptied. All the cesspits have recently been done away with.

REFUSE DISPOSAL.—The disposal of refuse is undertaken by the Authority, and apparently with satisfaction. It is deposited mostly in an old pond (brickpond) at Cogan, with the idea of getting it filled up. This is not altogether a desirable procedure, for the stench therefrom is sometimes complained of. Besides, granting that the Authority have succeeded in filling up the pond, it will not, to say the least, be a desirable site for building purposes.

HOUSE ACCOMMODATION.—The house accommodation is said to be sufficient for the district. There is no overcrowding, and no back-to-back houses. Most of the streets are provided with back lanes, thus allowing circulation of air in all directions. The properties are in excellent order. There are no common lodging-houses. There are, however, several seamen's lodging-houses, but no bye-laws exist for the regulation of the same.

ADOPTIVE ACTS.—The Infectious Disease (Notification) Act, 1889, the Infectious Disease (Prevention) Act, 1890, and the Public Health Acts Amendment Act have been wisely adopted by the Authority. The Infectious Disease (Notification) Act is said to work very satisfactorily.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—There is no Isolation Hospital, and no disinfecting apparatus of any description. It is true that there is gratuitous supply of disinfectants provided, and that every infected house is disinfected by the Sanitary Inspector, but articles of bedding and clothing cannot be satisfactorily disinfected by the burning of brimstone in a room.

BYE-LAWS AND REGULATIONS.—Bye-laws and Regulations exist with respect to—

- (1) Dairies, Cowsheds, and Milkshops Order of 1885.
- (2) Horses, Ponies, Mules, or Asses standing for hire.
- (3) Nuisances.
- (4) New streets and buildings, and the provisions for the sewerage thereof.
- (5) Hackney Carriages.
- (6) Pleasure Boats and Vessels.

A new Code of Bye-laws is soon to be adopted.

As Penarth Docks are under the supervision of the Cardiff Sanitary Authority no special precautions are being taken against the importation of cholera.

The great wants of Penarth are :—

- (1) An Isolation Hospital and a proper disinfecting apparatus.
- (2) Bye-laws as to Seamen's Licensed Lodging-houses, Merchant Shipping (Fishing Boats) Act, 1883.
- (3) A more satisfactory method for disposal of house and street refuse.

22nd March, 1893.

PONTYPRIDD.

	1881.	1891.
Population ..	12,317	19,971
Area in acres ..	2,560.	
Population of the New District, about	30,000.	
Area in acres ..	8,000.	

The prosperous and historical town and district of Pontypridd is one of the most important centres in South Wales. It owes its great prosperity to its steel, iron, anchor and cable works, and the numerous coal mines in its immediate vicinity. The town of Pontypridd occupies the lower portion of the Rhondda, together with a portion of the Taff, Valleys, and is situated 12 miles north-west of Cardiff. The district comprises portions of the five parishes of Llanwonno, Eglwysilan, Llantwit Fardre, Llantrisant, and Llanfabon, and includes Pontypridd proper, Gelliwasted, Hopkinstown, and Trehavod (occupying an extensive triangular area between the two rivers before their confluence); Rhiw and Graig on the Gelli-wion brook; Coed-pen-maen and Trallwn to the north, and in the direction of Merthyr on the east of the Taff; whilst to the south, and in the direction of Cardiff, and adjoining Pontypridd proper, is situated Treforest on the west; and Pentrebach, Glyntaff, Rhyd-y-felin, on the east of the Taff River. Lately the boundaries of the old district have been altered and extended, so as to include Pont-shon-Norton and Cilfynydd to the north, and White-Hawthorn and Upper Boat to the south. The area extends considerably beyond the populous centres above enumerated, and includes much agricultural and mountainous land, and is essentially rural in character. The general contour of the district is hilly and undulating, its natural drainage being into the rivers and their tributary brooks. Adjoining the rivers, and extending for some distance, the soil consists of alluvium and debris from the hill sides, whilst in the hilly and mountainous parts the geological formation is mostly the Pennant sandstone overlying the various carboniferous strata. The carboniferous limestone appears just beyond and to the south of Upper Boat. The highest centres of the district are Rhiw (300 to 400 feet above mean water level), Trehafod (300 feet above mean water level), and Cilfynydd (400 feet above mean water level), whilst the lowest centre is Upper Boat (130 feet above mean water level).

level). The elevation of Pontypridd (Newbridge) is 200 feet. The gradient throughout is, therefore, very considerable. There are main high roads on all sides, and direct railway communication with Cardiff, Cardiff Docks, Barry Docks, Newport, Port Talbot, Neath, Swansea, and the Rhondda and Merthyr Valleys. The system of railways, main high roads, and rivers are much on the same plan.

The Merthyr and Cardiff Canal passes through the whole length of the district, and is further polluted at many points.

The old Urban District of Pontypridd was formed some twenty odd years ago, and during the last decade it has more than doubled its population.

HOUSE ACCOMMODATION.—The house accommodation throughout the district is somewhat limited, and overcrowding is said to prevail. There is much building going on in all directions, and Cilfynydd, Pont-shon-Norton, and portions of Rhiw and Graig have entirely sprung up during the last five or six years. Generally the houses are very good and of solid construction, but in the older parts they are more irregular, more crowded together, more dilapidated and damp, such as in the various courts of Pontypridd along the river banks, Trallwn, Glyntaff, and Treforest. Those recently built are in rows and terraces—on the style of miners' houses throughout similar districts of the county generally—on the steep banks of rivers, brooks, and the canal, such as at Cilfynydd, Pont-shon-Norton, Rhiw, and Graig. There are no back-to-back houses, and comparatively few unfit for habitation. Recently, several dwellings have been condemned by the Medical Officer of Health (Dr. Howard Davies) as unfit for human habitation; some of these have since been closed, whilst others are still allowed to remain tenanted, and in their former dangerous condition.

I find that such is the case with two common lodging houses, one in High Street and another in Rickard Street. These are condemned on account of want of head room, want of through ventilation, want of light, general dilapidation and structural defects. There are several others, such as at Jones' Court, Davies' Court and Old Ford Row, that require more attention; some of these in their present condition of unhealthy surroundings—confined areas, with insufficient provisions for surface drainage, &c.—cannot be considered fit for habitation. Four houses in Davies' Court are liable to be, and often are, flooded to the depth of three or four feet. In the confined area of this court there is an offensive manure heap, uncovered and unprotected; besides, there are no efficient facilities for surface drainage, and the inhabitants complain of the offensiveness arising from the defective drains. The back lanes, gardens, back yards, and areas about dwellings, especially at Cilfynydd, are altogether neglected, and the receptacles of much filth, house refuse, excrement, the overflow and soakage from defective privies and privy cesspools.

WATER SUPPLY.—Pure and wholesome water in sufficient quantity, free from all sources of contamination, and not liable to become dangerously polluted, is one of the prime necessities of life.

The water supply of this district is in the hands of a private company (The Pontypridd Water Company) and derived from various sources, the most important of which are two chief reservoirs, one some distance above Mardy in the Rhondda Fach Valley, and the other on the hillside above Cilfynydd. Besides these two chief reservoirs there are two others; one on the hill above Gelliwastad, and the other above Rhiw, both chiefly, but not altogether, supplied from the Mardy Reservoir. The Mardy and its auxiliary reservoirs supply Tre-Hafod, Hopkins-town, Pontypridd, Rhiw, and Graig, together with the Rhondda Fach, Porth, Cymmer, Dinas, part of Trealaw, part of Penygraig and Williamstown (in the Ystradyfodwg Urban District). The Cilfynydd Reservoir supplies Cilfynydd, the whole of Treforest, and most of the district east of the river as far as Rhyd-y-felin. The general method of supplying the water is by means of taps inside the various houses.

There are some houses throughout the district without any supply, but these are generally to be found in the outlying rural portions. They depend mostly on

wells and spouts (pistyllau), some of which are certainly polluted, as evidenced by results of chemical analysis (*vide* below). There are many wells within the district, and some give very good water. Rhyd-y-felin, White Hawthorn, and Upper Boat depend entirely on such as these.

During wet weather the supply is sufficient, but during times of drought, some weeks without rain, as at present, it runs short, owing to the fact that sufficient provision has not been made for storing a reserve supply.

The Mardy Reservoir has been almost dry for some time, and the supply that remains is only sufficient for a few days, and should the present dry weather continue much longer the condition of the district will become very serious; and should the summer be a dry one matters will assume a still more serious aspect. At present the outlook is most gloomy. The flushing of drains and the existing water-closets will soon become impossible, and every trap, unless supplied with water, must necessarily become a drain ventilator.

For the health of the community it is essential that the supply be sufficient, and supplied on the constant service principle.

Now that the conjoint main sewerage system is on a fair way to become completed, and when the various midden and cesspit systems, now so general throughout the greater part of this district and a part of the adjoining Ystradfydwg Urban District supplied from the same source, a much larger quantity of water will be required, and unless forthcoming the conjoint main sewerage system cannot answer the purpose for which it was intended.

It must be said, however, that the Water Company are doing their best (under the circumstances) to obtain a sufficient supply and are making use of all available means whereby to augment it, but, notwithstanding all their efforts, the Pontypridd Local Board will find, if an epidemic such as of cholera or typhoid fever were to break out, that their ravages would be aided rather than resisted because, amongst other deficiencies, of the want of enough water for drinking, domestic, and flushing purposes.

Before long the important question of water supply and its storage will have to be seriously considered in this and other similarly situated districts throughout the county.

The attention of the Authority has repeatedly been called to the unsatisfactory water supply of the district. The provisions for filtering and storing a reserve supply at Mardy are very inadequate.

Certain well and other waters of questionable purity were analysed, and with the results appended.

1. **FOUNDRY PLACE WELL, TRALLWN.**—Mr. Rowland, the Sanitary Inspector, being suspicious of the purity of this water, on account of the position of the well at the foot of a steep hill and surrounded by dwellings and numerous cesspits on a high level, sent a sample for analysis. This water is much in demand at present on account of the scarcity of other water. Analysis shows it to be largely polluted with the oxidation products and constituents of animal or drainage matter, and dangerous to the health of persons drinking it.

2. **GLAN-Y-GERWIN ROAD WELL (NEAR GLYN-TAFF CEMETERY).**—Suspicious on account of its situation near and below the cemetery. The Glyn-Taff Cemetery is drained direct into the canal by means of an earthenware pipe drain, which, however, does not extend quite as far as the water, but its contents are allowed to run over the surface, and when I visited the place with the Sanitary Inspector a couple of children were playing in the water at this spot with bottles and tins. They denied having drunk any of the water, but other children may have done so. It should be quite out of their reach.

3. **SARON STREET WELL, TREFOREST.**—Depth, about 18 feet. Dry walled and uncemented; cesspit, slop drain, and hen-pen within a few feet. Should be closed forthwith.

EXCREMENT AND REFUSE DISPOSAL.—Throughout the district some of the various systems adopted for the removal of excrement are unsatisfactory, although

in the better class of recently-built houses, the improved system of w.c.'s, with flushing apparatus, is being adopted. These various systems are :—

- (1) Cesspits.
- (2) Cesspools.
- (3) Water closets.

There are also a few pail closets here and there.

The emptying and management of these various receptacles is not undertaken by the Authority, but left to the occupiers, and consequently very imperfectly performed. Their only practicable plan of disposal is to bury the contents in the gardens, which are generally uncultivated, and often rising steeply from the back of their houses, or descending steeply to those of their neighbours. By this arrangement the soil of necessity becomes sodden with excremental filth, and the air of areas surrounding dwellings very unwholesome and injurious. Excrement is disposed of at Cilfynydd and other localities. The other receptacles said to be made use of, are the rivers, canal, and adjoining fields.

Privies, properly constructed and systematically emptied, are unwholesome appliances for populous districts such as these, and when neglected, they become a source of much danger.

There are also many cesspool-water-closets, that is to say, properly constructed and flushed water closets, emptying their contents into cesspools some little distance away, and generally in the gardens. One of these cesspools often serves several houses. These have their overflows sometimes to drains, but generally allowed to soak and percolate into the soil beneath. They are but seldom emptied.

The w.c.'s are mostly provided with proper flushing apparatus, but some are merely hand-flushed.

When the conjoint main sewerage system is completed the Authority then propose to convert all the existing privies and cesspool water-closets into properly-constructed and automatically flushed w.c.'s, but until then the Authority are powerless, and nothing besides the rigid enforcement of bye-laws in relation to the frequent emptying and cleansing of privies, &c., can be of any avail.

Up to the present there has been no regular system of sewerage and drainage. The various sewers and drains are piecemeal, and empty direct at various points into the rivers, or on their banks, and sometimes into the canal. The sewage, or such of it as gets removed from the neighbourhood of dwellings, practically all finds its way to the rivers or streams. Slops and other liquid refuse, including drainage from piggeries, slaughter-houses, &c., all find their way, as a matter of course, in the same directions.

The Authority are now engaged, in combination with neighbouring authorities, in the construction of a main outfall sewerage system. The works are nearly completed, and the various house connections will soon be started. It is to be hoped that a great boon will thus be conferred upon this and other neighbouring districts, provided there be sufficient water for flushing purposes.

SCAVENGING AND SCAVENGING DEPOTS.—The disposal of refuse generally is undertaken by the Authority, and let out in contracts. In some parts of the district, as at Cilfynydd, it is most slovenly done, or almost neglected, so that back lanes and areas about dwellings become the receptacles of dangerous nuisances. The various scavenging depôts of the district are not fenced in, so that children can be seen playing on them. They are too near rivers and dwellings, varied in their contents—manure, street and house refuse, decaying vegetable and animal matter, such as putrid fish, &c. The stench therefrom is unbearable, and certainly dangerous. They are not disinfected in any way, and are most suitable media for the propagation and cultivation of germs of infectious diseases. Nothing short of burning can do away with the danger arising in connection with these heaps. The question of an efficient steam disinfecting apparatus should be considered in connection with the question of a "destructor," which might be so designed as to supply steam for this purpose.

PROVISIONS AGAINST INFECTIOUS DISEASE.—The Authority are to be congratulated upon the fact that the compulsory notification of the Infectious Disease Act is adopted in the district. So far hospital accommodation for the isolation of the first cases of dangerous infectious diseases is not available. The Medical Officer of Health has repeatedly called the attention of the Board to the great desirability of providing an Isolation Hospital; and since isolation is practically impossible in the small cottages of the district the curtailment of epidemics is also impossible. It is gratifying to find that this important question of "the isolation of infectious cases of sickness" is engaging the attention of the Authority, and it is to be hoped that a tangible result will soon be forthcoming.

It is true that the Sanitary Inspector makes good use of disinfectants and that houses and drains are carefully disinfected as occasions arise, but still no provision is available for the efficient disinfection of infected bedding and clothing.

As previously mentioned, the provision of a steam disinfecting apparatus should be considered in connection with the question of providing a "destructor" which might be designed so as to supply steam for this purpose.

COMMON LODGING-HOUSES.—There are several common lodging-houses in the district. They are all licensed and registered for a certain maximum number of lodgers. They are under police supervision and control. Two of these houses, already condemned by the Medical Officer of Health as unfit for habitation, are still occupied. Some are very clean and well kept, but others require more care and attention.

SLAUGHTER-HOUSES.—All the slaughter-houses throughout the district, with a few exceptions, are inadequate for the purpose, and do not comply with the Board's Bye-laws.

The Sanitary Inspector has reported specially upon them, and says:—"I may add that in my opinion there is not a slaughter-house in the whole district that complies with the Bye-laws or with the requirements of the Public Health Act," and, as Mr. Rowland further reported, "They do not possess sufficient provisions for the removal of filth and garbage, and no cooling houses; flooring, drainage, roofing, are often at fault; they are too near dwellings, and in some instances, obnoxious and offensive smells are much complained of; insufficient ventilation, and no receptacles for blood and offal. There are no regulations placed in any of the buildings." My own inspections allow me to confirm the above statement.

I am pleased to find that these various slaughter-houses will not long be required, for a large convenient central "Abattoir" is being constructed by the Board at a very great expense. It will be fitted with every convenience, and will be sufficiently large to accommodate all the butchers of this and surrounding districts. It is to be hoped that the old slaughter-houses will be closed by order of the Authority as not complying with their Bye-laws.

ADOPTIVE ACTS.—The Board have adopted:—

- (1) The Infectious Diseases (Notification) Act, 1889.
- (2) The Public Health Acts Amendment Act, 1890, and
- (3) The Private Street Works Act, 1892.

BYE-LAWS AND REGULATIONS.—The Bye-Laws in force are framed on the lines of the Model Bye-Laws of the Local Government Board, and were adopted in 1887. They refer to

- (1) New streets and buildings
- (2) Hackney carriages.
- (3) Slaughter houses.
- (4) The offensive trades of bone boiler, blood boiler, blood drier, fellmonger, tanner, leather dresser, soap boiler, tallow melter, fat melter and extractor, tripe boiler, glue maker, size maker, gut scraper.
- (5) Cleansing of footways and pavements, and the cleansing of earth closets privies, and cesspools.
- (6) Houses let in lodgings, and
- (7) Common lodging-houses.

Strict enforcement of the above would result in a great benefit to the district generally.

Regulations have recently been adopted under the Dairies, Cowsheds, and Milkshops Order, 1885.

RIVER POLLUTION.—The Rhondda River is much further polluted in its passage through this district. At the Great Western Colliery, Hafod, small coal and dirty washings from the washing machine are poured direct into the river, with the result that there is an enormous accumulation in its bed, and on which it much encroaches. The Taff River before reaching this district appears comparatively clean and clear.

Both rivers in their passage through the district are much further polluted. All the sewage disposed of by means of drains is discharged direct therein. Slop, surface, and liquid house refuse, pigstye and slaughter-house drains, blood, and other articles of filth gain access into the river. It further receives much chemical contamination from the Treforest Tin-plate Works. These impurities consist of free sulphuric acid (oil of vitriol), sulphate of iron in solution (copperas). After exposure for a short time to the air the sulphate of iron is oxidised into oxide of iron (yellow ochre) which is soon deposited in the beds and on the banks of the river, as evidenced by the yellowish-red appearance of the water and a deposit of a similar colour tenaciously clinging to stones, earth and stumps of trees and other materials.

These impurities are, in my opinion, inimical to vegetation and to fish life, and likely to prove injurious to animals drinking the water.

On the 5th instant, accompanied by Mr. Rowlands, the Sanitary Inspector, I visited the above works, and interviewed Mr. Hammond, one of the managers, who, when asked, admitted that no attempts were made to purify the water from the pickling tanks, &c., before it was allowed to re-enter the feeder, and that he did not consider it important as there were no fish in the river below. The feeder is a portion of the Taff, diverted some distance above the north of the works, and, passing through the works, driving several large wheels and again emptying into the river half a mile lower down.

The districts of Cilfynydd, Pont-shon-Norton, White Hawthorne, and Upper Boat, recently added to the Pontypridd Urban District, require special mention.

CILFYNYDD AND PONT-SHON-NORTON.

These two mining hamlets, which adjoin each other, contain a population of some seven to eight thousand people, and have been built entirely during the last five or six years. The houses are of good construction, built in rows and terraces, half way up a steep hill side, the sub-soil being clay and disintegrated sandstone. At the foot of the hill is the Merthyr and Cardiff Canal, but with the high road intervening.

At Cilfynydd there is no regular system of sewerage. The slop-water drains discharge eventually into the canal. Scavenging has been much neglected, the back lanes and areas about dwellings are sewage sodden and the receptacles of much filth.

Cesspit privies and cesspools receiving the discharge of water-closets are in general use. They are said to be often overflowing, especially during wet weather and floods, into the back lanes, and often into the very houses.

The emptying of these receptacles is left to owners and occupiers, and, in many instances, it seems never to have been performed.

All the houses have through ventilation, but owing to the slope of the land, some stagnation of air, dampness and befoulment of soil about houses result.

The place is well supplied with water on account of its proximity to the reservoir.

It has been sadly neglected, and requires much constant care and attention before it can be brought to anything like a sanitary condition.

PONT-SHON-NORTON.

Pont-shon-Norton is in a similar condition, and also requires the same care and attention.

WHITE HAWTHORNE.

White Hawthorne is a small village of about twenty houses on the banks of the Taff, south of Treforest. The houses are good, and the water supply obtained from a spout. For the disposal of sewage, privies are used. Most of it ultimately reaches the river.

UPPER BOAT.

Upper Boat is another small village, still more south and on the banks of the Taff. It contains some thirty or forty houses, having a somewhat dilapidated and destitute appearance. The sewage is disposed of by means of privies, and I observed several of these receptacles and slop-water outlets emptying direct into the river.

The conditions to which the attention of the Authority is specially needed are the following:—

- (1) The connections of houses with the various tributary branches of the conjoint main sewer, and the conversion of the existing cesspits and cesspool water closets into properly-constructed and automatically flushed water-closets.
- (2) The more strict enforcement of the existing bye-laws.
- (3) The better regulation of common lodging and slaughter houses, and of unhealthy areas and lanes about dwellings.
- (4) Provision of means for isolation and disinfection of cases of epidemic disease.
- (5) The desirability of destroying by burning the various scavenging tips.
- (6) A more plentiful supply of water for domestic and flushing purposes and provisions for storing the same.
- (7) The occupation of a few houses already condemned on account of structural defects.
- (8) The constant use of water from certain wells of questionable purity, together with the desirability of closing the same.

9th May, 1893.

THE ANALYSIS OF A SAMPLE OF WATER FROM FOUNDRY PLACE WELL,
WITHIN THE PONTYPRIDD URBAN SANITARY DISTRICT.

Date when received	..	..	..	19th April, 1893
Description	..	..	Clear, but of a faint yellow colour	
Total Solids	..	..	..	38·500
Albuminoid Ammonia	..	..	..	0·007
Free Ammonia	..	..	..	0·003
Nitrogen as Nitrates and Nitrites	..	..	..	15·800
Previous Sewage or Animal Contamination	..	..	..	15·500
Chlorine as Chlorides	..	..	..	3·9
Sulphuric Acid as Sulphates	..	..	..	Excessive
Magnesia Salts	..	..	..	Moderate

REPORT.—This water is largely polluted with the oxidation products and constituents of animal or drainage matters, and is, in my opinion, dangerous to the health of persons drinking it.

27th April, 1893.

PORTHCAWL.

Population (constant) about	..	2,000
„ (occasional) „	..	4,000 or more.
Area in acres	..	3,365

This district, comprising the Parish of Newton Nottage, formerly belonged to the Bridgend Rural Sanitary District of the Bridgend and Cowbridge Union, but a

few months ago was created into an Urban District. It covers an area of 3,365 acres, and its rateable value is £5,900. It includes the old villages of Nottage and Newton, about a mile distant to the north-east and north, respectively, each with a population of some 200 to 300 inhabitants. Towards the north it is surrounded (at some distance away) by a chain of hills. The soil consists mostly of blown sands overlaying the dolomitic and carboniferous limestone, which in many parts appear on the surface.

The constant population is about 2,000, which number is said to be more than doubled on occasions during the summer months.

Porthcawl is situated on a slightly elevated headland facing the Swansea Bay and Bristol channel, it has increased rapidly during the last few years, and is becoming a well-known watering place. It can boast of many natural advantages, such as fine sands, rocks, and breezy commons. It has a small convenient dock, and railway communication and main roads with the important mining districts of the County.

The district generally, is somewhat flat, the villages of Newton and Nottage being some 60 to 70 feet above ordnance data. Its natural drainage is towards the estuary of the Ogmore and the sea. The imports are mostly iron-ore and pitwood, whilst the export is chiefly coal. The population is partly residential and partly of the artisan class, the principal and constant trade being that connected with the port.

HOUSE ACCOMMODATION.—The house accommodation is said to be sufficient, and overcrowding an uncommon occurrence. Generally the houses are of a good class, the greater number having been erected during recent years. The older dwellings at Porthcawl and neighbouring villages are dilapidated, and in many cases there is absence of spouting. Throughout the district there are several back-to-back houses, and several also without through ventilation. Generally, it may be stated that they are inadequately supplied with privy accommodation; most of the existing drains are defective, in that they are either blocked or unventilated or both, and are the subject of many complaints by the occupiers. This was the case in a large number of instances at the time of my visit.

WATER SUPPLY.—The water supply of the district is altogether derived from various local sources. The larger portion of Porthcawl is supplied by a Water Company. In many instances, however, the inhabitants obtain their supply from wells sunk in the vicinity of dwellings.

Having regard to the porous nature of the soil, the large cesspools and cesspits, the often leaky and unventilated drains, the water so obtained is, to say the least, of a questionable purity.

The Porthcawl Water Company obtain their supply from a deep well opposite the Queen's Hotel on the Newton Road, and pump it by means of steam power to two tanks on the Esplanade Hotel and the Rest. From these tanks it is distributed to the various houses by means of pipes and taps. The supply, however, is said to be fairly sufficient and constant.

The village of Newton is supplied with drinking water from a curious old well some 200 yards south of the church. It is approached by steps, and arched over to protect it from the sand. It is a singularly clear spring, that rises and falls at cross purposes with the tide. The yield is always plentiful. There are also several pumps in the village.

The village of Nottage is supplied by two wells, which are well protected, and away from all buildings and dwellings.

SEWERAGE, DRAINAGE, DISPOSAL OF EXCREMENT, &c.—Porthcawl is partly a privy-midden town. A considerable portion of the town, however, has been pipe-sewered and drained, but in an unsatisfactory manner. The part so sewered and drained is between the Wesleyan Chapel and the beach (except William Square, where there are several large unconnected cesspools), and includes John Street, Railway Terrace, the Hotels (Esplanade and Porthcawl), and the Esplanade Terrace. The dwellings within this area were found to be generally provided with

proper flushing apparatus; some were merely hand-flushed. The various soil-pipes were often unventilated or defectively ventilated. These drains are used for the reception of surface water, slops, and excrement, and, in many cases, were found blocked, defectively trapped, inadequately disconnected and ventilated. They deposit their contents, in the first instance, into various large cesspools, with a view of retaining the more solid portions of the excrement in these receptacles. Finally these contents are deposited on the beach, in front of the Esplanade Terrace, much above low water mark.

The nuisance so caused at the outfall is much complained of by residents and visitors alike, and is a source of much danger to the public health.

The remainder of the town is supplied with cesspools, which, in most instances, receive the surface and slop water as well as the solid excrement; they are but seldom emptied, and often overflowing. Their contents, when emptied, are buried in the soil of the gardens.

The sewers and drains mentioned above were constructed by the owner of the property in conjunction with the Sanitary Authority. I am informed that the cesspools are porous, not properly cemented or ventilated. This plan, which eventually contemplated the soakage of the sewage into the soil, is an infringement of all sanitary principles in the disposal of sewage in Urban Districts; but, nevertheless, it must be remembered, that the system was constructed some years ago when the town was much smaller than at present, and may be taken as indicating an appreciation of the necessity of provision for this object.

DISPOSAL OF REFUSE, SCAVENGING, &c.—So far the disposal of refuse, &c., has been neglected, and small heaps of ashes and other house refuse can be seen deposited indiscriminately throughout the district. The present Authority have already taken action in the matter, and have removed a considerable quantity from the neighbourhood of dwellings. Until an adequate system of public scavenging, under the control and management of the Authority's officials, is in working order, much improvement cannot be expected.

Dr. Randall, in his last Annual Report, says:—"Until a system of sewerage has been constructed, and in face of the undoubted need of the public removal of excreta and other house refuse for the many houses now in course of erection, it has become an absolute necessity that the Authority should undertake the scavenging of Porthcawl."

THE STREETS, AREAS, &c.—The streets and areas about many dwellings in the sewered part of the town are private, and as yet their care has not been handed over to the Authority. There are no public means for lighting them. They can be much improved.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—Dr. Williams, the recently appointed Medical Officer of Health, has advised the board to adopt "The Infectious Disease (Notification) Act," and it is to be expected that such will shortly be the case. In this connection I would suggest the desirability of also adopting "The Infectious Disease (Prevention) Act," and Part iii. of "The Public Health Acts Amendment Act, 1890."

There are no means in readiness for the isolation of dangerous infectious disease, such as cholera, &c., &c.; and besides, there is, so far, no apparatus for the disinfection of articles of clothing and bedding. The disinfection of such articles is impossible at home, and without such an appliance the efforts of the Medical Officer and Sanitary Inspector to limit the spread of infectious disease, will necessarily, to a large extent, be defeated.

PRECAUTIONS AGAINST CHOLERA.—The port of Porthcawl is under the jurisdiction of the Swansea Port Sanitary Authority, and Dr. Alexander, who resides here, has been appointed as Assistant Medical Officer of Health. I was informed by the Harbour Master that all vessels were intercepted and inspected before entering, and if found with a clean Bill of Health, are allowed to enter. So far no illness of an infectious character has been detected.

In the case of cholera occurring an isolation building at Porthcawl would be of the greatest value to the locality and the rest of the district.

BYE-LAWS AND REGULATIONS.—So far the Bye-Laws of the Bridgend and Cowbridge Rural District are in force, but new ones will soon be considered and adopted.

There is a large amount of work to be done in this recently created Urban District, and I am fully aware that the present Authority cannot be expected to remedy the many defects at once, but at the same time I would suggest that their attention be specially drawn to the following matters as requiring their consideration :—

- (1) The provision of a more efficient system of sewerage and drainage for the district.
- (2) That samples of drinking water from all sources (public and private) be sent for analysis, and that these samples be taken by the Surveyor after rain, and at certain times of the day (these times are known to him).
- (3) The provision of means for isolation and disinfection.
- (4) The adoption of a public system of scavenging.
- (5) The rigid observance of the Bye-Laws, especially in connection with new buildings and cesspools.
- (6) The desirability of adopting the following Acts relating to the public health :—
 - (1) The Infectious Disease (Notification) Act.
 - (2) The Infectious Disease (Prevention) Act.
 - (3) Part III. of the Public Health Acts Amendment Act.

24th August, 1893.

YSTRADYFODWG.

	1881.	1891.	1892.
Population ..	55,615	88,350	102,578 (estimated).
Area in acres ..	23,543		

It is one of the largest Urban Districts in the Kingdom, and certainly one of the most important. It is situated in the eastern portion of the county. In the year 1877, 16 years ago, it was formed into an Urban District, having been, prior to that date, a part of a Rural District under the jurisdiction of the Pontypridd Rural Sanitary Authority. It lies a few miles north-west of Pontypridd, and 14 miles north-west of Cardiff, and covers an area of 23,578 acres. This area extends considerably beyond the populous centres of the valleys, including numerous farms and much mountain land.

The population, distributed as below, is essentially an industrial one :—

District.	No. of Houses.	Population, (Estimated middle of 1892).
Treherbert	1,577	11,039
Treorky	1,349	9,443
Ystrad	2,708	18,956
Llwynpia	2,394	16,758
Pandy	1,521	10,647
Porth	1,321	9,247
Hafod ..	520	3,640
Ynyshir	825	5,775
Tylorstown	487	3,409
Ferndale	1,422	9,954
Mardy	530	3,710
Total ..	14,654	102,578

According to the census of 1881, the population was much less, and distributed thus :—

				1881	(Estimated by Dr. James, M.O.H)		1890
Treherbert	Rhondda Fawr			8,415	..		11,046
Treorky				7,610	..		9,100
Ystrad				10,375	..		17,290
Llwynpia				6,650	..		14,308
Pandy				5,341	..		9,506
Porth				5,425	..		8,862
Hafod ..	..	..	..	1,980	..		3,052
Ferndale	Rhondda Fach			—	..		9,485
Mardy				9,818	..		3,008
Tylorstown				—	..		7,966
Ynyshir				—	..		—
				55,615			93,618

The census for 1891 gave the population as 88,350.

GENERAL LOCAL FEATURES.—The district comprises two main valleys—the Rhondda and Rhondda Fach, running north-west and north-east, and giving passage respectively to two rivers with the same names. The valleys are deep and narrow, long and crooked, surrounded by high, mountainous ridges of Pennant sandstone overlying the various carboniferous strata. The hill Cefnyrhondda separates the two valleys. Adjoining the rivers, and extending for some distance, the soil consists of alluvium and *debris* from the hill sides, and occasionally of peat. The soil is often damp and boggy, and subsidences are very common throughout on account of the extensive underground excavations. There are also several cross valleys, each giving passage to a stream; on such are found Cymmer, Williamstown, Clydach Vale, Blaencwm, and Blaenrhondda. The district extends from Hafod to Treherbert (1,000 feet above sea level), the highest centre in the Rhondda, and is about 10 miles in length; from Hafod to Mardy (9,500 feet above sea level) the highest centre in the Rhondda Fach, and about seven miles in length. Hafod station is 400 feet above sea level, so that the gradient of the district is very considerable. The valleys slope towards a junction at Porth, and the two rivers also unite to form the combined Rhondda Fawr River. The natural drainage of the district is into the rivers and their tributary brooks. Each valley has a railway communication with Pontypridd, and from there in all directions, but more especially with Cardiff and Cardiff Docks. There is also a direct communication with Barry Dock for mineral traffic only. The Rhondda has another railway communication with Port Talbot, Neath, and Swansea, by means of the Swansea Bay Railway. The system of railway lines and rivers are much on the same plan. There are also main high roads on most sides.

THE INHABITANTS.—The growth and history of these valleys and their teeming population, from a few villages at Dinas, Trealaw, Porth, Ferndale, and a few scattered hamlets and individual farmhouses in the rural districts, have occupied not more than 25 to 30 years. During the last two decades the increase of population has been something enormous, and at the present, new centres are rapidly springing up (Pontygwaith, Clydach Vale, &c.), so that from Treherbert to Mardy is almost one solid mass of buildings on both sides, and in most places skirting the very banks of the foul rivers. This is noticeably the case in the Rhondda, but not to such an extent in the Rhondda Fach except at Ferndale. Some score or more coal mines, each employing many hundred persons, afford employment. Consequently there is a large numerical preponderance of the working classes and a very limited number of persons occupying the middle and upper stations in life. The former consist chiefly of workmen and their families, the middle rank of tradespeople, shopkeepers, and others, and the upper of colliery owners, managers, &c., &c. All are directly or otherwise connected with the trade and commerce of the place.

WATER SUPPLY.—Pure and wholesome water, in sufficient quantity, free from all sources of contamination, and not liable to become dangerously polluted is one of the prime necessities of life.

The water of the district is derived from various sources, the most important of which are the Ystrad Water Company and the Pontypridd Water Company. The Ystrad Water Company supply the whole of the Valley, on the one side, down to Miskin Hotel, Trealarw; on the other, down to the Gethin Hotel, Penygraig. The Pontypridd Company, from their reservoir above Mardy, supply the Rhondda Fach, Porth, Cymmer, Dinas, part of Trealarw, part of Penygraig, and Williamstown. The other supplies are:—The Llwynpia Colliery Company supply the company's cottages (about 400) at Llwynpia, with good spring water, impounded on the hillside, and away from all sources of contamination. The upper half of Clydach Vale is supplied by the Clydach Vale Colliery Company. The company's houses at Tylorstown are supplied by spring water impounded amongst the sandstone rocks just above the town.

There are many houses without any supply, and the water of wells and spouts (pistyllau) on the hillside is made use of. Most of the old wells are done away with, but some still exist and are liable to pollution.

During wet weather the supply is sufficient, but during times of drought, a few weeks without rain, it runs short, and such is the case at the present instant, and this in a great measure owing to the fact that insufficient provisions have been made by either the Ystrad or Pontypridd Water Companies for storing a reserve supply. The water is now supplied on the intermittent system for a few hours daily, in different parts, as the case may be. The inhabitants complain bitterly of the great scarcity and quality of the water they are obliged to drink, and should this weather continue for a few weeks longer, the condition of the valleys will be very serious. And should we have a dry summer, which is very likely to happen, matters will assume a still more serious aspect—no water means no work; and no work, no wages; no wages, and what result follows? The flushing of drains will soon become impossible, and the consequence will be that the various syphon and other gullies will act as sewer ventilators—most efficient carriers of cholera, typhoid fever, &c., &c. A modern and safe water supply should be uninterrupted, for should there be leakages in the drains, as is exceedingly likely to be the case in a rotten piecemeal system as obtains in the Rhondda, it is more than probable that some sewage and sewer gases will gain entrance into the water. Several cases of typhoid fever have lately occurred in several parts of this district, and in one instance I attribute the outbreak to defective traps, acting as ventilators of the surrounding sewers. For the health of the community it is essential that the water supply should be above suspicion, and supplied on the constant service principle.

Typhoid fever is of common occurrence in this district, and at the present moment there are several cases that have been reported to me. Typhoid fever is, like cholera, a filth disease—it is the sign-post of cholera—and wherever typhoid fever is present and is prevalent, or likely to recur, there also cholera may be expected, and by the same means that typhoid spreads by the same means will cholera make itself felt.

It is a matter of common observation in the district that wells and streams which formerly contained a plentiful supply of water suddenly become dry. This occurrence is doubtless owing to the underground excavations. I am assured by some of the oldest inhabitants of the Rhondda that of late years such has been the case in many instances throughout the district. Before long this important question of water supply and its storage will have to be seriously considered in this and similar districts. The Medical Officer of Health, Dr. James, has again and again called the attention of his Authority to the unsatisfactory water supply of the district. A few days ago the Pontypridd Reservoir, at Mardy, was nearly dry, and spring water was taken in direct to the mains, some few hundred yards lower. The filtering beds are very primitive in structure, and the provision for the storage of a reserve supply very inadequate.

HOUSE ACCOMMODATION.—The house accommodation of the district is very limited, and overcrowding is general. There is much house building going on. Generally the houses are very good and of solid construction, but in several parts such is not the case. They are built in rows or terraces on the steep banks of the rivers and brooks, such as Treherbert, Clydach Vale, Williamstown, Mardy, and Pontygwaith. In the older places many of the dwellings, in their present dilapidated condition, are unfit for habitation, *e.g.*, the cellar tenements in Miskin Road, Trealaw; Ash Terrace, Pentre; cellar dwellings in Marion Street, Clydach Vale; 37 and 38, Co-operative Stores, Tonypany (where typhoid has been prevalent); the cellar dwellings at Dinas Road, Dinas; several dilapidated old railway carriages on road side, between Dinas and Porth; a coach-house, used as a dwelling, at back of High Street, Cymmer; a row of houses at Fair Oak, Hafod; and the huts above the colliery, Tylorstown; areas about these dwellings, and in other localities, such as along the river banks at Treherbert, Treorky, Pentre, Dinas, &c., are studded with pigstyes, stables, slaughter-houses; and the immense scavenging tips are most unhealthy and dangerous on account of the foul gases evolved from the putrefaction of animal and vegetable matters. In dry weather the stench arising from these various accumulations are unbearable. It is to be noticed that in most cases these scavenging tips are too near dwellings, and are not, except in District 3, in any way disinfected. In this connection, from the Report of Dr. James for 1892, I find the following:—“Dilapidated dwellings—47 houses and 17 huts—were reported during the year to your Board as requiring repairs in order to render them fit for habitation. More or less repairs were effected to all of them, with the exception of two huts at Coedcae, Rhondda, which are now disused.”

EXCREMENT AND REFUSE DISPOSAL.—Throughout the district generally, the system, or different systems, of dealing with the excrement is highly unsatisfactory. The various systems are water closets, the pail system, cesspits, cesspools, and ash closets. The water closet system is adopted in the recently built centres such as Mardy, Pontygwaith, Porth, Hafod, Clydach Vale, Williamstown, part of Ynishir, and certain other localities; the pail, cesspit, and cesspool systems at Treherbert (partly), Treorky, Ystrad, Trealaw, Ferndale (partly), and Tylorstown (partly); while ash-closets prevail at Llwynpia, Ynishir, Cymmer, and Tylorstown.

The water closets are generally provided with flushing tanks, and their contents eventually reach the rivers along the various drains and sewers provided by the Authority. The drains and sewers also dispose of the slop, surface, and waste water. The contents of the pail and ash-closets are disposed of, at certain intervals, by the public scavengers and deposited in the various scavenging tips (mixed with the street and house refuse) of the different localities. The contents of cesspits and cesspools are supposed to be disposed of by being buried in the gardens by the occupiers. As a matter of fact this is not done, and it is common to find that they are but seldom, if ever, emptied, and their contents overflowing and soaking into the soil beneath, which is already sodden with human excrement and other dangerous filth.

The disposal of refuse is undertaken by the Authority, and let out in contracts. To quote the words of Dr. James: “Scavenging in the private streets and lanes is being slovenly done, and look where you may on the open spaces around our irregularly built houses, remnants of wearing apparel, old boots, old fish, pots, &c., are allowed to accumulate. Some of the streets, such as Church Street, Ton; Senghenydd and Herbert Streets, Treorky; and Long Row, Blaenllechau, are almost impassable on account of the ruts, mud, and slush, whilst other streets, again, are so much out of repair as to be dangerous to travel at night time.”

SCAVENGING DEPÔTS.—“We are very deficient in scavenging depôts, and these again are seldom fenced in, so that children, ducks, geese, pigs, &c., can be seen discussing the last deposited loads. These loads contain the germs of disease, such as measles, scarlatina, diphtheria, typhoid fever, &c., besides being very unseemly when thus left open. From the deficiency of recognised and convenient refuse depôts, small cow-keepers continually and stealthily uncart their manure in too

close proximity to the dwellings." The various scavenging depôts are of enormous size, many in number, varied in their contents (human excrement, manure, street and house refuse, decaying animal and vegetable matters, *e.g.*, slaughter-house refuse, decaying cabbage leaves, &c., &c., old boots, cast-off clothes, bottles, old jars, fish, fruit, &c.), they are almost invariably on the river banks and often encroaching upon its bed. The stench therefrom is unbearable in dry weather. They are par excellence most suitable media for the cultivation of germs of infectious diseases. The time is at hand when their destruction by burning will have to be considered. Given a few cases of cholera, these depôts would *per se* be likely to spread the disease broadcast. As above-mentioned, their disinfection, except in one district, is not attempted.

SEWERAGE AND DRAINAGE.—The sewers and drains that exist are piece-meal, emptying their contents at various points direct into the river; in other places they do not reach the rivers, so that the contents are distributed on the banks and sides of the rivers, and here allowed to remain and decompose and soak until washed away by rain and floods. The various brooks are used as sewers in many parts, such as Ffrwdamos by Penygraig, which receives most of the sewage of the neighbourhood; not only do they present a most unseemly appearance, but also evolve most dangerous effluvia. The great want of the district is a proper system of sewerage and drainage, and the Board are to be complimented on the fact that a "Conjoint Main Sewer" is being constructed. It has been completed from the sea to Porth, and is ready for connections. It is also ready, or being constructed, in many localities higher up the valleys. Subsidiary sewers on the most approved plans, and of the strongest make, are also ready, but the house connections remain to be made. As Dr. James remarks in one of his Reports:—"As our drainage system gets ready a much greater water supply will be required; cesspit closets, which are an abomination, should be converted into the water-carrying kind, and all new closets should be on the same system." Nothing can be done in the way of converting the old unsatisfactory privies into water-closets until this "Conjoint Main Sewer and its branches" are finished, and when completed it is likely to prove a great boon to the valleys, provided there will be sufficient water for flushing purposes.

DEATH RATE IN THE DIFFERENT LOCALITIES, PER 1,000 POPULATION.

	1890.	1891.	1892.
Ynishir	13·2	18·4	19·1
Treherbert	13·7	19·9	17·2
Ystrad	16·2	21·2	17·0
Pandy	17·1	23·6	16·0
Treorky	18·7	22·1	18·74
Ferndale	19·0	26·9	16·4
Porth	19·3	22·5	17·2
Mardy	20·9	26·6	14·8
Llwynpia	23·1	22·9	17·8
Hafod	26·5	23·2	18·13
Tylorstown	28·9	44·5	19·1

The death-rate is rather high, but compares favourably with the mean for England and Wales.

Typhoid fever is generally prevalent in the district, and nine or ten cases have lately occurred at Williamstown. Most are now convalescent.

TYPHOID FEVER AT CYMMER.

In consequence of a number of cases of typhoid fever having been notified in the usual way from Cymmer, I recently made an inquiry with regard to the probable cause of the outbreak, and have now to report as follows:—

From the middle of September, 1892, to the date of my visit, 28th March, 1893, twenty-two cases were reported, and out of which four were fatal. The bulk of cases, seventeen, occurred in Argyle Street, and its continuation—Lincoln Street,

the remaining five were scattered in the adjoining streets of the immediate neighbourhood.

The important point to consider, in searching for the cause of such an outbreak as this, is the milk supply, water supply, the general sanitary condition of the houses and their surroundings, and also the possibility of the importation of the first case or cases.

As regards the milk supply, it was ascertained that the families were supplied by different vendors, and that owing to the fact that several other families supplied from the same sources did not suffer, it was most improbable that milk had anything to do with the causation of the outbreak. The water supply was the same as that of a very large district, and the absence of any prevalence of typhoid fever in the district so supplied clearly excluded water (except in the neighbourhood of Cymmer). There are no wells in the district.

As regards the sanitary surroundings of the houses, the usually insanitary conditions associated with pail-privies existed, and one feature was common to each infected house, viz., the drains in every instance were untrapped. Besides, the drains of Argyle Street, Brook Street, Thomas's Place, and a part of High Street, are not connected with the Authority's main sewer, but discharge direct to the brook close by the lower end of Brook Street.

I was unable to obtain any information as to whether the first cases might have been imported or not. It is much to be regretted that the disease was imported from Cymmer to Cinderford, Gloucestershire, where a large number of cases occurred, and several with fatal results. This outbreak at Cinderford was distinctly traced by the Medical Officer of Health to importation from Cymmer.

The outbreak at Cymmer was of a very infectious character. In one house, seven persons of all ages, and, in several other cases, more than one person belonging to the same family, were attacked. Most of the cases were also complicated with broncho-pneumonia. As a matter of fact, the infected houses were generally overcrowded, and in most cases the drains were outside the back door. There could not have been a better illustration of the ready communicability of typhoid fever, under conditions where the infectious atmosphere was a concentrated one. Without asserting that the first case or cases were not imported, I consider that the drainage arrangement were sufficiently at fault to account for the outbreak. It is therefore incumbent upon the Authority to take steps to have the property placed in sanitary repair, and such repairs are, I hear, being executed. It is to be hoped that no more cases will occur.

SLAUGHTER-HOUSES.—In the upper parts of the Rhondda some of the slaughter-houses are kept in a most dirty and filthy condition. The dirty, dilapidated floors allow soakage, the walls require lime-washing, offal and entrails are strewn on and about the premises, allowed to accumulate, and are causing most offensive smell, blood is allowed to run unchecked to the river close by. There is unmistakable evidence that such is the custom. In many cases pigs and manure heaps are so kept in the adjoining yard, as in themselves to be a nuisance; and remembering that swine fever has been of so common an occurrence and difficult to eradicate, here is another possible and a probable source of the dangerous contamination of meat.

In the other districts the slaughter-houses are very satisfactorily kept, except in a very few instances. I am pleased to find that during the last few months a great improvement in the keeping and management of slaughter-houses has taken place. This is, doubtless, due to the more vigorous efforts of the Sanitary Inspectors. There is yet room for improvement.

COMMON LODGING-HOUSES AND HOUSES LET IN LODGINGS.—There are but a few common lodging-houses throughout the district. They are all licensed and registered, and under police supervision. In one instance overcrowding was observed.

It is common here, as in other similar districts of the country, to find more than one, and sometimes more than two families occupying the same house. The practice of taking in lodgers is almost universal, and requires to be regulated. No bye-laws have been made by the Authority with regard to houses let in lodgings.

MILK AND FOOD SUPPLIES.—There are many cowsheds and dairies in the district. Purveyors of milk are numerous; but the great bulk of the milk is brought from a distance—daily supplies from Somerset and Devonshire.

Meat is killed in the district, and obtained from Cardiff and foreign countries. Fish is obtained from Billingsgate, New Milford, Grimsby, Yarmouth, Lowestoft, Hull, Aberdeen, and other fishing ports, also from Norway. Vegetables (green) from Worcestershire, Cornwall, and other English counties. Potatoes chiefly from France (St. Malo), also Cornwall and Ireland. Fruit from France, also Hamburg, Amsterdam, Rotterdam, Australia, and America.

In consideration of the danger that threatens our country during the present spring and coming summer, it is of the greatest importance to remember that articles of food and drink are often the means whereby infectious disease is carried and spread. It is much to be regretted that no inspection of meat and other articles of food and drink is made in the district, save by the Inspector under the "Sale of Food and Drugs Act," who is most active.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority have not yet adopted the "Infectious Disease (Notification) Act." They possess a small isolation hospital, calculated to receive six patients, and conveniently fitted up in every respect, except that there is no separate room for the washing of infected clothing. The building and premises are well drained and ventilated, beautifully clean, and tidily kept. There is also a movable disinfecting apparatus, which I did not see. Houses, articles of clothing, and bedding are disinfected in every infectious case. The provision made is most inadequate for such a district as this, with a population of 102,578, and should cholera gain entry to these thickly-populated valleys, with their piecemeal drainage system, unsatisfactory water supply, and their enormous scavenging tips, the result produced will be most disastrous. The position of the district to combat an epidemic of cholera or any other infectious disease is a most defenceless one.

BYE-LAWS AND REGULATIONS.—The bye-laws in force in Ystradyfodwg are framed on the lines of the Model Bye-laws of the Local Government Board, and were adopted in 1879. The bye-laws refer to:—

- (1) Nuisances.
- (2) New streets and buildings.
- (3) Slaughter-houses.

They are but seldom enforced.

Regulations have recently been adopted under the Dairies, Cowsheds, and Milkshops Order.

RIVER POLLUTION.—On the 14th instant I made a detailed inspection of the Rhondda, starting at Treherbert and following the river as far as Hafod.

All the sewage disposed of by means of drains is discharged directly into the river at various points, where in dry weather the stench is unbearable. Most of the sewage contained in the scavenging depôts on the banks and in the bed of the river, and in the sodden soil of the adjoining steep banks, is also washed away by floods and rain and eventually reaches the river. The various tributaries, on the banks of which dwellings stand, also contribute their share. On the occasion of my last visit the water was exceedingly low, and the effluvia of putrefactive processes induced by warmth, air, light, and moisture, arising therefrom, was most objectionable and dangerous. The bed and banks contain a large proportion of human excrement, stable and pig-stye manure, congealed blood, offal and entrails from the slaughter-houses, the rotten carcasses of animals, cats and dogs in various stages of decomposition, old cast-off articles of clothing and bedding, old boots, old hats, bottles, tinware, ashes and street refuse, and a host of other articles. On some parts of its banks, as opposite Pentre, there are colonies of pig-styes, all discharging direct into the river. The water is perfectly black from small coal in suspension.

At Ton, the Washing Company allow a great deal of small coal to enter, which, being in a state of fine powder, deposits and accumulates, filling up the river bed. The Clydach Vale brook adds a considerable quantity of similar material to

be deposited lower down. At Dinas and other places, overflowing privies discharge direct into the bed of the river. In a word, the river and its tributaries form a huge open system of sewerage, and until the main sewer and its subsidiary branches are finished, and the various house connections are made, matters must, of necessity, remain much in their present condition.

The conditions to which the Authority's attention is specially needed are the following :—

- (1) The adoption of various Acts relating to the Public Health.
- (2) A more extended accommodation for the isolation of infectious cases, also a proper disinfecting apparatus.
- (3) The more strict enforcement of the existing Bye-laws relating to nuisances, slaughter-houses, scavenging, the keeping of pigs and fowls.
- (4) The want of bye-laws with respect to houses let in lodgings, and the keeping of dogs.
- (5) The systematic inspection of meat and other articles of food and drink.
- (6) The destruction of the various scavenging tips of the district.
- (7) The repairing and alteration of houses, that from their condition of dilapidation, want of through ventilation, and privy accommodation are unfit for habitation.
- (8) The desirability of having the various Inspectors under the personal supervision and control of the Medical Officer of Health.
- (9) The prevalence of excremental nuisances arising in connection with the pail, privy, and ash closets systems.
- (10) The better management of streets and unhealthy areas about dwellings.
- (11) The provision of more adequate means for the storage of a reserve supply of water.

April 24th, 1893.

BRIDGEND AND COWBRIDGE.

(BRIDGEND DIVISION.)

		1881.		1891.
Population	.. ..	14,707	.. ..	15,801
Area in Acres	.. ..	56,055.		

This district covers an area of some 56,055 acres. To the north it overlaps the coal measures. Immediately to the north of Bridgend the millstone grit—a narrow belt which surrounds the South Wales Coal Basin—crops out, and from this point southwards the district consists, geologically, of the lias formation chiefly, and of some tracts of mountain limestone. The northernmost strip of the district, on which Aberkenfig, Tondy, Brynmenyn, Bryncoch, Bryncethin, Kenfig Hill, and the other small hamlets of Pyle and Kenfig Borough stand, contains the bulk of the population, engaged almost exclusively in the coal and iron industries of Aberkenfig, Tondy, and Kenfig Hill. To the south the district is almost entirely agricultural, the inhabitants being collected in numerous villages and hamlets, some of them remote from railway communication. The country here is more level and the roads in better condition. The Great Western Main Line traverses the district from east to west; a junction for the Valley Railways being at Bridgend, and for Porthcawl at Pyle. Porthcawl (this year constituted into an Urban Sanitary District) and Southerndown are well-known seaside resorts.

The dark spot of the district is Aberkenfig, which requires special attention.

For the purposes of description, it is convenient to include Tondy, with which Aberkenfig is almost continuous.

Aberkenfig is the most populous and important industrial centre of this wide district, and it is certainly the most insanitary. The inhabitants consist almost exclusively of coal and iron workers. They number about 5,000, and are densely packed together. The town of Aberkenfig is built on the flat and slope adjoining the Kenfig brook near its junction with the Ogmore river, whereas Tondy is a

little further north and more distant from the river. The sub-soil consists of alluvium overlying the various carboniferous strata.

HOUSE ACCOMMODATION.—House accommodation is very limited, and, like most other industrial places, it is infested with the evils of overcrowding. The closet accommodation in connection with many of the dwellings is very unsatisfactory and limited. There are a number of dwellings, such as at Brook, River, and Jenkins' Rows, which, in their present condition of the absence of through ventilation, structural defects, and insanitary surroundings, caused by the foul Kenfig brook, over-flowing privies, and the excrement-sodden soil, are unfit for human habitation. Several are condemned by the Medical Officer of Health, and a few have been closed. The condition of Jenkins' Row has repeatedly been brought to the notice of the Authority by their Medical Officer, and no further remarks are necessary. There were fourteen cases of typhoid fever at Aberkenfig during the fourth quarter of last year.

THE WATER SUPPLY.—The water supply of Tondy and Aberkenfig is impounded on the slightly elevated hill-side above Tondy, conveyed by mains into the town, and distributed by stand taps. At the best of times the quantity is said to be limited, and during the recent drought it became seriously short. Some houses were without any supply whatever. The provisions made for storing a reserve supply are inadequate.

EXCREMENT AND REFUSE DISPOSAL.—There is no system of drainage whatever. There are a few disjointed drains which receive the slop and surface water and excrement, and which empty their contents into the brook at various points, in close proximity to dwellings.

The Authority has for years had the question of sewerage under their consideration, but in the meantime of inaction, the nuisances that have arisen have become extreme.

The emptying of cesspools, privies, &c., is left to the occupiers and owners of property; their contents are allowed to accumulate or thrown at random in the brook or in areas about dwellings, there to decompose and evolve dangerous gases.

Sanitation at Tondy is somewhat better, but very unsatisfactory.

The wants of Aberkenfig may be shortly summarised, thus:—

- (1) A system of sewerage and drainage.
- (2) The substitution of water-closets for the receptacles now used.
- (3) The adoption of a proper and regular system of scavenging.
- (4) The closure of houses, which, in their present condition, are unfit for habitation.
- (5) A better water supply, and provision for its storage.

And until the above are carried out very little, if any, progress can be expected.

The mortality returns and new cases of infectious sickness coming to the knowledge of the Medical Officer of Health during the year 1892, are given in the following table:—

Sub-Districts.	Births.	Deaths.	Deaths under one.	Small Pox.	Scarlatina.	Diphtheria.	Membr. Croup.	Enteric or Typhoid Fever.	Puerperal Fever.	Measles.	Whooping Cough.	Diarrhoea.	Erysipelas.
Western ..	260	260	37	0	3	3	5	6	0	0	8	2	0
Ogmore ..	67	23	3	0	1	0	0	0	1	0	1	0	0
Maesteg ..	43	24	8	0	0	0	0	0	2	0	1	1	0
Central ..	97	55	10	0	0	0	2	1	0	2	2	0	0
County Asylum	1	104	—	0	0	0	0	0	0	0	0	2	0
Total ..	468	466	58	0	4	3	7	7	3	2	12	5	0

Sub-Districts.	Census, 1891.	Estimated, 1892.	Births.	Small Pox.	Scarlatina.	Diphtheria.	Memb. Croup.	Enteric or Typhoid Fever.	Puerperal Fever.	Measles.	Whooping Cough.	Diarrhea.	Erysipelas.
Western ..	8,096	—	260	0	54	3	5	30	0	No return.	No return.	No return.	6
Ogmere ..	2,120	—	67	0	23	0	0	0	1	No return.	No return.	No return.	3
Maesteg ..	1,143	—	43	0	20	0	0	0	1	No return.	No return.	No return.	0
Central ..	3,305	—	97	0	3	3	0	3	0	No return.	No return.	No return.	3
County Asylum	1,137	—	1	0	0	1	0	0	0	No return.	No return.	No return.	0
Total ..	15,801	—	468	0	100	7	5	33	2				12

In his Annual Report for 1892 the Medical Officer of Health states that in the Western Sub-district there were 260 births—birth-rate, 32·1; 260 deaths—death-rate, 32·1. This equality in births and deaths was brought about by the 112 deaths at Park Slip Colliery. Zymotic death rate, 3·3; and death-rate of children under one year of age, 142·3 per 1,000 births.

In the Ogmere sub-district there were 67 births, giving a birth-rate of 31·6; 23 deaths, giving a death-rate of 10·8; zymotic death-rate, 1·4 per 1,000; and a death rate of children under one year of age, 44·7 per 1,000 births.

In the Maesteg sub-district, 43 births, giving a birth-rate of 37·6; 24 deaths, giving a death-rate of 20·9; zymotic death-rate, 3·5; and the death-rate of children under one year of age, 186·0 per 1,000 births.

In the Central sub-district, 97 births, giving a birth-rate of 29·3; deaths 55, giving a death-rate of 16·3; zymotic death-rate, 2·1; and death-rate of children under one year of age, 103 per 1,000 births.

In the whole district the births were 467; birth-rate 31·8. Excluding the Asylum, deaths were 362; death-rate, 24·7; zymotic death-rate, 2·8; and death-rate of children under one year, 110·4 per 1,000 births.

In the Ogmere, Maesteg, and Western Sub-districts the zymotic death-rate is very high, being about equivalent to the four or six highest zymotic death-rates of the twenty-eight large English towns for the year 1891; Manchester, Salford, Blackburn, and Preston with 3·1, 3·5, 3·4, and 3·8 respectively.

REFUSE AND EXCREMENT DISPOSAL.—Generally speaking, wherever in the district there is a collection of dwellings, the liquid refuse from houses, stables, &c., flows in dilapidated gutters or over bare surfaces to the nearest river, watercourse, stagnant pool, or field. Solid excreta are received into various receptacles, often of an objectionable type and character, some mere holes dug in the ground, others properly built, but often found in the vicinity of dwellings and wells, the water of which is consumed by the inhabitants. At Pencoeed the main drain, which is uncovered, is along the side of the high road. At Coychurch there is no drainage, except rubble stone courses along each side of the road, emptying into the brook which passes through the village to join the Ewenny lower down. There is no attempt at public scavenging throughout the greater part of the district. The emptying of privies, cesspools, &c., is left to the owners and occupiers of houses, and consequently seldom and imperfectly performed.

HOUSE ACCOMMODATION.—In the industrial centres of this district accommodation is very limited, and overcrowding exists. Much attention is required to the house accommodation generally of the district. In the labourers' cottages and the older property of the poorer class, the floors are often sunk below the level of the ground, and spouting is generally wanting, the result being excessive dampness. Many of the dwellings in the country hamlets are dilapidated and in a state of disrepair.

THE WATER SUPPLIES.—The water supplies of this widely-scattered rural district are necessarily derived from various sources—reservoirs, springs, public and private wells.

Bryncoch, Bryncethin, and Brynmenyn are about to be supplied with water from the main of the Garw Water Company.

At Kenfig Hill water is derived from various sources, and is fairly plentiful. The chief source of supply is at any rate away from all sources of pollution. Many villages in the district are supplied from public wells and pumps, cleansed and repaired occasionally, as needs be, by the Authority. In several places, however, the supplies are very inadequate (St. Brides, Southerndown) in dry seasons, and in several also many of the inhabitants have at all times to go long distances for their water.

The quality, too, especially in the case of wells, is often open to grave suspicion on account of their position and surroundings.

I am glad to find that this important question of supplying the district with pure, wholesome, and sufficient water is engaging the attention of the Authority.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority have wisely adopted the Compulsory Notification of Infectious Diseases Act, which has been in operation since March, 1890.

There are, however, no means as yet provided for the isolation of infectious cases, and for the proper disinfection of articles of clothing, bedding, &c.

It is to be hoped that the next step taken by the Authority in this direction will be to provide means for isolation and disinfection of bedding and clothing. Without an efficient disinfecting apparatus the efforts of the Sanitary Officials to limit and prevent the spread of infectious disease are, to a large extent, defeated.

ADOPTIVE ACTS.—The following Acts relating to the Public Health have been adopted by the Authority:—

- (1) The Infectious Disease (Notification) Act, 1889.
- (2) The Infectious Disease (Prevention) Act, 1890; and
- (3) Part III. of the Public Healths Acts Amendment Act, 1890.

BYE-LAWS AND REGULATIONS.—The bye-laws at present in force were adopted in 1880. They relate to—

- (1) The cleansing of footways and pavements.
- (2) The removal of house refuse.
- (3) The cleansing of earth closets, privies, ashpits, and cesspools.
- (4) Nuisances.
- (5) New streets and buildings.

27th July, 1893.

BRIDGEND AND COWBRIDGE.

COWBRIDGE DIVISION.

		1891.		1893.
Population	.. ..	6,009	.. ..	6,050 (estimated)
	Area in acres	..		39,785

The district has an area of 39,785 acres, and a population of about 6,000.

It comprises 27 parishes, and may be roughly described as triangular in shape, with its base extending along the Bristol Channel for a distance of some eight to nine miles, the east side bounded by the Cardiff and Pontypridd Rural Districts, and the west by the Bridgend sub-district. From apex to base in a straight line is a distance of some twelve or more miles. It is essentially an agricultural district, but in the parish of Llanharan are several collieries and a tin-plate works, affording employment to numerous hands. Many of the employees of these works, however, live at the neighbouring villages of Pontclun and Llantrisant. The villages of Llantwit Major, West Aberthaw, Gileston, and St. Athan are much frequented by excursionists and visitors during the summer months. Excepting the parishes of

Llanharan, Llanharry, and Llanilid (on the coal measures) the whole district consists geologically of the lias formation chiefly and extensive tracts of mountain limestone. The soil is of alluvium and blown sands in the valley of the Thaw and other similar localities, and of gravel to a small depth on the elevations. The Taff Vale Railway traverses the eastern portion of the district from Llantrisant Junction to East Aberthaw, and the Great Western crosses its northern angle. Many of its numerous villages and hamlets are entirely agricultural and remote from railway communication.

HOUSE ACCOMMODATION.—Generally speaking the house accommodation of the district is very defective and the poorer cottage property, as a rule, out of repair. In many instances the labourers' dwellings are totally unfit for human habitation. Some consist of two rooms only—a living room and a sitting-room—are often overcrowded and without means for the proper separation of the sexes. The windows are often too small, and defective roofing of thatch, &c., is common, eave-spouts are wanting, and the floors sunk, the yards unpaved and without drains or channels for the disposal of slop-water—all these defects resulting in dampness with its attendant evils. Many are embedded, and others without through ventilation. Privy accommodation is oftentimes entirely absent or inadequate, the grossest nuisances prevailing in consequence thereof. There is, however, no crowding of houses upon area, and generally a good spacious garden is attached to each dwelling. In this connection it ought to be mentioned that Miss Talbot, in consequence of the reports of the Medical Officer of Health, has during recent years built several model dwellings and labourers' cottages in the district. The Authority seem to have taken little or no action under the "Housing of the Working Classes Act, 1890," and dwellings condemned by the Medical Officer of Health as unfit for human habitation are still allowed to be occupied. I am informed that the wind has been instrumental in carrying off bodily some old dilapidated roofs. Dr. Mellor, in his Annual Report for 1893, says:—"New houses have been built to about the number of 26 in the parishes of Llanharan and Flemingstone." In reference to the colliery huts recently built at Llanbedr and the houses near the "Eagle" he remarks:—"In the case of the huts, no proper provision is made for the disposal of slop-water, the foundations are damp, some of them already let in water, and the water supply is of very doubtful quality in wet weather. The houses near the 'Eagle,' like all other new houses there, are not supplied with proper drainage or water."

WATER SUPPLY.—The water supplies of this widely-scattered rural district are necessarily derived from various sources—from springs and deep wells sunk in the limestone. There are also numerous shallow wells. Almost all the wells are, I am informed, merely dry-steined, and this was certainly the case in several that I had the opportunity to examine, and which were in consequence open to pollution from the superficial layers of the soil. A few only were found with proper copings, covers, and pumps. The springs are generally not sufficiently protected and open to pollution, there being nothing to prevent cattle and other animals from polluting them and depositing their dung therein. The wells of St. Athan are in this condition. Having regard, therefore, to the unprotected condition and position of some of the supplies—within short distances of privies, foul ditches, &c.—it may be safely concluded that some of them, to say the least, are polluted or liable at any moment to become specifically contaminated with the poison of infectious disease. It must be said that many, however, are protected and supplied with pumps. It should also be mentioned that the nature of the soil and the situation of the supplies in many cases are such that they could, with a little trouble and expense, be made perfectly safe and free from pollution. The attention of the Authority has been constantly called to the unsatisfactory water supply of the district by Dr. Meller, the Medical Officer of Health, who, in his Report for 1893, writes thus:—"The villages of St. Donats, Graig, St. Hilary, Brynna, and Llanharry need an improved supply; also the 'Leys,' Steam Joinery and Potteries, Pontclun. The wells at Penylan, Newton, Llanharry, St. Athan, Llangan, and Graig are sorely in need of protection from surface contamination. As I have before reported, several require to be covered and a pump

affixed." I visited many of the above-mentioned supplies, and my observations confirm the remarks of Dr. Meller.

EXCREMENT AND REFUSE STORAGE AND DISPOSAL.—Except as regards a few of the larger houses, where w.c.'s are said to be provided, the usual mode of excrement disposal is by pails or privies, some of which are of the crudest construction—a mere hole dug in the soil and uncovered. They are but seldom emptied, and are often so constructed, that by soakage, overflow, or both, they pollute the surrounding soil around dwellings, and are frequently found within a short distance of wells. Not a few privies or middens were found very near dwellings. There are no ash-bins, and provision for the deposit of ashes and house refuse is generally absent or of a defective character. Ashes and refuse were seen scattered over the yards and piled up against the walls of dwellings.

There are several cottages within the district without any privy accommodation whatsoever.

I am given to understand that the Sanitary Authority have themselves undertaken the removal of excrement, refuse, &c., at Llantwit Major, Llanharan, including Rivers Row, Brynna and Dolau.

SEWERAGE AND DRAINAGE.—Generally speaking, the liquid refuse, slop water, &c., stagnates or flows in highway drains, in dilapidated stone channels and gutters, into the nearest field, water-course, pool, or pond. In parts of the villages of Llanharan, Llantwit Major and others, sewers have been provided. At Llantwit a part of the village is left to drain to the often dry brook, causing a serious nuisance and danger to the inhabitants. A system of drainage is much needed for Llanbleddian, St. Athan, Llantwit, and Brynna. The drainage of Gileston is discharged into a pond, often all but dry during the hot months of summer, and the highway drain receives a portion of the slop water of St. Donats. In the last annual report of the Medical Officer of Health is found the following:—"I must again point out the dangerous nuisance caused by the discharge of slop water, stable, and farm-yard drains upon the highway in every village of the district. If the Authority would support my view in this matter and do all in their power to prevent it, at least where reasonably feasible, much illness and discomfort would be prevented." As yet it seems that but little attention has been given by the Authority to the rectification of these defects.

SLAUGHTER-HOUSES.—There are seven slaughter-houses within the district. They are frequently inspected by the Medical Officer of Health. Some are said to be licensed. One slaughter-house visited at St. Athan was found clean and satisfactory in every respect. At Llantwit-Major the Collugh slaughter-house was unsatisfactory, there was a large accumulation of garbage and manure, together with a filthy pigstye in its immediate vicinity, and perilously near and liable to taint the meat injuriously. Others were found in a somewhat better condition.

DAIRIES, COWSHEDS AND MILKSHOPS.—Regulations have been made and adopted under the "Dairies, Cowsheds, and Milkshops Order, 1885."

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority have adopted the "Infectious Disease (Notification) Act, 1889," and Part iii. of the "Public Health Acts Amendment Act, 1890," but they have not as yet provided themselves with an Isolation Hospital for their infected sick, nor do they possess any apparatus for the disinfection of articles of bedding and clothing. Disinfection of persons, dwellings, articles of bedding and clothing, after infectious disease, is of the utmost importance, and unless carried out thoroughly, and by those that are experienced, it is worse than useless. Mr. Leyshon, the Sanitary Inspector for the district, in his Report for 1893, writes thus:—"As you are aware, there have been several cases of Typhoid, Scarlet, and Puerperal Fever; in the latter I have had the bed and bedding burnt, and in all cases have taken disinfectants to the houses, and given instructions how to use them." To give instructions how to use disinfectants is not sufficient.

BYE-LAWS.—The Authority possess a code of Bye-Laws for certain portions of their district. They were sanctioned by the Local Government Board in 1880, and refer to:—

- (1) The cleansing of footways and pavements.
- (2) The removal of house refuse.
- (3) The cleansing of earth-closets, privies, ashpits, and cesspools.
- (4) Nuisances.
- (5) New streets and buildings.

SYSTEMATIC INSPECTION OF THE DISTRICT.—A systematic inspection of the district has frequently been made by the Medical Officer of Health, and he is thoroughly familiar with each dwelling, spring, well, &c., within his wide district, and, moreover, has frequently called attention to the various defects.

PRINTING OF REPORTS.—It is not the practice in this district as well as in some others throughout the county to print the Annual Reports of their Medical Officer of Health. These Reports are most carefully prepared and contain most valuable information, and I feel confident that if published and circulated among members of the Board, owners of property, and inhabitants, they would be productive of more good.

I cannot do better than conclude this report by quoting the recommendations of Dr. Meller as they appeared in his Annual Report for 1893. He writes thus:—
“In conclusion, I should like to be permitted to again call attention to the requirements of the district, as described in previous reports, relating to:—

- “(1) The adoption of the Infectious Disease (Prevention) Act, 1890.
- “(2) The addition of measles and whooping cough as notifiable diseases.
- “(3) Further extension of Urban powers.
- “(4) Adequate provisions for disinfection and isolation.
- “(5) Improved water supplies where required.
- “(6) Another edition of our bye-laws printed.
- “(7) The extension of certain sewers and drains.
- “(8) The speedy abatement of all nuisances.
- “(9) The duty of disinfection to be undertaken by the Authority.
- “(10) Distribution of leaflets regarding infectious disease.
- “(11) A systematic inspection of new buildings where Urban powers are in force, and the entire district by a series of house-to-house visitations.
- “(12) Model plan of closets, drains, and privies provided for the use of builders.
- “(13) The abolition of large unventilated cesspools in such localities as more urgently need it.”

28th May, 1894.

CARDIFF.

	1891	1893
Population	17,970	18,504 (estimated)
Area in acres ..	68,435	

This district comprises all the contributory parishes in the Cardiff Union with the exception of St. John, Roath, Canton, and St. Mary, included in the Borough of Cardiff; Penarth, Cogan, and Llandough, in the Penarth; and Barry, Merthyr Dovan, Cadoxton, and a part of Sully, in the Barry Urban, Districts. It covers an area of 68,435 acres, and has a rateable value of some £188,350. From a public health point of view the situation of the district is most important, surrounding and contributing to the important Urban Districts of Cardiff, Penarth, and Barry. The chief industries of the district include several tin-plate works, collieries, quarries, brick, fuel, lime and cement works, a match, bacon, and sausage factories, and many others. Geologically the district is situated partly on the coal measures but to a greater extent on rocks of various ages, including mountain limestone, dolomitic limestone, conglomerate, lower lias, &c. It includes portions of three most important valleys and rivers in the country, viz., the Rhymney, Taff, and Ely.

The portion overlying the coal measures is hilly, but from the southern edge of the coalfields to the sea it is comparatively flat.

DWELLING ACCOMMODATION.—There is no crowding of houses upon area anywhere. A noticeable feature of the smaller villages is the fair amount of yard and garden space allotted to each dwelling. Many of the older cottages are dilapidated and out of repair, with their back yards generally unpaved, eave spouts and drains wanting, causing dampness, &c. Dwellings, as a rule, are well supplied with privy accommodation. The fitness for habitation or otherwise of many of these cottages depends to a great extent, on their situation, the nature of their immediate surroundings, and the nature of the soil upon which they are built, *e.g.*, those situated on isolated hill sides, though somewhat dilapidated, are found dry, with all the liquid refuse flowing away from them, whereas those on the level are often damp and difficult to drain. Some were found embedded and without means of through ventilation.

The Authority, during the last couple of years, have done excellent work under the "Housing of the Working Classes Act, 1890," in closing as unfit for habitation some forty cottages. This good work should be continued until the whole district shall have been reviewed.

There are no common lodging-houses within the district.

SLAUGHTER-HOUSES—Thirty-three in number, of which twelve are registered under the Authority's bye-laws. Their general conditions vary considerably—some were found fairly satisfactory, whilst others were unsatisfactory from want of proper paving, defective drainage, and general cleanliness.

DAIRIES, COWSHEDS, AND MILKSHOPS.—There are 300 dairies and 315 cowsheds on the register. There are no milkshops. The condition of these buildings is described as fairly good. The Authority have made and adopted regulations under the "Dairies, Cowsheds, and Milkshops Order, 1885," and all persons keeping cows or selling milk are required to be registered. The regulations have reference to the lighting, ventilation, cleansing, drainage, water supply, and precautions against infection and contamination. They are periodically inspected by Mr. Frazer or his Assistant.

WATER SUPPLY.—The most important and populous portions of the district, such as Llanishen, Whitchurch, Llandaff, Llandaff Yard, and Dinas Powis (partly), obtain an excellent supply from the mains of the Cardiff Corporation Water Works. Many of the smaller villages are dependent upon local reservoirs and wells. During late years the Authority have greatly improved the water supply of many parts of their district, but more requires to be done. The portions of the district still inadequately supplied are Radyr, Pentyrch, Rudry, and Sully.

SEWERAGE.—The important villages have been or are being sewered. Considerable extensions and improvements have taken place recently, *e.g.*, during the past and present year the following were accomplished:—Extension of filtration ground and construction of automatic flushing tanks at the City of Llandaff, the sewerage of Ely and Whitchurch, the preparation of schemes for the sewerage of Llanishen, Eastbrook, and Dinas Powis. Llandaff Yard and Whitchurch are being connected with the conjoint main sewer of Ystradyfodwg and Pontypridd. Some of the smaller villages are not sewered, the excrement being disposed of in privy middens and occasionally in pans or pails, and emptied by contractors or tenants, as the case may be.

Extensive and important improvements in the sewerage of the district have been planned and constructed by Mr. Frazer, the Authority's Surveyor, to whom much praise is due for the admirable work he has undertaken and already executed.

STORAGE AND DISPOSAL OF EXCREMENT AND REFUSE.—The following table, supplied by the Surveyor, show at a glance the existing closet accommodation of the district:—

Water-closets, some	..	..	..	..	1,000
Trough-closets „	..	..	..	..	20
Slop (waste water closets	..	..	..	..	20

Pails or pans	.. .. .	250
Privy middens (covered)	.. .. .	2,310
" " (uncovered)	.. .. .	Very few.
Number of w.c.'s constructed during 1893	.. .. .	350

The privies, &c., are cleansed by contractors in Llandaff, Llanishen, Whitchurch, and St. Andrew's Major. The present arrangements are said not to be altogether satisfactory—the cesspools of Llanishen and St. Andrew's Major should be done away with, and sewerage systems provided. The Authority contract for the scavenging of some portions of their district, but for the smaller villages no such means have been provided, and nuisances arising from refuse accumulations and the keeping of pigs are not uncommonly met with.

THE PUBLIC HEALTH ACTS.—The Authority have had Urban powers conferred upon them by order of the Local Government Board, for the purposes specified below, in the following contributory places:—

- | | |
|--|---|
| (1) Regulating the construction of new streets and erections of new buildings. | } In the whole district.
At Caerau, Llandaff, Llanishen, Radyr, St. Andrews, Wenvoe, and Whitchurch.
Llandaff, Llanishen, St. Andrews and Whitchurch.
St. Andrews. |
| (2) Controlling the establishment and carrying on of offensive trades. | |
| (3) Licensing, registering, and supervising slaughter-houses. | |
| (4) Providing fire extinguishing appliances. | |

BYE-LAWS AND REGULATIONS.—Bye-laws have been made by the Authority and confirmed by the Local Government Board as follows:—

- (1) As to new streets and buildings.
- (2) The alterations of buildings.
- (3) Nuisances.
- (4) The licensing and general control of slaughter-houses.

Regulations under the "Dairies, Cowsheds, and Milkshops Order, 1885," have been made and adopted.

ADOPTIVE ACTS.—The Authority have adopted—

- (1) The Notification Act, which came into force 31st December, 1889. (Measles and whooping cough are added.)
- (2) The Prevention Act, 1891.
- (3) The Public Health Acts Amendment Act (Parts I. and III.), 11th June, 1891.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—These include the adoption of the Notification and Prevention Acts, together with the disinfection of dwellings, &c., after cases of infectious sickness. The Authority have so far not provided an Isolation Hospital of their own, nor have they a disinfecting apparatus of any description. Arrangements have been made with the Corporation of Cardiff, who have agreed to admit and treat infectious cases at 25s. per week per head. Hitherto the accommodation has been very limited, and only four cases (from the Parish of Llandaff) were removed to the Sanatorium last year. Dr. Pritchard in his Annual Report for 1893, writes—"The chief objection to a Central Hospital has been the distance which it may be necessary to convey the patients, but this is not insuperable. Little or no hardship would befall 95 per cent. of patients to be brought to a central spot, say at Whitchurch, &c."

RIVER POLLUTION.—The Authority have effectually abated the pollution of rivers within their own district, and have persistently endeavoured to stop the pollution of the Ely, Taff, and Rhymney, without their district. The County Councils of Glamorgan and Monmouth have also taken the matter up.

Great credit is due to the Authority and their Officials for the energetic manner in which they have carried out permanent improvements during the last few years, and the amount of money now being expended on schemes of sewerage and water supply.

Although many improvements have been and are being executed, yet there are a few matters requiring the further attention of the Authority. These are:—

- (1) The provision of a portable disinfecting apparatus.
- (2) Ash-bins should be extensively placed in all populous places, and duly emptied under the supervision of the Inspector.
- (3) Privy-cesspools should be entirely abolished, and dry earth closets provided (where there is no system of sewers) with movable receptacles, which should be emptied not less than twice a week. Where cesspools cannot be abolished they should be well ventilated, and no soakage or overflow of their contents should be allowed.
- (4) The Authority should, in pursuance of the provisions of the Public Health (Water) Act, 1878, see that every occupied dwelling-house within their district is provided, within a reasonable distance, with a sufficient supply of wholesome water (sec. 3). Where wells must be resorted to, they should be protected from surface pollution—by rendering their sides water-tight, by properly covering them and removing from their vicinity all sources of contamination.
- (5) Although much has already been done under the "Housing of the Working Classes Act, 1890," the Authority should cause the systematic inspection of their district to be continued, in order to ascertain the existence of dwellings that are unfit for human habitation.

24th April, 1894.

GOWER.

	1891	1893
Population	7,432	7,432 (estimated)
Area in acres ..	50,275	

The Gower Rural District is co-extensive with Gower Union (except an area of 2,615 acres included in the Oystermouth Urban District). It has an area of 50,275 acres, and a population of some 7,432. It is an isolated peninsular district, surrounded on all sides except the north-west (where it abuts on portions of the Swansea and Llanelly Rural District) by the Bristol Channel. It has an irregular outline, measuring from east to west about 15 miles, and varying in breadth between four and six miles. The Glamorganshire coalfields extend some three miles across the isthmus, and a strip of it underlies the northern seaboard for some distance, but it is not worked further than Llanmorlais. The rest is either carboniferous limestone or Devonian, the latter forming the ridge of Cefnbryn and the hills at the western extremity. The whole of the coast from the Mumbles to the Worms Head is limestone. The district throughout is hilly, and on the whole water is plentiful, there being several small streams flowing in various directions and emptying to the different bays, most of them having their origin in the old red sandstone. The soil varies in character, but generally it is dry and absorbent, consisting of gravel and sand, but occasionally of clay. The surface is somewhat barren and not well wooded, and there is but little shelter. The locality is noted for its genial climate. Except in the parish of Llanrhidian Higher (Penclawdd and Llanmorlais) where a few collieries, a tin-plate works, and the cockle industry (for which Penclawdd is celebrated) afford employment to some 400 or 500 hands, the inhabitants of the district are mostly engaged in agriculture. There is a railway communication with Penclawdd and Llanmorlais, but with this exception, railways do not trespass on Gower. However, the various villages are much frequented by visitors, and infectious disease may at any moment be imported.

The relative contributions of the various parishes to the Union as regards houses, population, acreage, and rateable value are shown in the following table from the census report of 1891. The district is now much in the same condition as it was three years ago:—

GOWER UNION.	HOUSES IN 1891.			Popula- tion.	Acreage.	Rate- able Value.
	In- habited.	Unin- habited.	Build- ing.			
Bishopston	121	1	1	628	2,595	3,038
Cheriton	41	..	..	155	1,400	941
Ilston	50	4	..	250	3,100	1,521
Knelston	20	..	..	83	548	498
Llandewy	24	1	..	119	2,010	1,249
Llangennith	71	..	..	298	3,367	2,051
Llanmadoc	46	4	..	154	1,514	730
Llanrhidian Higher ..	610	26	4	3,136	4,709	4,268
Llanrhidian Lower ..	99	4	..	424	5,592	2,839
Nicholaston	20	1	..	100	488	454
Oxwich	57	..	..	214	1,265	787
Oystermouth (Urban)	768	115	19	3,675	2,996	15,131
Oystermouth (Rural)	96	8	1	457		3,350
Penmaen	27	1	1	138	994	924
Pennard	53	2	..	240	2,855	2,030
Penrice	57	3	1	242	2,124	1,580
Porteynon	61	1	..	202	1,139	821
Reynoldston	66	..	..	307	1,069	1,325
Rhossilly	62	8	..	285	2,707	1,178
Lands common to Parishes .. ..	..	..	..	..	258	..
	2,349	179	27	11,107	40,739	46,695

Area, including tidal water and foreshore, 52,890 acres.

DWELLING ACCOMMODATION.—Gower is renowned for the number of its thatched cottages, most of which are pictures of simplicity, cleanliness, and neatness. Some, however, are structurally defective, and owing to dampness arising from absence of eave-spouting, defective roofing, and floors sunk below the ground, &c., appear to be unfit for habitation. Generally the houses are well supplied with privy accommodation—pails or cesspits—situated, as a rule, well away at the far ends of the spacious gardens, which are attached to most of the cottages. There is no crowding of houses upon area observed anywhere, and I am informed that overcrowding of persons is seldom met with. Except in a very few instances there is a complete absence of drains and sewers. The cottages in the various villages are well isolated and supplied with spacious gardens, all of which appear to be well looked after and cultivated, and in the soil of which the excrement and house refuse are buried by the occupiers. The roofs are made of straw, and the cottages thus roofed are said to be colder in summer and warmer in winter than the others, the straw preventing the ingress and egress of heat in the summer and winter respectively. Abutting on some houses, *e.g.*, at Middleton and Rhossilly, are objectionable farmyards with accumulations of manure and liquid refuse, resulting from the keeping of animals. There is little or no building at present taking place in any part of the district, and the Authority have no Building Bye-laws either framed or enforced.

WATER SUPPLY.—Speaking generally, the water supply of the district must be said to be fairly satisfactory, and there was but little scarcity (except perhaps at Penclawdd) during the general drought of last summer. The inhabitants are dependent upon wells, and in a relatively few cases upon streams and springs. The wells are for the most part fitted with pumps; some, however, are draw wells, and imperfectly covered and unprotected. The majority are of considerable depth, but

some are shallow. I am informed that almost all are merely dry-steined and open to receive water from the superficial layers of the soil. Some, especially at Penclawdd, are situated among dwellings and within short distances of privies, and it may safely be concluded that some of them at least are liable to chance pollution, the superficial layers of the soil, consisting as they do of porous material, such as sand or gravel. The water supply of Penclawdd calls for attention, and some of the wells should be closed, and it is advisable to obtain drinking water from the neighbouring hills, where, I am informed, a supply could be easily procured. In one or two villages the water is piped from distant springs on the neighbouring hills, and distributed by means of taps. Pure and wholesome water cannot be obtained from a soil which receives, and is contaminated with, the dejecta of the inhabitants.

SEWERAGE AND DRAINAGE.—Most of the Villages have no sewers of any sort. At Penclawdd there are a few drains to carry away the slop and surface water to the adjoining estuary of the Loughor. Uncovered roadside channels are occasionally met with.

EXCREMENT AND REFUSE DISPOSAL.—The Sanitary Authority have not in any way undertaken the removal of excrement and refuse, and this duty, therefore, falls upon the occupiers. In some instances accumulations of ashes and refuse is seen in the vicinity of dwellings. Except as regards a few of the larger houses where w.c.s are employed, the usual mode of excrement and refuse removal is by means of pails and cesspits. Their contents are buried in the gardens, and slop-water is also thrown on the same soil. The privies, as a rule, are covered over, and in a fairly satisfactory condition. Some were said to have been built with cement so as to prevent soakage in and out, but considering that the Authority possess no bye-laws—building or otherwise—it is doubtful whether such is the case.

The method of disposal of excrement at the Elementary School, Penclawdd, is very unsatisfactory and highly dangerous to the children.

SLAUGHTER-HOUSES.—Such as I visited, with a few exceptions, were unsatisfactory in all respects. The flooring was defective and offal and garbage had been allowed to accumulate. They are but seldom limewashed.

The Authority possess no bye-laws for their regulation. They are not licensed or registered, but are frequently visited by the Inspector.

DAIRIES, COWSHEDS, AND MILKSHOPS.—At present there are some purveyors of milk on the register kept by the Inspector. The Sanitary Inspector acts as the inspector of dairies, cowsheds, and milkshops. Some are registered, but no regulations under the Dairies, Cowsheds, and Milkshops' Order have been made for their management, so that these buildings as such are not under any special control of the Authority.

Under the above Order it is unlawful for anyone to carry on the trade of cow-keeper, dairyman, or purveyor of milk, unless registered by the Authority. Local authorities may make regulations for the inspection of cattle and dairies, for prescribing and regulating the lighting, cleansing, draining, ventilation, and water supply of dairies and cowsheds; for the cleansing of milk stores, and shops, and milk vessels, and for prescribing precautions to be taken against infection and contamination. Without precise regulations it is impossible to insure that premises, cattle, and milk, are kept clean and in order.

COMMON LODGING HOUSES.—There are no lodging-houses of this class in the district.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority have not adopted the Infectious Disease Notification or Prevention Acts. They have not provided any means for the isolation of cases of infectious sickness, nor do they possess any apparatus for the disinfection of articles of bedding and clothing. It is true that the district has enjoyed a comparative freedom from infectious cases for some years, but this is no criterion for its future freedom from such maladies. It may be argued that the provision of means for the isolation of infectious cases is not necessary in such a district as this, but the duty of the Authority consists not merely with dealing with disease after it has arisen, but primarily in preventing its

occurrence by the removal of those conditions which encourage it. Last summer the Inspector was directed, that should cholera gain access to the district, to look out for a cottage or cottages where the first cases might be isolated. Such measures are comparatively useless unless taken before the occurrence of such a disease, and should be in readiness.

RECOMMENDATIONS :—

- (1) The Authority should forthwith prepare a code of bye-laws, and submit same for the sanction of the Local Government Board, and in pursuance of Section 276 of the Public Health Act, they should apply to the Local Government Board for Urban powers, under Sections 157 and 158, with respect to any contributory places where building operations are likely to be carried on. They should also apply for Urban powers under Sections 169 and 170 for the contributory places in which slaughter-houses are at present situated, and with respect to which they do not as yet possess such powers. In the event of the powers being granted, they should make Bye-laws applicable to the places in question, with respect to the construction of new buildings, and the registration and regulation of the slaughter-houses. Regulations should be made and adopted under the Dairies, Cowsheds, and Milkshops Order.
- (2) The Authority should, in the more populous portions of their district, such as Penclawdd, themselves undertake under Section 42, Public Health Act, 1875, or contract for the removal of refuse and the cleansing of privies, middens, and ash-pits.
- (3) The Authority should, according to the provisions of the Public Health (Water) Act, 1878, see that every occupied dwelling is provided, within a reasonable distance, with a sufficient supply of wholesome water (Section 3). They should cause a periodical inspection of the district to be made in order to ascertain the condition of existing supplies (Section 7). According to Section 70, Public Health Act, 1875, steps should be taken to close these sources of water supply which are polluted, and wells should be protected from surface pollution by rendering their sides water-tight, by properly covering them, and by removing sources of contamination from their vicinity.
- (4) The Authority should, according to the provisions of the "Housing of the Working Classes Act, 1890," (Sec. 32) cause a systematic inspection of their district to be made, in order to ascertain the existence of any dwellings that are unfit for habitation.
- (5) The "Infectious Disease (Notification) Act, 1889," the "Infectious Disease (Prevention) Act, 1890," and such clauses of the "Public Health Acts Amendment Act, 1890," as are applicable to the district, should be adopted.
- (6) Provisions should be made for the isolation of infectious cases, and for the efficient disinfection of articles of bedding and clothing.
- (7) The unsatisfactory condition of farmyards in some of the villages, should receive the Authority's attention.

18th May, 1894

LLANELLY.

PARISH AND BOROUGH OF LOUGHOR.

	1891.	1893.
Population	4,196	4,289 (estimated)
Area in acres ..		3,648

The above district covers an area of 3,648 acres, and had a population in 1891 of 4,196, now estimated at some 4,300. On the north and east it is bounded by the

Swansea Rural District, on the South by the Gower Rural District, and on the west it is separated from the remainder of the Union by the estuary of the Loughor. The only villages are those of Gowerton and the Borough of Loughor. The district is by no means flat, and is drained by the Loughor and two of its tributaries, viz., the Lliw and Lliwtha. The sub-soil consists of alluvium on the flat, with some depth of clay and gravel, according to the localities.

GOWERTON.

Gowerton is a compact village on the slope of a hill, drained by the stream Lliwtha, a short distance above where it joins the Lliw. Both join some distance below and discharge into the estuary of the Loughor.

The Lliwtha is a tidal stream as far as Gowerton. This village is advantageously situated with regard to facilities for drainage. The sub-soil, however, consists of some thickness of clay, and is consequently damp and retentive of moisture, but towards the valley it is alluvial in character.

With the exception of a few old-fashioned cottages all the dwellings are of modern type, and well built of stone or brick. There is no crowding of dwellings upon area.

The WATER SUPPLY, which is said to be satisfactory both in quality and quantity, is obtained from Cefngoleu Reservoir, some distance away and not liable to any pollution. It is distributed at various points by means of Kennedy's taps. An extension of the service has been decided upon by the Authority, and when completed the village will be well supplied. There is now only one well within the village, and it is so circumstanced as to be liable to pollution, but is resorted to by only a few families. Its supply is said never to fail.

Pails and buckets are generally used for the storage of excrement; there are only a few cesspits, and these built of brick and cement. The Authority, acting under the advice of Dr. Evans, have lately undertaken the removal of house refuse, the cleaning of closets, cesspits, and ashpits, within the contributory places of this parish. This is a step in the right direction, and will, doubtless, prove a great boon to the inhabitants.

The greater part of the village was lately drained. The main sewer runs along the main street, and is ventilated here and there by shafts along the pine ends of dwellings. House and slop water is disposed of over open stoneware channels, but ultimately enters the main sewer through trapped openings. The sewer outfall is to an uncovered ditch in an adjoining field, and should be covered for 100 or 150 yards further. It eventually discharges into the river.

There are several works in the immediate vicinity of the village, viz., one tin-plate, one steel works, and two coal mines, affording employment to some 500 persons.

To the north of the Parish of Loughor, and on the opposite side of the wide valley, is the Borough of Loughor. This ancient Borough is a long straggling village, extending for $1\frac{1}{2}$ to 2 miles between the Lliw and Loughor rivers, and stretching over a hill, the highest point of which is 70 feet above Ordnance datum. It may be described as consisting of one long main street, with groups of houses here and there. At the summit of the hill is the Upper Loughor Town, and at the foot of its western declivity, on the Loughor, is the ancient Borough.

THE EXCREMENT DISPOSAL in this locality is by means of pails, emptied in the soil of the gardens by the occupiers. Most of the dwellings are provided with eave-spouts and paved yards, and with open stone-built channels for the disposal of slop-water, which eventually finds its way from the main road into the adjoining fields. None of the dwellings are provided with trapped and covered drains.

The WATER SUPPLY of Loughor Borough is entirely derived from wells, some six or eight in number, all of which, within the last six years, have been securely cemented, covered over, and protected from surface pollution, and from all sources of possible contamination. Last summer, however, the supply was somewhat scarce.

The scavenging of Loughor Borough is not undertaken by the Authority.

There are no common lodging-houses within the district.

A house to house inspection is periodically made by Mr. Thomas, the Inspector, and the number of the old dilapidated cottages is being gradually diminished at every available opportunity.

DAIRIES, COWSHEDS, AND MILKSHOPS.—Regulations have been made and adopted under the Dairies, Cowsheds, and Milkshops Order, 1885. Every cow-keeper, dairyman, or milk-seller, is supposed to have his name entered on a register, kept at the office of the Clerk to the Authority. They are frequently visited by the Sanitary Inspector.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority have adopted the Infectious Disease (Notification) Act, 1889, but so far they have not provided any means for the isolation of their infected sick, nor do they possess any apparatus for the disinfection of articles of clothing and bedding. Disinfection of dwellings after infectious cases is carried out personally by the Inspector.

BYE-LAWS.—The Authority possess a code of bye-laws sanctioned by the Local Government Board in 1877. They refer to—

- (1) Removal of refuse, and the prevention of nuisances generally.
- (2) Notices, plans, and inspection of new buildings and streets.
- (3) The construction of new streets.
- (4) New buildings.
- (5) Buildings unfit for habitation, privies, cesspools, and ashpits.
- (6) Slaughter-houses.

26th May, 1894.

MERTHYR.

	1881		1891		1894
Population ..	12,600	..	13,715	..	14,760 (estimated)
Area in acres		..	21,808, or		

PARISH OF GELLYGAER.

Population, 13,782; occupied houses, 2,616.

Acreage, 16,388; rateable value, £72,641.

PARISH OF RHIGOS.

Population, 978; occupied houses, 214.

Acreage, 5,420; rateable value, £6,592.

The district includes the four parishes of Gellygaer, Vaynor, Penderyn and Rhigos in the registration district of Merthyr Tydfil, two of which, viz., Gelligaer and Rhigos, are in the county of Glamorgan, whilst Vaynor and Penderyn are in the county of Brecknock. Gelligaer parish comprises the Taff-Bargoed, Bargoed, and upper portions of the Rhymney Valleys, its boundaries being the Merthyr Tydfil towards the west, the Caerphilly Urban Districts towards the south, and Monmouthshire towards the east. A river occupies each of the above-named valleys—the Taff-Bargoed river joining the Taff below Treharris, and the Bargoed joining the Rhymney at Bargoed village. Most of the towns and villages are situated on or near the rivers' banks. In the Rhymney Valley are Newtown-Bute, Pontlottyn, Troedyrhiwfwch, Tirphil, Brithdir, Bargoed, Gilfach-Fargoed-Fach, Hengoed, and Ystradmynach. In the Bargoed Valley are Fochriw, Penybank, and Deri, whilst Bedlinog and Trelewis are in the Taff-Bargoed Valley.

The parish of Rhigos is to the north of the Aberdare and Ystradyfodgw districts, and includes Penmark and Rose Row (near Hirwain) Cwm-Hwnt and Cwm-Isaac on Hirwain Common, and Pontwalby on the Neath river at the extreme western boundary of the parish. Gelligaer covers an area of 16,388 acres, and has a rateable value of £72,641. Rhigos covers an area of 5,420 acres, and has a rateable value of £6,592. Geologically, the whole of Gelligaer and the greater part of Rhigos are situate upon the coalfields, the soil consisting of

Pennant rock on the hills, and in the valleys of boulder drift, sand, and in some places alluvium. The district generally is hilly and undulating, with its natural drainage towards the various valleys and streams. There are several other scattered hamlets, such as Gelligaer, Pontywain, &c., and a number of detached farm houses and a considerable area of pasture and mountain land included in the area.

HOUSE ACCOMMODATION.—The house accommodation is barely sufficient, and several villages are being, or have been recently, erected, such as Tirphil and Gilfach-Fargoed-Fach.

In the older villages of Pontywain, Newtown-Bute, and Pontlottyn the dwellings are old and dilapidated, crowded upon area, with the eave-spouts and damp-proofs sometimes absent or deficient. The recent ones are well built, supplied with eave-spouts, damp-proofs, water-closets, drains, paved yards, and good channels.

At Bedlinog several dwellings were observed to be cracked and damp on account of subsidences. There are no inhabited cellar dwellings, and only a few back-to-back or back-to-earth habitations.

There are seven common lodging-houses within the district. In two of such houses at Pontlottyn there were preparations for overcrowding, and it was customary to lodge more than the prescribed number. The closet also was dirty and choked, due to want of care on the part of the keeper, who had been previously warned.

The practice of sub-letting and taking in lodgers is common, and requires to be regulated. I am informed that the same beds are occupied by different lodgers through both night and day in some cases, thus occasioning overcrowding and deficient ventilation, with their attendant evils. There cannot be a more fruitful source of disease than this constant occupation of beds and bedrooms, which is common in the mining districts of this county.

SLAUGHTER-HOUSES.—There are seven slaughter-houses. They are frequently inspected, and all registered. The few that were visited were found clean, lime-washed, well managed, and supplied with the necessary appurtenances of water supply, good floors, efficient drainage and ventilation, provisions for the removal of blood, offal, and garbage, and suitable shelter for animals prior to slaughtering.

DAIRIES, COWSHEDS, AND MILKSHOPS.—The number of registered cowsheds and dairies in the district is eighty. Regulations under the Dairies, Cowsheds, and Milkshops Order (1885) have been made and adopted. These regulations have been in force since 1889. It should be remarked that the cowsheds are situated not in the various villages, but at the farms of their neighbourhood. The space allowed for each animal is 600 cubic feet.

ARTICLES OF FOOD, &c.—There is little or no systematic inspection of meat and other articles of food in this district.

WATER SUPPLIES.—The district generally is well provided with water from various sources, stored and impounded in well constructed and conveniently situated reservoirs. In most cases the supplies have been examined chemically and bacteriologically by Dr. Simons, D.P.H., Merthyr. Most of the supplies are not liable to any pollution, but this is not the case in every instance. During the drought of last summer a few villages only are said to have suffered from the want of a more plentiful supply. The supply for Newtown-Bute and Pontlottyn is exposed to a possible pollution above Newtown-Bute, where it flows in an open conduit over the natural ground, and is open to dangerous pollution from animal deposit. It is supplied by the Rhymney Iron Company. The water for Tirphil is partly supplied from an old disused level. Dr. Dyke points out that of the twenty deaths from diarrhoea, which occurred in the parish of Gelligaer in 1892, one-third occurred at Tirphil.

A new reservoir for Fochriw is in course of construction. The water supply for Brithdir is limited, and no supply has been procured for Gilfach-Fargoed-Fach, where it is much needed.

The present supply of Gelligaer is of doubtful purity and should be investigated.

DISPOSAL OF EXCREMENT AND REFUSE.—Excrement is disposed of in most villages by hand-flushed hopper-pans and syphons. In the smaller villages of Rhigos, and at Bargoed, Hengoed, and Ystradmynach, pails are used and emptied daily by contractors, under the supervision of the Authority's officials. At Panty-wain there are no privies or closets of any sort. The noticeable features of this well-managed Rural District is the absence of cesspits, and this important essential of health in hamlets and villages, viz., the removal of excrement, &c., from the neighbourhood of dwellings is much appreciated and well attended to.

The disposal of street, house refuse, &c., is wisely undertaken by the Authority and efficiently performed. Each important village is scavenged daily, and the smaller ones twice weekly.

Areas about buildings are well kept, and the yards, roads, and streets are paved, metalled, and channelled.

SEWERAGE.—The sewerage of the district, with one or two minor exceptions, is exceedingly complete. In most cases the sewage is disposed of by broad irrigation over suitably drained land, and managed by farmers. Where pails are used they are emptied daily. In only a few cases does untreated sewage enter any river, and provisions are now being made to prevent this pollution. The ventilation of the sewers is effected by means of shafts in all cases, but the gases are not heated by burning gas jets. The sewers were formerly ventilated by means of street openings, but Dr. Dyke, who has given this matter many years' study, some time ago advised his Authority to erect ventilating shafts. When this was accomplished an appreciable decrease in the number of cases of, and mortality from, typhoid fever, was soon noticed, as is shewn by comparing the annual mortality statistics. The mortality from diarrhoea also decreased as a more pure supply of water was obtained.

The district is studded with a number of small, well-arranged irrigation plots, all planned, constructed, and under the supervision of Mr. Jones, the Authority's Surveyor, to whom much praise is due for the admirable way he discharges his duties. The condition of his district affords him very much credit.

ADOPTIVE ACTS.—The Authority have adopted the "Infectious Disease (Notification) Act, 1889," since 1890.

PRECAUTIONS AGAINST INFECTIOUS DISEASE:—

- (1) The adoption of the Notification and Prevention Acts.
- (2) The conversion of several cottages at Penybanc into an Isolation Hospital. They afford room for eight or twelve patients, and are duly fitted, and always kept prepared, for the reception of patients. A Matron, who is a careful nurse, being always in attendance.

Arrangement have been made so that the infected sick of the Parish of Rhigos can be received into the Aberdare Isolation Hospital.

BYE-LAWS AND REGULATIONS.—The Authority possess a Code of Bye-laws, sanctioned by the Local Government Board in 1879. They refer to:—

- (1) The cleansing of footways and pavements.
The removal of house refuse.
The cleansing of earth-closets, privies, ash-pits, and cesspools.
- (2) Slaughter-houses.
- (3) Common lodging houses.
- (4) New streets and buildings.

Regulations have been made and adopted under the "Dairies, Cowsheds, and Milkshops Order of 1885."

RECOMMENDATIONS.—Although the district is in a satisfactory condition, and might well serve as a model for other districts, yet there are a few matters requiring the further attention of the Authority. These are:—

- (1) The protection of the Newtown-Bute and Pontlloftyn water supply.
- (2) A more plentiful supply of water for Tirphil and Brithdir.
- (3) Gilfach-Fargoed-Fach should be supplied with water without delay, and the arrangements for the disposal of sewage should be completed before any more dwellings are allowed to be inhabited.

- (4) It would be well if the proposed supplies of water for Hengoed and Ystradmynach were laid on.
- (5) The present supply of water for the village of Gelligaer should be investigated.
- (6) It is advisable that the Surveyor's scheme for the disposal of sewage at Badlinog should be adopted in its entirety.
- (7) The sewerage of Fochriw should be carried out. Plans have been submitted by the Surveyor, and it is advisable to have the difficulty of obtaining land settled, so that the scheme be carried out.
- (8) Dr. Dyke's recommendation as regards Pontywain should be carried out.
- (9) Provision should be made for the more efficient disposal of sewage at Factory Row, Ystradmynach.
- (10) The better scavenging of Trelewis. A few ash-bins would be of great service here.
- (11) The arching over of the culvert at the foot of the Recreation Ground, Pontlottyn. The tipping of refuse over the same should be discontinued. The surface water from Mount Street should be conveyed in pipes to the main culvert. A similar remark applies to the surface water drain from the old level to Saunders' slaughter-house at Farm Yard.
- (12) The scavenging of Gelligaer.
- (13) The conversion of cesspits into pail-closets at Penmark and Rose Row, above Hirwain.
- (14) The distribution of sewage over the small field above the Railway Station, Deri, should be discontinued, as it is too near the cottages (River Row), and already water-logged.

9th February, 1894.

NEATH.

	1891	1893
Population	27,475	23,953 (estimated)
Area in acres		52,844

This district covers the extensive area of 52,844 acres, and, according to the census for 1891, had a population of 27,475, now estimated at 23,953. It comprises much mountainous and cultivated land, is situated mostly between the rivers Avan and Neath, and includes the greater portion of the Avan, Neath and Dulais Valleys, with the following important centres, besides many smaller hamlets, groups of dwellings, individual farm houses and cottages:—

Cwmavan	}	In the Avan Valley
Pontrhydyfen		
Skewen		
Melincrythan		
Cadoxton-juxta-Neath		
Tonnau	}	In the Neath Valley
Aberdulais		
Melincourt		
Resolven		
Glynneath		
Onllwyn	}	In the Dulais Valley
Seven Sisters		
Crynant		
Cilfriw	}	On the Glynclydach Brook
Together with		
Bryncoch and	}	
Neath Abbey		

The chief industries of the district are coal mines, tin-plate, copper and iron works and farming.

The district is undulating and hilly, and its natural drainage towards the various valleys. In the highest parts the geological formation is Pennant sand stone, whilst in the valleys of Neath and Avon the subsoil is alluvium and broken detritus from the hill sides.

CWMAVAN.

Cwmavan is one of the most important centres of the district. It is a densely populated town of some six thousand inhabitants, almost entirely of the industrial class, the various copper, tin-plate, iron works, and coal mines affording employment. It is situated in the Avan Valley, some $1\frac{1}{2}$ miles N.E. of Aberavan, and extending as far as Rhydyfen (some two miles or more higher up the valley), and with which it is almost continuous. The greater and more important portion is on the west of the river. In the lower part of the town the houses are somewhat crowded together, whereas a little higher it is a series of connected villages. It is built partly on the flat, but chiefly on the slope of a hill, so that the natural facilities for main drainage are very considerable, although hitherto no system of public sewers has been provided. The most densely populated and unhealthy parts are those on the flat, viz., Waen-ty-Maen and the place known as the Depot surrounding the iron works. It possesses a railway communication with Aberavan and the Rhondda Valley by means of the Swansea Bay Railway, and from Aberavan east and west by the Great Western. The copper and iron ores are obtained from the Rio-Tinto and Bilbao mines in Spain. Over a thousand workmen are employed in the copper and tin-plate works, and many others in the coal mines and other works of this and neighbouring localities. Formerly the place was in a most flourishing condition, but at present it bears distinct traces of impoverishment, and its rateable value has decreased. The situation of the district is excellent, and its natural drainage into the Avan and various water courses from the hill side.

HOUSE ACCOMMODATION, &c.—The house accommodation of the district is said to be sufficient for the present demand, and overcrowding is said not to prevail. The houses are built in rows and terraces on the hill-slope facing the valley, but on the flat the various rows and streets are at right angles to the river (the main sewer of the locality). Most of the dwellings are old, somewhat dilapidated, and more or less out of repair. There are no cellar dwellings, but several rows of back-to-back houses without through ventilation, but the windows are made to open, and the spaces in front are not confined, so that there is but little impediment to the circulation of air in and about the same. They are all well provided with privy accommodation of some sort or another, and during the last three years some 250 new brick-built privies have been erected, and also several new drains. Generally, the houses are very clean and tidily kept, and it is evident that the occupiers take much pride in keeping their abodes clean, and cultivating their plots of gardens.

Most of the house property belongs to the various companies whose works afford employment, but a few to private individuals, directly or indirectly connected and dependent upon the works.

The practice of taking in lodgers is universal and requires to be regulated.

There are no common lodging-houses in the district.

WATER SUPPLY.—The water supply of Cwmavan is derived from various sources, the chief of which is the Aberavan reservoir.

These various sources are :—

- (1) The Aberavan reservoir and the overflow therefrom impounded in a smaller reservoir (supplying London Row, Cross Row, and Somerset Place.)
- (2) An old level on Foel (supplying Tew-goed and Tir-Arthur Rows).
- (3) Cwm Clais. A small reservoir (supplying 'Finers', Kendon, Lower, and Tir-Owen Rows, Market Place and Post Office Square).
- (4) Woodland Row is supplied by a brook.

During the recent drought it was scarce, but generally it is said to be plentiful.

It is conveyed in cast-iron pipes, and distributed at convenient points by means of self-closing stand taps. It is said to be of good quality, and to yield satisfactory results on analysis.

Besides the water from the above-named sources for drinking and domestic purposes there is another supply for the flushing of privy-drains, slop water, and surface channels. This supply is obtained from the feeder and piped to the various rows and streets for the purpose of flushing the various channels. It flows continuously, and effectually answers the purpose for which it was intended. The feeder water is obtained in the first place from the river at Pontrhydyfen. The supply for Pontrhydyfen is very short, and derived from three or four spouts. It has to be carried a long distance in some cases, and complaints are made of its scarcity.

EXCREMENT AND REFUSE DISPOSAL.—The various means made use of for the disposal of excrement, refuse, slop and surface water are unsatisfactory. They are :—

- (1) Cesspits.
- (2) The privy-drain system.
- (3) A few ash-closets.

There are no water-closets. Cesspits are in general use. Some are properly built so as not to allow soakage, whilst in other instances they are not so built, being mere holes dug in the ground. As a rule they are placed at the far ends of the gardens, into the soil of which their contents are emptied by the owners once a month or oftener. As the gardens were in most cases well looked after and cultivated there were but a few cases of nuisances to be observed. The privy drain system is made use of for many rows and terraces. The excrement is received direct into rubble stone box drains, through which water is made to flow. These privies are not trapped, and evolve a very offensive smell. The few ash closets that have recently been put up seem to answer well. In these excrement is mixed with the ashes and received into properly-built above-ground receptacles, which can be conveniently emptied. Appliances, such as cesspits and privy drains cannot be said to be wholesome and desirable for districts such as this, and had it not been for the fact that they are frequently and systematically emptied and inspected, the nuisances and danger would have been much greater. The contents of these privy drains empty on the river bank in many cases some distance away, and are allowed to flow in the open, creating grave and dangerous nuisances and evolving much offensive smell. Similar conditions are produced at the spots where the slop and surface drains empty their contents to the same useful receptacle.

The great want of Cwmavon is a *proper system of sewerage and drainage*.

SLOP AND SURFACE WATER is disposed of in different ways :—

- (1) By means of open surface drains along each side of the streets.
- (2) By gullies (untrapped) at the back of the dwellings.

These open surface drains for the disposal of slop-water, &c., are well built, generally made out of half-brick pipes. They are continually kept flushed and well looked after. The untrapped gullies used cannot be said to be free from danger to the inhabitants, but, on the contrary, they are very unwholesome and dangerous.

Street and other refuse is in the first place deposited in metal ash bins, supplied and placed by the Authority at convenient points through the district. They are emptied twice weekly.

The scavenging is let out on contract, and is exceedingly well performed under the vigilant watch of the Sanitary Inspector. The streets, areas about dwellings, and backyards are kept as clean as possible *under the circumstances*.

Disinfectants are made much use of, and are in great demand.

MELINCRYTHAN.

This portion of the district, situate between the Borough of Neath and Briton Ferry, is in a very fair condition. It is pipe-sewered and drained, and derives its somewhat limited water supply from the Neath reservoir. The main outfall of the sewer is to the Neath river at a point well away from all dwellings. There are a

few houses not yet connected with the main sewer, and also a few houses without flushing tanks for the w.c.'s.

The slaughter-houses should be better regulated.

The scavenging is well performed.

SKEWEN

Skewen, in the Parish of Coedfranc, is an important populous village, or rather a series of connected villages, adjoining the Borough of Neath on the one hand, and extending for a mile and a half or more along the highway between Neath and Swansea. It is built chiefly on the slope of a hill, so that the natural facilities for main drainage are very considerable, though hitherto no public sewers have been provided. A brook, having its origin in the adjoining hill, flows obliquely through the greater length of the district and contains a fair volume of water. It is augmented near the Railway Bridge by water obtained from a disused level. These water courses, including the Clydach Brook which crosses the district towards Neath Abbey, are the main sewers of the district, and serve to carry away slop, surface, and storm water, and as much sewage as gets removed from the neighbourhood of dwellings.

The population, some 4,000, is mostly of the industrial class. Employment is afforded by the various works (tin-plate works, coal mines, &c.) of this and neighbouring districts.

HOUSE ACCOMMODATION.—House accommodation is said to be fairly sufficient for the present demands of the district. The houses, generally, are somewhat dilapidated and out of repair. In many instances they are rendered unwholesome by their very limited supply of water, their defective drainage arrangements, and by the unpaved and sewage sodden state of their immediate surroundings. Some from inherent structural defects, dilapidation, and want of ventilation cannot be considered healthy. Most of the houses are drained in some way or another, very often by roughly constructed channels, which pass frequently beneath them to the roadside open gutter, where the sewage and slop water cause, at various points, considerable nuisance. Those in the side streets or furthest removed on the outskirts of the district do not possess such facilities, and are even more unsatisfactorily circumstanced.

WATER SUPPLY.—The present supply, estimated at about four gallons per head per day, is far too limited. A fair supply for such a district would be some 15 or 20 gallons per head per day. The supply of some five-sixths of the population is obtained from the mains of the Neath Water Company, the sources being the Darren Springs (in the Pennant sandstone) on an adjoining hill, a different one from that which supplies the town of Neath. The Company have apparently very little provision for storage, and the yield is insufficient to meet the requirements of the population. At the times of my visits, and during the recent drought, there was great scarcity, and some families had not received any from the pipes for two months. Even in ordinary seasons the supply is said to be insufficient. This inadequacy of the supply is continually the subject of remonstrance by the Authority to the Water Company, and it has doubtless stood in the way of a much-needed extension of a general service. The Authority are now negotiating with the Company with a view of purchasing the Darren Water Works. The supply can be considerably augmented by means of neighbouring springs.

Of the remaining sixth of the population many families are in need of wholesome water. Many houses in various parts are supplied from surface wells. At Burrows Road the inhabitants have to resort to a spring obviously much liable to chance pollution on account of its position and proximity to a privy cesspool.

On the whole the water supply of the district must be regarded as defective and unsatisfactory.

To quote from the Annual Report of Dr. Whittington for 1892 :—"There is a great scarcity of water at Skewen. I have repeatedly called the attention of your Board to the matter, and they in turn have urged the Neath Water Company to

increase the supply, but they refused to do so. I believe the Board are now in treaty with the owner of the Darren for his terms for letting them have water from there."

DISPOSAL OF EXCREMENT, SLOP AND SURFACE WATER, DRAINAGE, ETC.—Excrement disposal is generally by old-fashioned privies often placed over water-courses (privy-drains). These often contain an accumulation of many months, and are dilapidated and very foul. Some of the newer houses are provided with small box closets, but no provision has been made for their emptying; consequently they, too, are allowed to overflow and become a dangerous nuisance, causing much befoulment of the air and soil. When emptied their contents are buried in the gardens, which have long since become sewage sodden. The privy-drains empty their contents into the brook flowing through the district, to be eventually deposited in the river Neath some distance away.

Slop and surface water is disposed of by means of open triangular stone-built drains, placed along the sides of the streets. In many cases drains leading from untrapped gullies in the back yards pass under houses to discharge into the open street channels. Such open channels are often very offensive and dangerous appliances in a populous district such as this. Had it not been for the great care exercised by the sanitary officials in the management of the various privies, drains, channels, &c., they would long since have become an intolerable nuisance. Although they are systematically cleansed and disinfected, it must be said that their present condition is such as to assist and not resist the ravages of an infectious disease, such as typhoid fever or cholera. In his last annual report, Dr. Whittington states:—"During the past year I have had reported to me 14 cases of typhoid fever in Skewen, which occurred at intervals, and two of which proved fatal. Typhoid fever and cholera are always associated with similar conditions, and wherever typhoid prevails, there also may we expect cholera."

The removal of ashes and house refuse is effected by the Authority under a contract. They are, in the first instance, deposited in various fixed iron receptacles placed at convenient points in the district. These receptacles are not covered over and a great difficulty is experienced in preventing the inhabitants from depositing excrement, &c., therein. They are systematically emptied, and on the whole the scavenging is well performed.

No public sewers have been provided, but the Surveyor (Mr. Thomas), has completed his plans for the sewerage of the place. The sewage is to be discharged into the tidal water of the Neath river, and by an arrangement of tidal valves and penstocks it will be let off with the out going tides and stored when the tides rise.

Streets, areas about dwellings, backyards, privies, &c., are kept as clean as possible *under the circumstances*. Disinfectants are systematically and freely used.

The kerbing, channelling, and paving of some of the streets have been much neglected.

CADOXTON.

Cadoxton is a small village adjoining the town of Neath and situate in the valley of Neath. It has a population of some 400-500, mostly of the industrial class, the tinplate works, coal mines, and brewery affording employment. The subsoil is alluvium and debris from the adjoining hill of Pennant sandstone. Its natural drainage is into the river Neath.

WATER SUPPLY.—Water is gratuitously supplied by Mr. Bevan. It is derived from springs in the Pennant sandstone of the vicinity. Water for washing purposes is obtained from a brook along the outskirts of the village. In his Annual Report for 1892 the Medical Officer of Health states:—"The water supply in several parts of your district is very deficient, notably at Crynant, Cadoxton, Cilfriw, Skewen, and Abergwynfy. There has been a scheme for supplying Cadoxton, Cilfriw, Aberdulais, and Taillwydion, which, I understand, had the sanction of your Board, but which appears to have fallen through owing to the excessive demands of certain landowners for the water on their property." I am informed that a plentiful supply of good spring water, sufficient for Cilfriw, Aberdulais, and Cadoxton, can

be obtained from Gelli Marsh Mountain above Cilfriw. The supply was gauged in May last and the yield found to be 29,000 gallons per 24 hours.

DISPOSAL OF EXCREMENT, SLOP AND SURFACE WATER, &c.—Excrement disposal is generally by old-fashioned cesspools and cesspits. A few houses, however, are supplied with hand-flushed water-closets.

There are slop and surface drains here and there, but no system of public sewers and drains has been provided. The plans are now ready, and it is proposed that the main sewer should join the main sewer of Skewen before it enters the Neath river.

As is the custom through the district the removal of ashes and house refuse is undertaken by the Authority, but requires to be better regulated.

The Medical Officer of Health states, in his Annual Report for 1892, that "Cadoxton is one of the most filthy and worst drained places in the neighbourhood, and the wonder is that so few cases of infectious diseases are reported from this locality from time to time."

TONNAU AND ABERDULAIS.

Two adjoining villages situate at the junction of the Dulais and Neath rivers, $2\frac{1}{2}$ miles north-east of Neath, with an industrial population of some 600 or more, and mostly dependent on the tinplate works of the neighbourhood.

WATER SUPPLY.—The water supply of Tonnau and the part of Aberdulais east of the rivers is plentiful and impounded in a well-constructed covered reservoir at a considerable elevation, above all sources of pollution, conveyed in 4-inch cast iron pipes, and distributed at seven convenient points by means of self-closing stand taps. The supply is plentiful, and on analysis gives good results. A part of Aberdulais (Canal Bank) is not so well supplied.

MELINCOURT.

A scattered village of some 40 houses, and a population of about 200, employed at the brick and colliery works.

WATER SUPPLY.—The water is of good quality and also plentiful, obtained from a spring on the breast of the adjoining hill, and distributed by stand taps.

RESOLVEN.

A mining village some eight miles N.E. of Neath, situated on the Resolven brook, which joins the Neath river at the new bridge a short distance away. It has a population of about 800 or 900, and consists of six rows or terraces, recently built, and with ample spaces between. Many of the houses are now uninhabited.

WATER SUPPLY.—The water supply is good and plentiful, is derived from a spring, impounded in a well-constructed reservoir on the hillside, conveyed by cast iron pipes, and distributed by six self-closing stand taps.

DISPOSAL OF EXCREMENT, SLOP AND SURFACE WATER, &c.—Excrement disposal is by means of privies, brick and stone built, and emptied in the gardens.

Slop water is got rid of by means of open surface drains, and conveyed into a large cesspool in an adjoining field, some short distance away from the houses.

The scavenging is well performed.

GLYNNEATH.

Glynneath is an old dilapidated village with a population of some 500. Some of the houses are old, dilapidated, and out of repair.

WATER SUPPLY.—The water supply is derived from five wells by means of suction pumps. Their position, amongst and near houses, renders the water supplied liable to chance pollution. The water of three of these wells has recently been analysed, and found fit for drinking and dietetic purposes. Nevertheless, the various wells should be closely watched, on account of their *liability* to become polluted.

DISPOSAL OF EXCREMENT, SLOP, AND SURFACE WATER, &c.—Excrement is disposed of by means of the pail system. There are also a few privy-cesspits. Their contents are buried in the gardens.

The scavenging has been somewhat neglected.

The slaughter-house was found to be clean and well kept.

SEVEN SISTERS.

The mining village of Seven Sisters, situated near the top of the Dulais Valley, is entirely new and built within the last five or six years. It has a population of some 600 inhabitants, the adjoining coal mine affording employment. The village consists of several rows or terraces, and the houses are well constructed, and belong almost entirely to the Company. There are spacious back lanes. The soil consists of peat and clay. Its situation is healthy and elevated, but much exposed. Its natural drainage is into the river Dulais.

WATER SUPPLY.—The water supply is derived from a brook (open to surface pollution) some distance away from the village. It is sufficient for the present demands of the inhabitants, but no provision whatever has been made for its proper storage and distribution.

DISPOSAL OF EXCREMENT, SLOP, AND SURFACE WATER, &c.—Excrement disposal is by means of privies built in accordance with the Authority's Bye-laws, and their contents are buried in the soil of the gardens, at the far ends of which they are situated.

Trapped drains are provided for the removal of slop and surface water, and the main out-fall drain empties into the river Dulais.

Between the village and the river is a field which can, without much expense, be conveniently converted into a filtering area for the purpose of getting rid of the noxious materials of the contents of the drain, and should the place happen to grow this will be a very desirable and safe procedure.

During the recent epidemic of small-pox a temporary hospital was provided by the Company.

The scavenging is well performed.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—The "Notification of Infectious Disease" has been compulsory in the district for over two years, and lately the Authority have wisely provided a hospital for the isolation and treatment of their infected sick. It is centrally situated on the Cymla Commons, a short distance from Neath and fairly convenient for both Cwmafon and Skewen, the most important and populous parts of the district. There are two wards and accommodation for twelve patients (six in each ward). Each ward has a floor space of 600 square feet, and a cubical capacity of about 6,700 cubic feet, thus allowing over 1,000 cubic feet for each patient. It is well ventilated. Each ward has its earth closet and bathroom, with water laid on from a small reservoir situated in a field some few hundred yards away, where it is fed by a spring. The premises are thoroughly drained by stone-ware socket pipes, trapped and ventilated above the roof.

A disinfecting chamber and mortuary have yet to be provided.

BYE-LAWS AND REGULATIONS.—The Authority's Bye-laws are on the same lines as the model Bye-laws of the Local Government Board, and were adopted in 1881. They refer to:—

- (1) Cleansing of footways and pavements.
The removal of house refuse.
The cleansing of earth closets, privies, ash-pits, and cesspools.
- (2) Nuisances arising from snow, filth, dust, ashes, and rubbish, and for the prevention of the keeping of animals on any premises so as to be injurious to health.
- (3) Common lodging-houses.
- (4) Slaughter-houses.
- (5) New streets and buildings.

Regulations have been adopted under the Cowsheds, Dairies, and Milkshops Order, 1885.

ADOPTIVE ACTS.—The Board have adopted—

- (1) The Infectious Disease (Notification) Act, 1889.
- (2) The Public Health Acts Amendment Act, 1890.

(3) The Infectious Disease (Prevention) Act, 1890, and they are all actively in force.

Under the supervision of the Medical Officer of Health and the Head-Inspectors, the scavenging of the district generally is well performed, and in view of a visitation of cholera the Board have very wisely appointed several Assistant Inspectors, who are stationed in different localities, and whose duties are to disinfect privies, foul drains, and gullies, and to supervise the scavenging, which is let on contract.

20th July, 1893.

NEWPORT.

PARISHES OF LLANDVEDW AND RHYDYWERN.

	1891.	1894.
Population	550	550 (estimated).
Area in Acres ..	3,175.	

In future the above parishes will be annexed to the Cardiff Rural District.

PONTARDAWE.

	1891.	1893.
Population	17,375	18,083 (estimated).
Area in acres ..	28,323	or
Western Division ..	10,174	10,388
Area in acres ..	17,971	
Eastern Division ..	7,201	7,695
Area in acres ..	10,352	

The whole district is co-extensive with Pontardawe Union, and comprises the parishes of Ynys-y-mond Mawr, Rhwngdwytydach, Llanwig, Cil-y-bebyll, and Ystradgynlais Higher and Lower. The parishes of Ystradgynlais Higher and Lower of the Western Division are situated in the County of Brecknock. For the purpose of Sanitary Administration the district is divided into two divisions—the Eastern and Western, each with a Medical Officer of Health. It includes portions of three watersheds and three valleys—the Tawe, Twrch, and Amman, together with a large proportion of agricultural and mountain land. Cwmelydach, portion of Glais, Pontardawe (Western Division), and Ystalyfera are in the Tawe Valley. The Tawe river is joined by the Twrch above Ystalyfera, on which tributary are Cwmtwrch and Cwmllynfell, whilst on the Amman and its tributary, the Garnant, are Brynamman, Waen-cae-gurwen and Cwmgors. The district covers an area of 28,223 acres. Geologically, it is situated in the coalfields, the sub-soil consisting of Pennant rock on the hills, and in the valleys of Tawe and Twrch of boulder drift and alluvium. The population is mainly composed of the artisan class, the numerous tin-plate works, coal mines, &c., affording employment to over 4,000 people.

DWELLING ACCOMMODATION.—The dwellings are, as a rule, substantially built of good Pennant stone. There is no overcrowding of houses upon area, indeed a noticeable feature of the district is that most of the cottages are either detached or semi-detached and furnished with spacious gardens, which are generally well cultivated. I am informed that more than two-thirds of the dwellings are the property of the occupiers, and are consequently in good repair. There are, however, a few here and there in a more or less dilapidated condition and out of repair. At Ystalyfera most of the houses are built on the steep hillside. There is a large

number of cellar dwellings, some of which are without any means of through ventilation, whilst in others the main room obtains light and air indirectly by means of iron gratings in the roadway above. Taking into consideration the fact that the Authority do not possess any building Bye-laws, the wonder is that the dwellings are so well planned and built. They are well provided with privies, generally at some distance, in the far end of the gardens, if possible. In many cases the means provided for the disposal of slop-water are inadequate, allowing stagnation along streets and roadsides.

SLAUGHTER-HOUSES.—There are some dozen slaughter-houses within the district, and their general condition may be described as fairly satisfactory. They are all licensed and registered, frequently inspected, periodically limewashed, and well provided with water. The floors, as a rule, are of concrete, but the provisions for the disposal of blood, offal, &c., were not in all cases satisfactory. The Authority's Bye-laws in connection with these buildings seem to have been well enforced, and without systems of drainage and sewerage very little more can be done.

COMMON LODGING-HOUSES.—There are only two, and these at Ystalyfera. They are under police supervision, but frequently visited by the Medical Officer of Health and Inspector. They are registered for a certain number of lodgers and in a fairly satisfactory condition.

DAIRIES, COWSHEDS, AND MILKSHOPS.—There are 59 dairies and cowsheds in the district, which are periodically inspected. Regulations have been made and adopted under the "Dairies, Cowsheds, and Milkshops Order, 1885," since 1887.

There is little or no inspection of meat and other articles of food made within the district.

WATER SUPPLY.—The district is well supplied with water. It is obtained from various sources, impounded and stored in well constructed and conveniently situated reservoirs, and distributed by means of suitable taps at convenient points in the various localities. Most of the wells formerly used have now been closed, and others covered and protected from pollution. The only portions of the district still inadequately supplied are Cwmtwrch and Glais. Plans for the better supply of Cwmtwrch and Upper Ystalyfera have been prepared by Mr. Morgan, the Surveyor, and submitted for the approval of the Local Government Board, with a view of obtaining a loan to carry out the works.

DISPOSAL OF EXCREMENT AND REFUSE.—No system of drains have been provided in any of the localities. Excrement is disposed of in covered privy-middens, of which there are some 2,000. There are also some 150 pans or pails made use of. Some 40 or 50 of the better-class houses are provided with w.c.s, which empty into cesspools. The scavenging of Ystalyfera is undertaken by the Authority, but with this exception the occupiers are expected to empty the various receptacles periodically in their gardens.

A considerable difficulty is experienced in the disposal of slop-water, and nuisances are not uncommonly found in this connection. In a part of Ystalyfera drains have been provided which empty their contents into the neighbouring canal. The number of privies is gradually diminishing, and pails are being substituted wherever it is practicable.

RIVER POLLUTION.—The Tawe, Twrch, and Ammon, together with the canal, are much polluted at many points. The river Tawe contains a large quantity of yellow ochre (oxide of iron), which imparts to the water and the river bed a yellowish red appearance. I visited most of the tin-plate works along the rivers' banks, and ascertained that copperas was manufactured in every instance. The water from the swilling tanks and condensers are allowed to enter the rivers untreated.

I hope, on a future occasion, to enquire more fully into the means adopted at these and other similar works against befouling the rivers on which they are situated.

ADOPTIVE ACTS.—The Authority, so far, have not adopted any of these Acts.

BYE-LAWS AND REGULATIONS.—The Authority possess a limited code of bye-laws having reference to—

- (1) The regulation of common lodging-houses, sanctioned in 1877.
- (2) Slaughter-houses, sanctioned in 1888.

PRECAUTIONS AGAINST INFECTIOUS DISEASE.—The Authority possess no means for the isolation of their infected sick, nor have they a disinfecting apparatus of any kind. The Infectious Disease Notification and Prevention Acts have not been adopted. The Authority will find it to their advantage to adopt the "Compulsory Notification of Infectious Disease Act," and now that the law has provided means whereby the information can be acquired, Sanitary Authorities cannot expect Medical Practitioners to furnish them with gratuitous information. It is of the highest importance that the Medical Officers of Health should be immediately informed of any infectious disease occurring in their districts, and unless the cases are notified it becomes impossible to prevent its spread.

RECOMMENDATIONS :—

- (1) The Authority should, in the more populous portions of their district, especially at Pontardawe and Clydach, themselves undertake or contract for the removal of house refuse, and the cleansing of privies, pails, ash-pits, &c., in accordance with Sec. 42 Public Health Act, 1875.
- (2) They should provide for the isolation of their infected sick, and for the efficient disinfection of articles of bedding and clothing.
- (3) Privy cesspits should be abolished, and dry earth closets or pails provided (where there is no system of sewers), with movable receptacles, which should be emptied twice weekly. Where cesspools cannot be abolished, they should be well ventilated, and no soakage or overflow of their contents allowed.
- (4) The Authority should, according to the provisions of the "Housing of the Working Classes Act, 1890," (Sec. 3), cause the systematic inspection of their district to be continued, in order to ascertain the existence of dwellings that are unfit for habitation.
- (5) Efficient systems of sewerage and drainage should be provided for the more populous villages of the district. The sewage should be disposed of in such a way as not to be productive of a nuisance or of the fouling of the watercourses.
- (6) The Authority should adopt the—
 - (a) The Infectious Disease (Notification) Act, 1889.
 - (b) The Infectious Disease (Prevention) Act, 1890.
 - (c) And such parts of the Public Health Acts Amendment Act, 1890, as are suitable to the district.
- (7) The provisions of more adequate means for the disposal of slop water.
- (8) The Authority should (in pursuance of Sec. 276 of the Public Health Act, 1875) apply for Urban powers under Sections 157 and 158 with respect to any contributory places where building operations are likely to be carried on. In the event of these powers being granted, they should make Bye-laws applicable to the places in question, with respect to the construction of new buildings.

17th April, 1894.

PONTYPRIDD.

Population	..	11,070 (census, 1891).
Area in acres	..	17,358

This Rural District includes the larger portions of the two parishes of Llantrisant and Llantwit Vardre. It is situated in-land, in the south-east part of the county, in the registration district of Pontypridd, its boundaries abutting on the Cardiff Rural District towards the south, on the Caerphilly and Pontypridd Urban Districts towards the east (the river Taff separating it from the Caerphilly), on the

Ystradfydwg and Garw and Ogmore Districts towards the north, and the Bridgend and Cowbridge Districts towards the west. It comprises parts of three valleys—the Ely, the Taff, and Ogmore Fach, and covers a total area of 17,358 acres—13,154 belonging to Llantrisant, and 4,204 to Llantwit Vardre parishes. It has a rateable value of £60,081. The greater part of it stands upon the coalfields, its surface being composed of Pennant rock on the hills, with a sub-soil of peat, gravel, and alluvium in and towards the valleys. South of Llantrisant it extends into the Vale of Glamorgan, and here consists geologically of mountain limestone. The district, generally, is hilly and undulating, with its natural drainage towards the various valleys.

The population numbering some 11,070, is engaged in the coal mines, tin-plate, pottery works, and farms of the locality.

The important centres are:—

Penrhiwfer, with a population of some	255	In the parish of Llantrisant, and in the Valley and watershed of the Ely river.
Edmundstown	577	
Tonyrefail,	1,560	
Llantrisant,	2,500	
Cross Inn,	320	
Miskin Village, }	1,050	In the Ogmore Fach Valley and watershed.
Pontclun,		
Brynsadler,	250	
Gilfach Goch,	1,200	
with		

Pentonteg	}	with a population of some 1,895.	In the form of a series of disjointed villages, on a considerable elevation, and extending nearly the whole distance from Llantrisant to Pontypridd.
Holly Bush			
Church Village			
Llantwit Village			

The natural drainage of this parish is partly towards the Taff and partly towards the Clun, a tributary of the Ely.

There is railway communication within a short distance of the important centres.

DWELLING ACCOMMODATION.—Dwelling accommodation is described as barely sufficient, and overcrowding is said to exist in some localities. The houses are much like other workmen's cottages in similar districts. In the older villages (Llantrisant and elsewhere) many of the houses are old, dilapidated, and out of repair. In the village of Llantrisant the Medical Officer of Health has condemned several as unfit for habitation, but some of these are still occupied. There are many dwellings in a similar condition, and should be dealt with under the "Housing of the Working Classes Act, 1890."

Alleys, courts, and areas about dwellings are often uncared for and much neglected.

A large number of the houses belong to the various companies and are occupied by their workmen and families; they are generally provided with privies of some kind or another.

COMMON LODGING HOUSES.—There is but one common lodging house within the district, viz., at Llantrisant. This has been condemned by the Medical Officer as unfit for habitation, and certainly it is most unfit.

The practice of taking in lodgers is universal and requires to be regulated, and so far the Authority possess no Bye-laws that can deal with and control houses let in lodgings.

SLAUGHTER-HOUSES.—There are several slaughter-houses within the district, and some that I visited were inadequate for the purpose, and did not comply with the requirements of the Public Health Acts. They are inspected from time to time by the Inspector. They are not registered, and Bye-laws with respect to removal of filth and to general cleanliness do not appear to exist in the Authority's code. One of these buildings visited was dirty, and there was a quantity of offal in and

and about the premises. The blood and washings found their way out the best way they could. Such was the condition of a slaughter-house at Gilfach Goch.

COWSHEDS, DAIRIES, &c.—There are several cowsheds, &c., within the district. The Authority are about to draw up regulations with regard to these matters. This is of the highest importance when we consider how often it happens that milk is the vehicle whereby disease is carried and spread.

WATER SUPPLY.—Some parts of the district, such as Cross Inn, Miskin Village, Long Row, Pontclun, Brynsadler, and Groesfaen, have recently been supplied with plentiful and wholesome water. In other parts of the district the present supply is deficient, and in cases open to pollution. This is the case at Llantrissant. The supply of this ancient village is derived from wells dug in the sub-soil and the underlying disintegrated Pennant rock. The thickness of the sub-soil varies from 0 to 30 feet. The wells are some half-a-dozen in number, and dug in a soil impregnated with sewage (for many of the old closets are not watertight; some, indeed, are mere holes dug in the ground) in the vicinity of dwellings and cesspools, and some very near the Churchyard, which is on the highest elevation in the village. On analysis the water yielded by most of these wells is found unfit for use. (See extracts from the Annual Report of the Medical Officer of Health for 1892.)

As the Authority have now under consideration the question of supplying the various localities with better water, it is useless to say more on this occasion.

SEWERAGE.—The sewerage of some localities within the district is of a rudimentary character. Such is the case at Gilfach Goch, Tonyrefail, Edmundstown, Penrhiwfer, and Llantwit Vardre villages. In other localities considerable improvements have recently been made. The question of the more efficient sewerage of the district is now being considered by the Authority.

EXCREMENT AND REFUSE DISPOSAL.—The disposal of excrement is by water closets, cesspits, and earth closets, and is unsatisfactorily carried out in some places. New houses are supplied in every instance with properly built cesspools, trapped and ventilated. No provision is made by the Authority for the emptying and cleansing of cesspools; this duty is imposed upon the occupiers, and, consequently, but seldom performed efficiently. The earth closets are emptied once or twice weekly by the scavengers, of which there are four, under contract, for the whole district. This arrangement is not satisfactory, and this duty should be undertaken and supervised by the Authority.

PROVISIONS AGAINST INFECTIOUS DISEASE.—The Authority have lately adopted the Infectious Disease (Notification) Act, 1889, and have procured a plot of ground where a temporary isolation hospital can be put up, but so far no steps have been taken towards erecting such a building. There are no means in readiness for the efficient disinfection of clothing, bedding, &c. The Infectious Disease (Prevention) Act, 1890, and the Public Health Acts Amendment Act, 1890, have not, as yet, been adopted.

BYE-LAWS.—The Authority possess a code of bye-laws sanctioned by the Local Government Board in 1887. They refer to—

- (1) Level, width, &c., of new streets, and sewerage thereof, &c.
- (2) The structure of walls, foundations, roofs, &c.
- (3) Sufficiency of space about new buildings, &c.
- (4) Drainage of new buildings, water closets, privies, &c.
- (5) The regulation of common lodging-houses.

Extracts from the reports of Drs. D. W. Davies and H. Naunton Davies :—

Re Water Supply of Llantrissant, by Dr. D. W. Davies.—“The supply, which is derived partly from private, but mainly from public wells, is, even in ordinary seasons, wholly insufficient to meet the sanitary requirements of the town, which, it should be borne in mind, include not only water for drinking and cooking, but for baths, washing, flushing of sewers, and many other purposes. Not only is the supply insufficient, but open to very grave suspicion. From the position of the wells in relation to the geological strata of the neighbourhood and the proximity of many of them to some drain, cesspit, or burial ground, the water in them, even if

pronounced by the analyst to be pure to-day, is so exposed to excrementitious pollution that to-morrow it may contain the germs of cholera or typhoid."

"A better privy accommodation is urgently needed."

Re Cymmer Division, by Dr. Naunton Davies.—"The sanitary state of the whole district is in a most unsatisfactory and dangerous condition, liable to develop at any favourable period an epidemic of infectious disease." "There is no system of drainage at Tonyrefail." "Gilfach Goch is also dangerously defective, there being no water supply and no system of drainage. The closets are in a most dilapidated condition, the pail system being adopted and emptied but seldom by the householders." "Edmundstown is in a most deplorable insanitary state."

I beg to make the following suggestions concerning matters requiring the attention of the Authority:—

- (1) Isolation Provisions.—That the Authority should make arrangements whereby they may be able to fully carry out their powers for averting the spread of infectious disease, *i.e.*, to provide (either by themselves or jointly with Pontypridd Urban or other district) sufficient and proper hospital accommodation for the isolation and treatment of infectious diseases. The accommodation at first provided need not be on a large and costly scale, but it is essential to have the same in readiness, so that the first persons attacked may be promptly isolated. Such a provision should include a laundry, a mortuary, and an ambulance, with their usual appurtenances.
- (2) The adoption, either partly or entirely, of the Infectious Disease Prevention Act, 1890, and the Public Health Acts Amendment Act, 1890.
- (3) That all dwellings which from dampness, dilapidation, want of ventilation, and other structural defects, are unfit for habitation, be repaired or permanently closed.
- (4) That bye-laws be drawn up with regard to slaughter-houses, with a view of their better regulation.
- (5) That the inspection of the district be carried out systematically, in accordance with Section 92 of the Public Health Act, 1875, and that nuisances likely to recur should be dealt with under Section 95 of the above Act.
- (6) That under the guidance of the Medical Officer of Health a code of regulations be drawn up for the management of dairies, cowsheds, and milkshops.

November 28th, 1893.

SWANSEA.

LLANGYFELACH DIVISION.

	1891.	1893.
Population ..	10,518	11,020 (estimated).
Area in acres ..	..	10,001

This division comprises the parishes of Llansamlet Higher and Lower, and portions of the parishes of Clase and Penderi. It covers the extensive area of 10,001 acres, mostly situated in the valley, and extending considerably on both slopes of the river Tawe. Geologically, it stands upon the coalfields, the sub-soil consisting of Pennant rock on the hills, with some depth of peat, clay, sand, and alluvium, according to the elevation and position of the localities. The population is mainly of the artizan class, the industries being two foundries, five tin-plate works, thirteen collieries, together with one vitroil, two steel, two brick, one wagon, and one spelter works. Many of those employed at these works live outside the district. The river Tawe flows through the whole length of the district, and in its course is joined by several tributaries. Along their banks are situated most of the works. In Clase there are several distinct villages, but in the

parishes of Llansamlet Higher and Lower, the various villages are continuous for several miles.

HOUSE ACCOMMODATION.—The house accommodation is said to be sufficient. The dwellings are, as a rule, of the cottage class, substantially built, and fairly well provided with privy accommodation. Many are detached or semi-detached, and supplied with extensive gardens. There is no crowding of dwellings upon area, and no hindrance to the free circulation of air around them. There are no back-to-back, back-to-earth, cellar dwellings, or common lodging-houses within the district. Several dwellings, originally intended for one family, are sub-let in tenements. Throughout the district, little or no attention seems to have been paid to the paving of yards, and no drains have been provided for the disposal of slop-water, with the consequence that it is thrown haphazard to any convenient place, so that the unprotected street and roadside channels often contain stagnant pools of dirty slop and refuse water. There are many dwellings out of repair, and several in such a condition as to render them unfit for human habitation. This is notably the case in a row of five houses at Hanover Place, Llansamlet Lower. In many places also the streets are out of repair, and pavements, kerbs, and channels are entirely wanting.

SLAUGHTER-HOUSES.—There are only a few slaughter-houses in the district, which are said to be inspected regularly by the Sanitary Inspector. They are not registered, and bye-laws with respect to removal of filth and to general cleanliness do not appear to have been made.

DAIRIES, COWSHEDS, AND MILKSHOPS.—It is stated that there are 90 cowsheds and 60 dairies in the district. These are not registered, but are under the supervision of the Sanitary Inspector. The Sanitary Authority have not, however, hitherto drawn up regulations with regard to these matters. Local Authorities may make regulations for the inspection of cattle and dairies; for prescribing and regulating the lighting, cleansing, draining, ventilation, and water supply of dairies and cowsheds; for the cleansing of milkstores and shops and milk vessels, and for prescribing precautions to be taken against infection and contamination. This is one of the few districts in the county where no such regulations have been made, and without precise regulations it is impossible to insure that premises, cattle, and milk are kept clean and in order. This subject requires the Authority's attention.

SEWERAGE AND DRAINAGE.—No systems of sewers or drains have been provided, and there are no water closets within the district. Excrement and ashes are almost universally disposed of in pail, dry earth closets, or cesspits. The scavenging of some parts of the district is let on contract; in other parts (Clase and Penderi) no such provisions have been made, and the owners and occupiers are expected to empty their own privies, with the result that this important duty is frequently neglected, especially at times when the excrement is not required to manure the gardens. Where scavengers are employed the pails are emptied once weekly, and dry earth closets once fortnightly. The excrement is finally disposed of and used as manure, after admixture with lime, in the fields of the various contractors. In one part of Clase (Midland Terraces) many cesspools are being done away with and pails substituted. No means have been provided for the disposal of slop water.

WATER SUPPLIES.—This district generally is not well provided with water. The parish of Llansamlet Higher is very well supplied with pure spring water from the Gelli Service Reservoir, which is conveniently situated and covered over. It is distributed by means of stand pipes at convenient points throughout the whole parish. Lately the service has been wisely extended to a portion of the parish of Llansamlet Lower, where water is exceedingly scarce. With an additional supply (which I am informed can be obtained), and a storage at Gelli, the parish of Llansamlet Lower should be further supplied. Sarn, Bon-y-maen, and Cefnhesg are much in want of a plentiful and wholesome supply of pure water. There is no water supplied to the Truant School at Bon-y-maen. Seventy to eighty boys are provided for at this institution, and, according to the testimony of the head-master, it suffers

considerably from want of water. What little water is available must be carried a long distance, and there is oftentimes great scarcity. In short, it may be said that the parish of Llansamlet Lower generally (but notably the above-named localities) is very inadequately supplied.

The following localities also are inadequately supplied, viz., Cwmrhydycewri, Midland Terraces, Mynyddbach to Heo'ddu (Clase).

THE BYE-LAWS AND PRECAUTIONS AGAINST INFECTIOUS DISEASE are the same in this Division as in Llandilo-Talybont, so it is needless to refer to them in this report.

The conditions to which the attention of the Authority is specially needed are :—

- (1) The provision of an adequate supply of pure and wholesome water for the Parish of Llansamlet Lower, and the other localities mentioned.
- (2) The provision of adequate means for the disposal of slop and house water.
- (3) The desirability of keeping a register of all the dairies, cowsheds, and milkshops, and to make and adopt regulations under the "Dairies, Cowsheds, and Milkshops Order of 1885," and of making additional bye-laws having reference to nuisances, slaughter-houses, &c.
- (4) The Authority should, according to the provisions of the "Housing of the Working Classes Act, 1890" (Section 32), cause a systematic inspection of their district to be made, in order to ascertain the existence of any dwellings that are unfit for habitation.
- (5) The Authority should, themselves, undertake or contract for the removal of refuse, and the cleansing of pails and ashpits (in accordance with Section 42, "Public Health Act, 1875,") in all the more populous parts of their district.
- (6) The "Infectious Disease (Prevention) Act, 1890," and such clauses of the "Public Health Acts Amendment Act, 1890," as are applicable to the district should be adopted.

30th March, 1894.

SWANSEA.

LLANDILO-TALYBONT DIVISION.

	1891.	1892.	
Population..	13,449	13,580	(estimated).
Area in acres		17,246.	

This division comprises the parishes of Llandilo-Talybont, Penderi and Swansea Higher and Lower. According to the last census the population was 13,449, which is now considerably increased, principally on account of more activity in the coal-mining industry at Gorseinon. The district covers the area of 17,246 acres, and has a rateable value of £52,296. Geologically it stands upon the coalfields, the sub-soil consisting of Pennant rock on the hills, with some depth of peat, clay, sand and alluvium, according to the elevation and position of the localities. The population is of the artisan class, coal-mining, tin-plate, and steel works affording employment. The important centres are Pontardulais, Gorseinon, Waunarlwydd, Dunvant, Killay, Sketty and Forest Fach.

GORSEINON.

I have formerly reported on Gorseinon, and as no material change has taken place since that time, I do not propose to refer to it in this report.

PONTARDULAIS.

Pontardulais is at the junction of the Dulais and Loughor rivers. It is partly situated in the county of Carmarthen, and has a population of some 2,000, mostly employed at the various collieries and tin-plate works of the district. The small river Dulais flows through the town on its way to join the Loughor, and receives most of its surface, slop water and other refuse. The soil consists of gravel and sand.

Many of the houses are dilapidated and old, with unpaved and undrained surroundings. The streets are out of repair, and pavements, kerbs and channels entirely wanting. There is also a complete absence of drains and sewers, the slop water being allowed to soak into the soil or find its way to the various water-courses, and finally into the Dulais and Loughor rivers. Drinking water is obtained from a number of wells situated amongst or near dwellings. The water is of doubtful purity on account of the character of the soil and surroundings of the wells.

There are two slaughter-houses in the town, and both are absolutely unfit for the purpose and defective in every respect. A new slaughter-house is in course of construction, which, when completed, it is hoped will replace the old ones, and serve as a public convenience for the district.

The "pail system" is made use of for the disposal of excrement, and, failing water-closets and a system of sewerage, it is undoubtedly the best, provided the pails are regularly and carefully emptied. The scavenging is fairly well performed, and the pails emptied twice weekly, and disposed of, after mixing with lime, with the street and other refuse.

No means for drainage is provided—there are a few unprotected and unpaved channels.

WAUNARLLWYDD.

This village is provided with a plentiful supply of water and is well scavenged. Pails are used for the reception of the sewage, and their contents used as manure for the gardens of the various cottages. There is no system of drainage; surface and slop water is allowed to flow in open channels and to soak into the soil. The dwellings are not crowded upon area and all are supplied with large gardens and are built upon a porous soil. Similar remarks apply to Dunvant, Killay and Forest Fach, except that the Surveyor's schemes for the water supply of these places have not been completed.

SYSTEMATIC INSPECTION of the district is thoroughly conducted by the Inspector (Mr. Thomas), in accordance with Section 92 of the Public Health Act. Nuisances are sought out, and their suppression enforced, independently of any complaints by the inhabitants.

The scavenging is let on contract and is well performed under the personal supervision of the Inspector.

BYE-LAWS AND REGULATIONS.—The Authority possess a limited Code of Bye-laws, sanctioned by the Local Government Board in 1885. They refer to New Streets and Buildings, but to no other matters, such as nuisances, slaughter-houses, &c.

No regulations have been made under the Dairies, Cowsheds and Milkshops Order of 1885. The various slaughter-houses, dairies, cowsheds, &c., are not registered, but are systematically visited and inspected; but without precise regulations it is impossible to insure that premises, cattle and milk are kept clean and in order.

PRECAUTIONS AGAINST INFECTIOUS DISEASES.—The Authority have now practically made arrangements with the Swansea Urban Authority to provide 7 or 8 beds at their Fever Hospital, where the infected sick of the district may be admitted and treated, and where infected articles of bedding and clothing may be efficiently disinfected.

The conditions to which the attention of the Authority is specially needed, are:—

- (1) The provision of adequate supply of wholesome water for Pontardulais and Gorseinon.

- (2) The provision of means for the drainage and sewerage of the various localities so as to prevent the pollution of the streams and villages.
- (3) Public provisions for the purposes of slaughtering at Pontardulais and Gorseinon.
- (4) Properly constructed receptacles for the storage of house refuse prior to removal by the scavengers.
- (5) The systematic inspection of the District in accordance with the provisions of the "Housing of the Working Classes Act, 1890," for the purpose of ascertaining the existence of any dwellings that are unfit for habitation.
- (6) Yards about dwellings should be properly paved, and where open channels exist for the conveyance of slop and surface water, they should be replaced by pipe-drains and trapped gullies.
- (7) Bye-laws and Regulations should be made and enforced, having reference to—nuisances, slaughter-houses, dairies, cowsheds, &c.,

21st February, 1895.



The following is a list of the names of the persons who have been elected to the office of the President of the United States since the year 1789.

1789 George Washington

1793 John Adams

1797 Thomas Jefferson

1801 James Madison

1805 James Monroe

1809 James Madison

1817 James Monroe

1821 James Monroe

1825 James Monroe

1829 James Monroe

1833 James Monroe

1837 James Monroe

1841 James Monroe

1845 James Monroe

1849 James Monroe

1853 James Monroe

1857 James Monroe

1861 James Monroe

1865 James Monroe

1869 James Monroe

1873 James Monroe

1877 James Monroe

1881 James Monroe

1885 James Monroe

1889 James Monroe

1893 James Monroe

1897 James Monroe

1899 James Monroe