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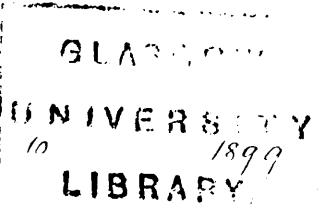
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THE SANITARY CONDITION of the DISTRICT in which I practice with
Special reference to an epidemic of Enteric Fever therein.

The district in which I have practiced my profession for 18 years is practically co-terminous with the area under the Supervision of the Mountain Ash Urban District Council.

Its area covers 10,463 acres and it extends considerably beyond the populous centres and it includes many farms and much Mountain land. It is situated in the eastern portion of the County of Glamorgan and has an estimated population of 31,062, The census of 1891 gave the population as 17, 495, but since then the area has been somewhat extended.

The number of houses in the district was 5247 last year, many have been added since. The relation of this Sanitary District to the Sanitary Districts which adjoin it can be seen at a glance from the accompanying map. It includes portions of three parishes, Llanwonno Llanfabon and Aberdare and of three Valleys Aberdare (or Cynon), Clydach and Taff. It comprises a string of typical South Wales Colliery Villages, all of which except Ynysybwl occupy one or the other bank of the Cynon River within a stretch of some 4½ miles in the lower portion of the Cynon Valley.

Abercynon is as its name denotes at the confluence of the Cynon and Taff rivers and the old town of Aberdare at the summit of the Valley.

The highest village in the district is Cefn-pennar with an elevation of some 500 feet and the lowest is Abercynon with an elevation of 320 feet. The elevation of the highest

part of Ynysybwl (old village) is about 600 feet.

Special Local Features. The District comprises portions of three valleys, viz, Cynon, Clydach and Taff and these give passage respectively to rivers having the same names, these valleys are deep and narrow, long and crooked surrounded by high mountainous ridges of Pennant sandstones overlying the various carboniferous strata.

Adjoining the rivers and extending for some distance the soil consists of alluvium and debris from the hill sides and occasionally peat. The soil is occasionally damp and boggy and subsidences are common on account of underground excavations. At the extreme north of the district is a short cross valley named Cwmpennar giving passage to a stream of the same name.

The entire district stands on the coal field, it is hilly and undulating with its natural drainage towards the various valleys and their rivers.

The Population is of the Mining Class, Coal Mining being almost the exclusive industry. Seven large coal mines some six hundred yards deep give employment to about 8000 men and boys consequently there is a large preponderance of the working classes and a very limited number of persons occupying the middle or upper stations of life. All classes are more or less directly connected with the trade and commerce of the place.

There are two Railways and a high Road communicating with all the populous centres.

Past history.

No reliable account of Sanitation in Glamorganshire is given before the year 1844 and then we have only the report

of Sir Henry De La Beche's on the Sanitary Condition of Swansea and Merthyr Tydvil, Malkin however in 1807 published two interesting volumes on the scenes and Antiquities of South Wales and dealing with 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 Aberdare Valley though probably there is scarcely ten miles of intervening space between them, the diet of the peasant in the hill 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 the Mountain and the Vale. Evidently at this time the district was a mountainous agricultural area and then Canal, Railways and Coal Mining were unknown.

The first thing that disturbed the tranquility of the agricultural inhabitants and those who laboured under them was the construction of the Canal from Abercynon to Aberdare which work was commenced in 1807. Aberdare it should be mentioned is one of the oldest towns in the County of Glamorgan.

A few years later about 1809 the name of Mountain Ash was given to two of the first cottages built here and this was the beginning of the place.

By the year 1859 there were 614 houses in the place and ever since then new houses have been continually added according to the demand for them. The busy days of Mountain Ash began about 1850 when several coal pits were sunk and in 1855 at the Deep Duffryn Pit 360 tons of Coal a month was raised,

at the same pit they now raise nearly 2000 tons a day.

The Local Board of Health was formed in 1867 and up to this time the district was included in the Area under the Control of the Aberdare Local Board which was constituted in 1854. The first medical officer Dr. W.E.S. Davies was appointed in 1867 but the officers were not under the Local Government Board's order at that time and consequently very little reliable and definite information is on record up to 1887 although quarterly and other reports were prepared and presented to the Authority by the Medical officer of Health.

I have had the opportunity of consulting these reports and below is given a resume of what I have gathered therefrom as well as from a few Reports by the Medical Inspectors of the Local Government Board which relate to Sanitary Matters in this district.

Dr W. E. S. Davies in his quarterly report in October 1867 states that convulsions caused many deaths whatever the cause was they lived under similar influences as Merthyr did, a mining population ill-ventilated dwellings, imperfect and improper nourishment. Pulmonary Consumption is very common here. Bad air insufficient and unwholesome food are blamed, attention is drawn to the necessity of carrying out drainage works and the Medical Officer states that consumption had greatly diminished in towns that had been sewered, in Salisbury by 49 % of its previous rate, Ely 47 % Cardiff 17 % and Merthyr 11 % In the last quarter eruptive fevers prevail in certain localities. Typhoid fever occurred in a marked manner in habited houses before the plastering of the walls was dry and where the gardens at the back were unformed. Typhoid

fever is said to have occurred in great intensity in the houses called the Barracks which are described as filthy, overcrowded and ill-ventilated. General Death rate for 1867 was 21.6. The death rate is said to have been as high as 45 per 1000 sometime previously.

1868

The drains in Oxford street, Commercial Street and Quarry Row are complained of, and to this is ascribed many cases of Typhoid fever and Diarrhoea. Extensive epidemic of measles is also reported. General Death Rate 23.75.

1869.

In the summer months Typhoid fever epidemic at Newtown and Darranlas ascribed to want of ventilation and insufficient drainage and overflowing cesspools. Owing to this outbreak the necessity of an Isolation Hospital was first suggested by the Medical Officer. General Death rate 26.2.

1870.

Several deaths from Typhus fever occurred in the third quarter diarrhoea was also prevalent. The disinfecting of drains and personal cleanliness is insisted upon. During the last quarter the Medical Officer presented his report on the workshops of the district, one or two unhealthy and very small. Small Pox in a neighbouring district. Death rate 26.3.

1871.

An Exodus of many workmen from the district during a strike. The Medical Officer remarks "The absence of sickness during this period (the Strike) is very remarkable and no doubt the temperate life led during this time and the comparatively slight overcrowding of houses contributed mainly to this end. It would be a great point gained if this healthy state of the district during an unhappy period should point its own

moral and induce people to live in moderation and so happily"
I have personally noticed a similar condition of affairs during the strike of last year. Death Rate 15.5.

1872.

During the first quarter 32 cases of Small Pox occurred resulting in three deaths, several were of the Confluent type, the only unvaccinated case died. During the second quarter there were 33 deaths from small-pox and of these 5 only were under five years of age and two of these were not long born and in infected houses.

During the third quarter three more cases occurred one fatal, fourth quarter 26 cases and 8 deaths. Death rate 27.8.

1873.

Up to this time a Police Officer was Sanitary Inspector.

During this year there were 84 cases of Small pox with 11 deaths.

The Population at this time was about 7500. Water works were constructed this year. Death rate 27.4. Birth rate 50.9.

1874.

The health of the District at Mid-summer was good and no infectious diseases present. During the later half of the year Scarlet Fever and Measles were very prevalent.

The Medical Officer remarks, "I well recollect this place before the institution of this Board so full of Typhoid Fever that to save time, where the patients lived I used to chalk the doors so numerous were they"

Death rate 29. Birth Rate 52.9.

1875.

In November a widespread epidemic of Chicken pox of a mild kind occurred here

Death Rate 18.2. Birth Rate 42.4.

The following statistics are given by the Medical Officer.

During the year 1875 the mortality among children under 5 years of age has as usual been excessive, no less than 72.6 % of the whole. The mortality from Convulsions and teething was 28.7 % of the gross mortality.

Chest Diseases (generally) 31.6 %

Pulmonary Consumption 12.2 %

Epidemic Contagious Diseases 7.2 %

1876

Death Rate 19.1.

Dr Airy reports to the Local Government Board, Houses generally well built, but wanting in eaves, gutters and rain spouts.

Water.

The town is supplied with water derived from neighbouring hills and gathered in two reservoirs, a larger and a smaller on opposite sides of the valley. The water is passed through filtering beds and is delivered by gravitation. The quantity is sufficient and the quality is satisfactory. The town is drained by four or five sewers which discharge into the Cynon river. Traps are imperfect and ventilation insufficient. In these particulars improvement is in progress. For disposal of human excreta most of the houses have privy accommodation, one privy as a rule serving two houses. Some of these privies are placed over culverts or box drains which carry a stream of water, some are flushed by hand. The majority of privies however, are placed over cesspits and exhibit the characteristic nuisances which attend that system.

Hospital accommodation for Isolation ^{of} Infectious Diseases

is wanted in Mountain Ash and a more effectual mode of dealing with sewage matter is recommended"

I may mention that when Dr Airy presented the above Report the Population is given down by him as 6800 and then there was only the town of Mountain Ash, the other villages being of recent development.

1877 Death Rate 19.4 Birth Rate 39.2.

1878 Began to report to Local Government Board. Death Rate 19.2. Birth Rate 35.8.

1879 Attention is called to the satisfactory state of the District and the good work done by the Board of Health since its establishment.

Death Rate 18.6. Birth Rate 36.8.

1880 The District was considerably enlarged by the addition to it of many acres of Pontypridd rural district.

Death Rate 22.

Dr E. P. Evans appointed Medical Officer of Health.

1881 No particulars of death rate.

1882 Epidemic of Scarlet Fever.

1883 Nothing important.

1884 Population given as 11,000.

1885 do do 12,000.

Death Rate 18.5. Birth rate 48.08.

Dr D. S. Davies Inspector for Local Government Board reports as follows. Population 10,289. Cleanliness of Roads and Domestic Premises good, Sewered and sewerage being extended as required. Excrement disposal and removal mostly W.C's at a distance from dwellings without flushing cisterns, but not unsatisfactory on the whole. Refuse removal satisfactory.

Water supply, Constant, apparently wholesome supply and sufficient except in dry season. Sanitary Authority are increasing supply Sanitary Condition of the dwellings of the poor generally good and open. Sanitary Authority intelligent and striving to do well.

1886

At the end of March an epidemic of Diarrhoea broke out at Caegarw, the disease attacking adults and children, the former chiefly. Between 300 and 400 cases came under observation and all but two recovered. The cause of the epidemic is ascribed to offensive smells from manure heaps and drains together with the sudden changes of temperature. I attended the great majority of these cases. The onset was very sudden and severe very much resembling Cholera with severe cramps, vomiting and Diarrhoea and great prostration. I was called to visit about 50 cases the first day of the outbreak and before the end of the second day I had no less than 150 cases on my list, the great majority being very ill. After the first few days the attacks became very much milder and it gradually died away. The Reservoir supplying water to the district first attacked was an open pond on the hill side just above and the water was not filtered. I thought at the time that some specific infection had got into this water.

The water supply here mixes after passing through this part of the district with the water supply of the other side of the valley and that may have accounted for a number of cases on the other side of a milder nature.

1887	Typhoid Fever outbreak is reported.				
1888	Population 16,126. Birth Rate 33.9. Death Rate 15.6				
1889	do	do	do	34.7	do 18.7
1890	do	do	do	40.5	do 20.6
1891	do	17,495	do	47.1	do 24.2

1892. A slight epidemic of enteric fever is reported to have broken out at Penrhiwceiber, 13 cases being notified. A new Isolation Hospital was opened this year and five cases were treated there and discharged convalescent.

At this time Penrhiwceiber depended for its water supply upon the collection of water from the side of the hill into a Reservoir which was very near to the houses. This being near to my house, I made an examination of the water gathering area and found human excreta in various places not far distant from the Reservoir. This area not being enclosed children used to go and play about the immediate neighbourhood of the reservoir. I suggested to some members of the Urban District Council that this was probably the cause of the outbreak and they gave instructions to obtain a supply from another reservoir in the town of Mountain Ash which was previously connected but not in use and after this was done no more cases were heard of thus showing that water gathering areas close to villages unless enclosed are not safe. There is now a new reservoir completed, situated some three miles from all centres of population. No doubt this will give an abundant supply of water for many years to come and there will be little fear of contamination. The capacity of this storage reservoir is 12,000,000 gallons. Birth rate 49.1 Death rate 22.5. The service reservoirs now are supplied from this and are

Darranlas Capacity	500,000	gallons.	Penrhiwceiber (new)	
			500,000	old 500,000
Cefn Pennar	do	25,000	do	Abercynon 500,000

1893. Typhoid Fever seems to be endemic in this District 56 cases are reported with 8 deaths, 23 of the cases were treated at the Isolation Hospital and all discharged convalescent. The Medical Officer attributes the epidemic to local causes dependent upon bad drainage, and cesspools overflowing to the back premises of the infected houses.

79 cases of Scarlet Fever are also reported with one death 3 diphtheria 1 death, 2 croup 2 deaths.

Isolation Hospital is not under special Medical Supervision but every Medical Man in the district follow their own patients and treat them.

Birth rate 45.05. Death rate 19.2.

1894. Infectious Diseases. 188 cases of infectious sickness were notified comprising 92 scarlet Fever 4 diphtheria, 8 Croup, 58 Typhoid Fever, 4 puerperal Fever and 22 erysipelas 12 Typhoid Fever patients were removed to the Isolation Hospital and all discharged convalescent. The Typhoid cases are attributed to Local causes .

Birth rate 42.7. Death rate 20.9.

1895. Infectious Diseases. 488 cases of Infectious Diseases are reported. These included 384 Scarlet Fever with 13 death 5 diphtheria all died 7 membranous Croup with 6 deaths 23 Typhoid Fever with 3 deaths 4 puerperal Fever all fatal and 14 Erysipelas. There were also notified 58 deaths from Measles Seven cases of Typhoid Fever, 1 Scarlet Fever and 1 Erysipelas were treated in the Isolation Hospital and 8 discharged convalescent. Defective drains were supposed to be

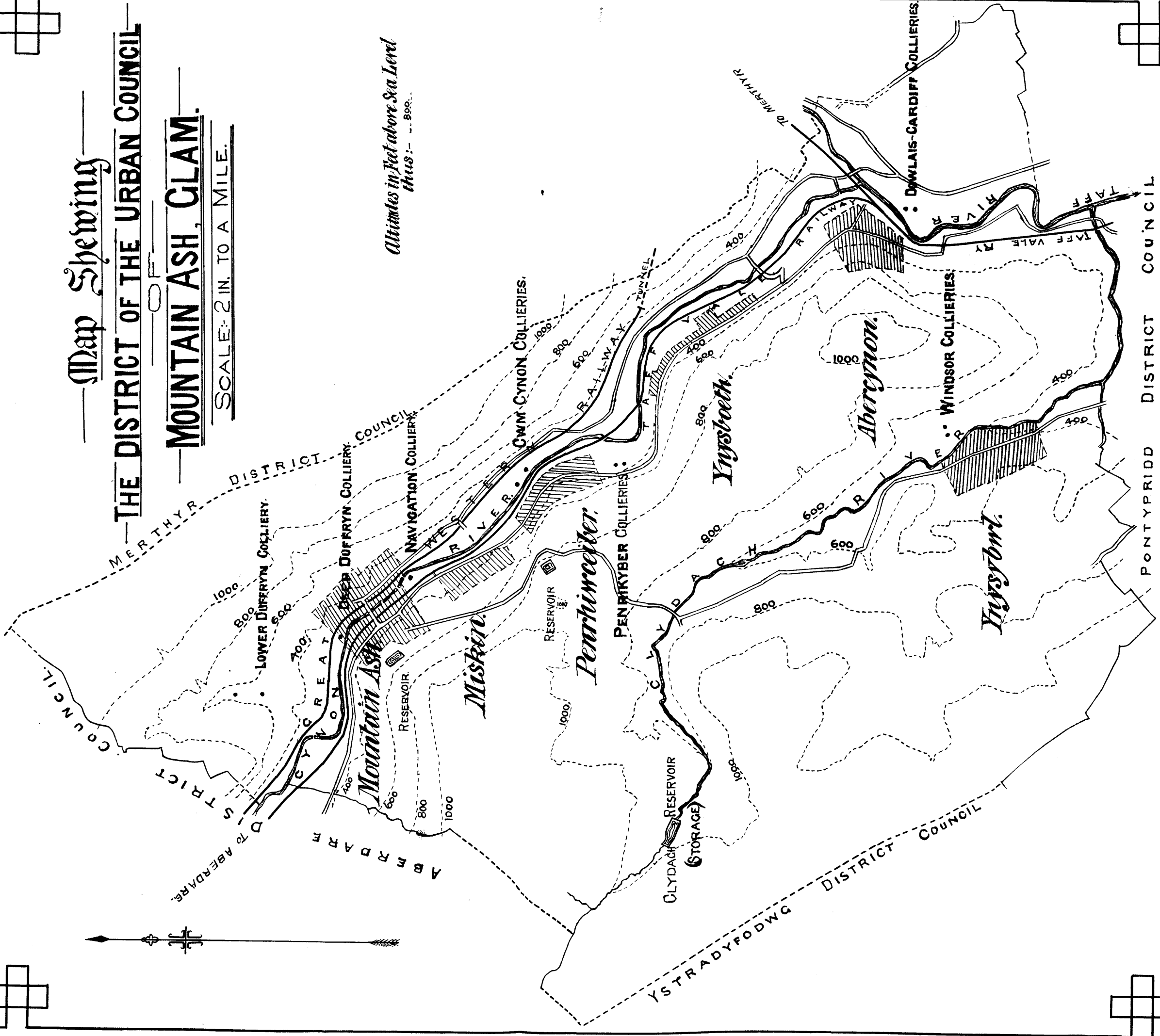
Map Showing

THE DISTRICT OF THE URBAN COUNCIL

OF
MOUNTAIN ASH, GLAM.

SCALE: 2 IN. TO A MILE.

Altitudes in Feet above Sea Level
thus: - - - 500.



the cause of many of these cases.

Birth rate 42.6. Death rate 23.7.

The Zymotic Death Rate excessively high being 5.8.

1896.

124 cases of Infectious diseases are reported being as follows Scarlet Fever 36 cases 1 fatal Diphtheria 24 Cases and 10 deaths, Membranous Croup 9 cases all fatal, Enteric Fever 33 cases 4 fatal puerperal fever 1 case, Erysipelas 21 cases 1 fatal, 38 deaths from measles are also reported and 21 from Whooping Cough. 20 cases consisting of 18 Enteric Fever and 2 Erysipelas were removed to Isolation Hospital 17 were discharged convalescent and 3 died. These cases were scattered over the whole district.

Birth rate 39.9. Death rate 18.1

In this year I was appointed Medical Superintendent for the Isolation Hospital, and the whole administration and Medical attendance was entrusted to my care. Being previous to this practically under no supervision, I had several improvements made for the Comfort of Patients and Nurses.

The hospital has twelve beds and is situated on an elevated spot near the town of Mountain Ash. It is adapted for the treatment of two different Infectious diseases at the same time. The whole District is now well sewered with the exception of Abercynon which place has only been recently developed.

I shall now deal more fully with Epidemic Enteric Fever as it occurred here in 1887.

As may be seen by the accompanying map the Mountain Ash Urban District Council comprises several detached villages of which

all with the exception of Ynysybwl occupy one or the other or both banks of the river Cynon, and are now almost joined together by houses on the side of the road joining them, there being only very short gaps of road without houses at present

Mountain Ash consists of two parts one side of the river being called Caegarw the other Darranlas, lower down the valley we find Miskin and Newtown on opposite sides of the valley but they have no direct road communication between them and in order to get from one to the other it is necessary to go through Mountain Ash proper.

Miskin is separated from Mountain Ash by one field only and Miskin and Penrhiwceiber are now in one, houses having been built all the way from the one centre to the other. There are short gaps between Penrhiwceiber and Abercynon, Ynysybwl stands by itself and has but little intercommunication with the other villages in the district.

I am going to deal now with the district from Mountain Ash to Penrhiwceiber.

In the year 1887 a severe outbreak of enteric fever occurred affecting 518 persons of all ages, it attacked the Miskin part of the District chiefly and first. In the last week of July my visiting list increased to an enormous extent by the access of enteric fever cases. In less than a week I had no less than 100 cases under my care at the Miskin and its immediate neighbourhood. I may mention that I attended the great majority of the people in that immediate neighbourhood at that time. During the outbreak I assisted Dr. Spear Local Government Board Inspector in his researches in the district. I had experience of small outbreaks in the same

district for two years previously but they were very limited in extent then compared to this outbreak of 1887. Although I had frequently pointed out that the water was contaminated somewhere. But Dr. Spear as inspector for the Local Government Board now made most extensive examination and found the main water pipe supplying this infected area to be leaking in several places and passing through sewage matter at the same spot. During the summer of 1887 it was very dry and water was very scarce so much so that it used to be supplied only for a few hours per day. When the water was turned off no doubt gas and sewage matter found its way into the water main through these defective pipes. No doubt the same conditions had existed for some time previously only that the water supply had been more constant and consequently the sewage matter was not able to find its way so easily into the water main.

There were some 18 houses in this epidemic area which had a separate water supply and they all escaped infection with one exception and that was a woman who was washing at infected houses. The drain water pipes had been recklessly laid a few years previously without much supervision. This points to the importance of having proper supervision over the laying of water and drain pipes. I made a post mortem in one case and discovered innumerable ulcers in the intestine with one perforating ulcer which no doubt had been the immediate cause of death. The mesenteric glands were considerably enlarged and so also was the spleen. This patient appeared to be doing fairly well before the perforation took place his

temperature had been coming down for some days.

During this epidemic three cottages in the centre of the infected area were converted into a temporary hospital and 24 patients were treated there. Since these leakages in the main pipe have been remedied there has been no serious outbreak in any part of the district. In all subsequent outbreaks the cases have been scattered over the whole district and we never get a summer quite free from it.

How does Enteric Fever spread?

In the majority of extensive epidemics no doubt it spreads as in the epidemic of 1887 at Mountain Ash by contaminated water, or water contaminating milk. But when we find only one case in the district it is not so easy to find the cause. I have met with a great many such cases. The defective drains about houses and small leakages which I have often found in the water pipes under the flags in these cottages must account for some of them.

I have noticed particularly since we have had an Isolation Hospital here and have been able to get the first case in a house removed early into hospital that we get no more cases in that house. On the other hand if they are not removed I generally get three or more infected in the same house, thus proving that in these small cottages where isolation is impossible that one patient contaminates others, and in the majority of cases it appears to me that the dried excreta get carried into the drink or food of persons in the same house, or they must be using the same utensils for drinking and eating and it may in that way be carried by the saliva.

It may also be that the poison is breathed in but in those cases it is probably arrested in the pharynx and carried into the stomach with the next act of swallowing.

During the epidemic of 1887 I spent on an average eight hours a day with patients suffering from enteric Fever in these small cottages, having in many cases two enteric patients in the same bed, but during that time I did not eat or drink anything but what I had outside the infected area, otherwise I considered it highly probably that I might also have had an attack. Christmas of 1897 at the Infectious Diseases Hospital, the servant frequently sat with the patients and attended to them, she was taken with enteric fever, and I afterwards ascertained that she frequently went and had her food without washing her hands, so that the soiled hands would probably contaminate the food. This points to the importance of early isolation to hospital or otherwise and to the most careful careful and strict observance of cleanliness by those in attendance.

R. W. JONES, M.B., & C.M.

1st. June 1899.

Penrhiwceiber S.O.,

Glam.

