

Thesis.

Phases of Disease in  
Colliery Practices.

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The medical practitioner, in a colliery practice, has considerable difficulty in selecting a subject for Thesis of a purely scientific kind on proceeding to the degree of M.D.; he is, perhaps, best able to contribute to the sum of professional knowledge by stating some facts & fallacies belonging to the sphere of work in which he has been engaged. His cases, although numerous, are not what might be called interesting. He has no hospital in which disease may be studied. He sees his patients, often under great difficulties, sometimes due to the nature of the houses, sometimes to the accompaniment of vermin & filth, which make the most earnest practitioner glad to conclude his visit as soon as possible. Besides he can seldom complete his case with a post mortem.

Since beginning practice in a colliery district, I have been struck with the fact that colliery practice

is not what it is usually represented,  
nor what I expected it would be.

Some diseases, which are supposed to  
be almost a part of a miners life,  
are in the district in which I have  
wrought conspicuous by their absence.

Other diseases which are supposed to  
be very common, I find to be not  
more so than in other parts of the  
country. And, while it is generally  
said that miners are a short lived  
race, it is usual in my experienced  
to find a great many not only  
over 50 years, but over 60, 70, 80  
& even over 90. men, who have wrought  
in the pit from 6 years of age, are  
still working when over 60 & indeed  
in some cases over 70; while a con-  
siderable number die of senile decay.

This fact I shall illustrate later  
on by the records of two practitioners  
in the county of Durham. These  
practices I have an intimate acquaintance

with, from having acted as assistant in both. This idea is contrary to the opinion of the miners themselves & of those best able to judge. In deed, if it were not for epidemics & diseases of children, few places would be so healthy as an average colliery village, even with the disadvantage of a large population in a small compass.

Medical cases are much more common than surgical. From the careful regulation of pits, accidents, especially serious accidents, are uncommon, and chronic forms of disease are much more common than acute.

Still, from the nature of their work, & from their habits, they suffer a good deal. But as a rule, their ailments are not such as to raise the death rate above the average, except in the case of children.

I Disease & disorders of the digestive process  
 but, very largely in mining practices.  
 This may in part be due to their occupation,  
 but is much more largely due to their  
 social habits.

These disorders of digestion not only render  
 otherwise healthy men miserable, but  
 complicate all the ailments from which  
 men suffer. An idea has come down,  
 evidently handed on from father to son,  
 that, to keep a miner in the best health  
 & up to his work, a large quantity  
 of animal food must be consumed.  
 The result of this family tradition  
 is, that miners as a class consume  
 more flesh meat than any other class  
 of working men.

It has been estimated that the  
 British consumption of beef averages  
 1 lb per head per week, and of  
 mutton  $\frac{1}{2}$  lb for the same period.  
 Another estimate has been made  
 by Kolb in his "Condition of Nations"

and referred to by Sir Wm Roberts  
in a note at page 6 of his Lectures  
on Diets & Dyspepsia.

Rollé states that he estimates the  
consumption of meat per annum at  
136 lbs. in England, 46 lbs. in France,  
35 lbs. in Prussia, and 74 lbs. in Belgium.  
It is larger in cities than in rural  
districts, & is largest of all in London.  
Both of these estimates, however, I  
am convinced are largely exceeded  
in a mining village. High feeding  
is the rule, low feeding unknown  
unless by necessity. Nor is there any  
doubt that the larger proportion  
of flesh meat is consumed by the men.  
Oatmeal is almost unknown, although  
"as a bone & muscle <sup>producer</sup> it stands highest  
among the foods" And the cost  
according to Sir Lyon Playfair M.D.  
is "for the same amount of nutriment  
Oatmeal 1/4, Flour 2/1, Meat 6/3 and  
Milk 14/7"

One family in Pansley moor, consisting of 3 workmen, a woman & 4 children, consumes no less than 40 lbs of beef per week. This family, consisting of Roman Catholics, it is only fair to suppose that beef is not used on Friday. Therefore the average consumption has to be calculated over 6 days or giving an average of rather ~~265~~ <sup>265</sup> lbs. Another family of 5 individuals including a woman and a young boy, requires over 14 lbs per week, and the most of it is used by two individuals, or equal to an average of 14.5 lbs. Quantity, not quality, is their maxim; & although we have lost the powerful jaws of our ancestors they manage to consume meat that requires powerful jaws to chew it. But to digest this hard meat an extra strain is thrown on stomach & bowels.

Another feature is the speed with



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which they generally eat, especially at their principal meal which is dinner. Of course after working without food from 3 a.m. till noon, with the exception of the small quantity of bread which is carried to the pit with them, they are hungry enough, & bolt their food, without taking time to masticate it.

A North of England pitman's dinner follows a peculiar order of courses. It consists of a big drink of water or beer; then pudding, generally a heavy sweet pudding; then beef & potatoes with bread in quantities sufficient for any two healthy men in other trades.

Indeed the wonder is that any stomach can contain it, much less digest it.

Sir W. Roberts in "Dietetics & Dyspepsia" p. 445 says - "In the case of the lower animals, we assume that each creature selects,

from the nutrient materials within its  
 reach, those articles which are most  
 suited to its well-being, and are best  
 fitted to promote its success in its  
 struggle for existence; and that it  
 is guided in this selection by an almost  
 unerring instinct. This, like other  
 instincts, is now explained by biologists  
 as consisting essentially in an inherited  
 & perinnous, which has been gradually  
 accumulated through a long line  
 of ancestors, & is transmitted by  
 heredity to the descendants. Occa-  
 sionally, when we see an animal  
 feeding on a particular kind  
 of food, we conclude without  
 hesitation that that food is  
 one of the nutrient materials  
 accessible to it, the best adapted  
 for the special wants of its economy.  
 But we know that man, in  
 regard to his bodily functions,  
 is subject to the same laws as

govern the life of the lower animals, and we cannot doubt that in the formation of his dietetic habits man is guided by the same kind of instincts as those which guide the rest of the animal creation in the choice of their food.

In the case of our English miners this hereditary instinct has undoubtedly led them astray, as it is a diet which does a great deal of mischief both to stomach & liver; but scientific facts or theories will not shake their belief in beef as the miners staff of life.

"Men have no faith in finespun sentiment, who put their faith in buttocks, or in beavers. Longfellow.

Again the amount of water or beer, which they take with their food, must retard digestion if only by diluting the gastric juices. A quart of water is nothing extraordinary

before dinner & with copious draughts during the meal. In the case of those who drink beer a pint is the usual amount, & as a rule it is good sound beer. But still it has an inhibitory effect on digestion.

Women are more addicted to tea than men; yet, there is a strong tendency among all to make tea an article of diet rather than an occasional beverage. Thus not alone from the inhibitory effect of the Tannin, but also from the large quantity of warm water introduced into the stomachs, tea-drinking tends to retard & ruin digestion.

Functional derangement of the heart is exceedingly common & it is due in most cases to this custom. If you attempt to restrict or to stop tea you meet the vulgar reply, "what are poor folks to drink except tea" & with

that one must be satisfied, for beyond giving advice the practitioner is helpless.

They begin to smoke at a very early age & often the tobacco is not of very good quality. But worse than smoking is the chewing. They of course are not allowed to carry a pipe into the pit under a penalty, and so the greater number of them chew all the time they are at work. About 50 per cent more or less of our cases among them is due to this habitual over eating, and abuse of the stomach generally. Intemperance in eating among them, so far as experience shows, does more harm than intemperance in drinking. The over eating is a daily thing, & so the stomach hardly ever gets rest, while the over drinking is only

occasional.

The 'appetite', -patients say, is generally good; but, after a meal they complain of a load at pit of stomach amounting sometimes to severe pain! Pain, again, is generally complained of between the shoulders or in the left shoulder, & also frontal headache increased on stooping; so that the prosecution of their work is impossible. The tongue becomes very much furrowed, with a bad taste in the mouth & with a bad smelling breath especially in the morning. Sometimes eructation of sour liquid into mouth. Sometimes relief is obtained by escape of flatus & in other cases relief can only be obtained by vomiting. In other cases they complain of pain over the liver, & tending into right shoulder, frontal headache very severe & intensified on stooping. Very often a stupor or faintness is complained of & incapacity for

eraction, a slight tinge of jaundice in  
 conjunctiva, seldom amounting to ~~any~~ <sup>extreme</sup>  
 jaundice. Constipation, at all times  
 common, is very much increased.  
 Sometimes it attains grave proportions.  
 They are afraid to eat, & if they do,  
 pain is so great that relief can only  
 be got by vomiting. Flatulences is  
 sometimes so extreme that they are  
 continually allowing the flatus to escape.  
 I have seen them so bad that relief  
 could only be obtained by keeping  
 all their clothes open; & it is in  
 such extreme cases that carbolic  
 acid in one or two minims after  
 food is of great benefit, from its  
 power of preventing fermentation.

These are the common ailments  
 among miners; & although not in  
 themselves dangerous, they intensify  
 the hypochondriac melancholy  
 "complexion of us islanders," and  
 (13th Aug.)

and are undoubtedly brought about by the habitual overloading of stomach, & the great strain thrown upon the liver, by so much albuminous matter being sent to it.

A great deal of this dyspepsia & chronic liver trouble is due to the fact, that from childhood, they are in the habit of taking beer. Sir Wm Roberts in "Dieties & Dyspepsia" page 12 says "Children are allowed neither the use of alcohol nor of tea & coffee, except gradually as they draw towards the adult age." Unfortunately among our population they are all over the use of all three, in a great many cases, on the belief that what is good for men can't be bad for children.

## II Haemorrhoids.

This is an affection which is very common in a mining village. You seldom



must a female patient over the age  
 of 19 or 20, who is not afflicted with  
 this painful arrangement in some degree.  
 In many cases, it is sufficient to  
 keep them in bed, & in all it renders  
 life miserable at one time or another.  
 A look at the plan of a colliery  
 village accompanying this Thesis  
 will to some degree explain this.  
 The closet arrangement is very bad.  
 The houses are built in rows & generally  
 where two or more rows exist, the  
 backs look towards one another.  
 The street with the front doors  
 is seldom used. The doors are  
 generally fixed & not intended to  
 open, & it is in the back street  
 where all the traffic is. Here also  
 in the back street, as shown in the  
 plan, is the Ashpit arrangement  
 with Closets attached. The plan  
 is that of an actual colliery called  
 Browney, about 3 miles from the

city of Durham; but it is rather  
 a model mining village as there  
 is a street to each house, while  
 as a rule there is only one to 3 or 4  
 houses. Into this back street the  
 kitchen doors open, & here from morning  
 to night groups of men, women & children  
 congregate. Females there with  
 their characteristic modesty, which  
 cannot be effaced even by a widow  
 amidst such surroundings, cannot  
 attend to the calls of nature as they  
 should. They must watch for an  
 opportunity to get across without  
 being observed, or wait till darkness  
 sets in. A state of chronic constipation  
 is at length set up, & to this condition  
 more than anything else may be  
 ascribed the extremely large number  
 of patients we have suffering from  
 this complaint. During nearly 2 years  
 constant residence among them, visiting  
 their rows at all hours, I can scarcely

remember ever seeing a woman enter  
 or leave a closet. Even this men  
 suffer, although not to such a marked  
 degree; and, in this case, it is  
 more likely due to curbsness, chronic  
 liver trouble from which the greater  
 portion of them suffer. They become  
 at last so much afraid of having  
 their bowels moved, that a week,  
 10 days & even more sometimes elapses,  
 thus making the complaint much  
 worse, and strong purgatives are  
 then generally required, if indeed  
 the constipation does not relieve  
 itself by an attack of Diarrhea.

Not only do they suffer from Piles,  
 but Headaches are exceedingly common  
 amongst the women; & generally relief  
 is obtained by the hospital which  
 nature showing their connection  
 with the entire state.

Pilious staining of the skin in  
patches & staining of the conjunctiva

is also exceedingly common among our female population, partly due to their fondness for the national beverage - beer; partly to the sluggish action of liver & bowels; & partly, to want of exercise. Even the men, I may remark, are not over fond of exercise away from their work. Their chief aim is to lounge about doors & road sides, but never far from home. The miners legs receive too little exercise, the often presents a badly developed physique having legs like a wisp, while arms & chest are even beyond the usual development. I suggest, <sup>ascribes</sup> the thin legs & thick arms of the Rayapas Indians to successive generations having passed nearly their whole life in canoes, with their lower extremities motionless" Descent of Man page 32 -

This thin condition of legs among miners may be due to the same cause, viz - "a cumulative & transmitted effect of lessened use during many generations. All miners are not exactly of this type

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but it is evident enough to be noticed  
by any stranger in a colliery village.

III With the view of arriving at a correct  
idea of the main cause of death in a  
colliery practice, I have tabulated on  
pages 20 + 21 the death records of  
Langley moor, Sleetburn, Brandon  
Browney; four mining villages  
near to the city of Durham for  
the past 3 years. The population  
of the district being about 16,000.

## Deaths under 2 years

1)	L. Moor	Brandon
	Steeburn	Paroway
Small pox	1	1
Scarlet Fever	6	1
measles	10	11
Typhoid Fever	1	-
Whooping Cough	6	2
mumps	-	1
Tubercular	3	3
Croup	2	1
Bronchitis	9	8
Pneumonia	6	8
Atrophy & Marasmus	26	25
Diarrhoea	12	12
Abductasis	3	2
Convulsions	33	15
Menigitis	9	2
Hernia		
Peritonitis &c	3	5

## Over 2 but under 2 1/2 years.

2)	L. Moor	Brandon
	Steeburn	Paroway
Small pox	2	-
Scarlet Fever	11	1
measles	3	5
Typhoid Fever	3	3
Whooping Cough	1	-
Tubercular	1	2
Phtisin pulmonalis	2	3
Bronchitis	4	3
Pneumonia	3	2
Diarrhoea	2	-
Convulsions	3	1
Hip disease	2	1
menigitis	4	1
Marasmus	2	-
Pleurisy		1
Other diseases	2	3

# Cause of Death among patients over 21 years.

	Langley Hill		Brandon	
	Steeburn	Brownley	Steeburn	Brownley
3) Small pox	1	1	1	-
Typhoid Fever	2	3	-	1
Rheumatic Fever	1	4	1	-
Phthisis	9	3	2	-
Meningitis	-	4	2	-
Erysipelas	-	1	16	10
Bronchitis	10	1		
Pneumonia	7	5		
Diarhoea	1	-		
Heart Disease	2	2		
Cancer of Stomach	2	1		
" " Liver	-	1		
Cirrhosis of Liver	-	1		
Epithelioma of Neck	-	1		
Hepatitis	-	1		
Apoplexy	6	4		
Heart Disease	10	6		
Purpural Fever	1	3		
Rheumatism	-	1		

IV

A slight examination of these tables will show that diseases of children form a leading feature in the death rate of a mining village.

Out of a total of 250 deaths during this period in the villages of Langley Moor & Sluichburn, which are almost entirely mining, no less than 126 deaths were of children under 2 years of age; that is, equal to 50.4 per cent of the total.

Again 43 or 17.2 were between 2 years & 21 years of age. Thus 67.6 die before reaching the age of 21, leaving only 87 deaths to be scattered over the working decades & senile periods.

At Brandon & Knowsley Collieries out of 182 deaths in 3 years, 97 or 53.3 are under 2 years of age & 23 or 12.6 between 2 & 21, leaving 62 for the working decades & senile period.

This feature of mortality in infants



and youths may be clearly seen by the following tabulation of the facts:

(1.) Langley Moor & Sluithburn

Total number of deaths in 3 years -		250
Under 2 years of age	Males 73	Females 53 = 126 or 50.4%
" 21	" " " " 24	" 19 = 43 " 17.2
Over 21	Under 50 " 11	" 18 = 29 " 11.6
" 50	" " 60 " 6	" 4 = 10 " 4.0
" 60	" " 100 " 60	" 20 = 42 " 16.8

(2.) Brandon & Browney

Total number of deaths in 3 years -		182
Under 2 years of age	Males 47	Females 50 = 97 or 53.3
" 21	" " " " 10	" 13 = 23 " 12.6
Over 21	Under 50 " 14	" 16 = 30 " 16.5
" 50	" " 60 " 6	" 5 = 11 " 6.1
" 60	" " 100 " 9	" 9 = 18 " 9.9

The cause of this great sacrifice of infant life is not far to seek; but unfortunately the remedy is more difficult to find. Undoubtedly,

improper feeding is the cause of the greater part of it.

The parents have inherited a notion that milk is not sufficient for an infant; and, almost from its first breath, it is fed on "Boiley", a compound of boiled bread, with the addition of sugar & milk. Others again favour boiled biscuit, arrowroot, corn-flour, or even branney flour; & in a few cases gruel. Often you find infants of a few months sitting at table eating or trying to eat bread & butter, bread & jam, potatoes, beef & indeed anything, even to a drink of beer, as the <sup>parents</sup> say "just taking what the rest are taking." This is common even when children are at the breast. In very few cases are children brought up by hand; & if they are, it is compulsory. Indeed, mothers rather than nurses from the impression that it will keep down their families & it is nothing

unusual to find a child 2 or even 3 years old being nursed.

Scarcely a day passes but we are called to see one or more infants "working in fits"; convulsions are a common cause of death, either alone or as a complication of some other ailment.

The Registrar-General's returns show that 20,000 children under one year of age die in England every year from convulsions. Equal to 1 out of every 34, which in Scotland is only in 3% dies from a like cause.

In Langley near Cluthburn, 126 children under 2 years of age 33 died of convulsions or a little over 26 per cent of the infant mortality.

In Brandon & Terenure, out of 97 deaths under 2 years of age, 15 died of convulsions or over 15 per cent.

Convulsions are not the only result

Of this bad system of feeding, diarrhoea is exceedingly common, & caused 12 deaths at Lonsley Moor & Clutburn, & a like number at Brandon colliery. At the same time it is a common complication. Atrophy or Marasmus is likewise ~~caused~~<sup>very</sup> fatal & generated by the same ignorance of infant dieties. The simple fact appears to be, that, from their early marriages & large families, they have little regard for the lives of their offspring, & they will often tell you with a faint smile that "they have plenty without it".

This improper feeding makes the child cry & scream out at all times of the day & night; & to keep it quiet, & that the overwrought mother may get rest, they administer all kinds of soothing powders or "Quieters" obtained from quacks & chemists; & I have known more than one case

where Laudanum was being systematically  
 given to an infant to keep it quiet.

Perhaps another reason for so much  
 carelessness in the upbringing of their  
 families is the system of infant insurance.

You will find more care taken of a  
 child if not insured. As I have been  
 told by a mother "The child is  
 not insured & I don't want to lose it  
 as I can better afford to keep it  
 than bury it" Still, there is a  
 strong temptation to poor people  
 to neglect the child, knowing that  
 they will get a few pounds at  
 its burial.

Y Epidemics of all kinds tend to weaken + reduce the population of our Colliery villages.

Colliery villages, in Durham at least, are usually built on the side of a hill, with everything favourable for good drainage. Unfortunately, however, the houses are put up in a hurried manner, & only intended to stand for a few years till the coal is wrought out. Still, within the last 15 or 20 years, a great deal has been done in our villages — to improve Sanitation.

A recent article in the "Spectator" recognizes the changes which have taken place in hygiene generally. "The medical profession has succeeded" the writer says "by improvements in Hygiene, treatment of children, midwifery &c and also by arrest of epidemics, mainly

within the last 50 years, until  
 2 years is added to the male chance  
 of life and  $3\frac{1}{2}$  to the female. This  
 improvement has been almost entirely  
 an improvement in health during  
 the working decades of life. It  
 is not that severity drags on  
 without dying, but that severity  
 is averted for a longer period,  
 and that the human race has  
 enjoyed in England more time  
 for "healthful recreation & easy  
 work." In all these improvements  
 our villages have benefited;  
 Still, they are far from perfect.  
 The houses are generally two  
 stories in height, but from their  
 faulty construction, ventilation consists  
 of a series of draughts & air doors  
 or windows, not absolutely  
 required, are "fixed up." Even  
 the grate is hermetically sealed  
 by pasting paper over it &

extra ventilation cannot be obtained without great difficulty.

Drainage, although vastly improved within the last few years, is not what it ought to be. In most cases there is a system of underground drainage, but little or no precaution is taken to carry off the surface water. It, therefore, runs down the streets & often floods the houses at a lower level.

Again, the flooring is either brick or stone simply laid on the bare earth, without any preparation, & the surface water soaks under the floor & keeps it always damp.

The ashpits & closets, in every case, are built too close to the houses. In many instances they are not more than 12 feet from the kitchen door, & unless a collector where great care is taken



to have them cleaned out the smell is something dreadful, especially in Summer. In fact, it is almost unbearable to walk down the rows without staying in the houses.

Fortunately, from the exposed sites of the villages, they are supplied with plenty of fresh air; otherwise epidemics would certainly work more havoc than they do at present.

Another improvement is the introduction of pure water by gravitation to most of the pit villages, which prevents the water supply being contaminated by sewage as in the old days of wells.

Drainage & improved water supply, with increased sanitary inspection, have done a great deal to stamp out Typhoid Fever.

At one time it was almost endemic & occasionally broke out in epidemics from doing great

Damage. Now, when it is met with, it is in sporadic form, & very few cases occur in a year. As a rule it is confined to certain streets at the Colliery, which are specially adapted for its reception, but on the whole it is rare.

Small pox is uncommon. Within the last two years an epidemic of it broke out in Paughly moor, Sluithurn, Brandon, Browney & surrounding district & over 200 people were attacked by it. Undoubtedly it was due to the people's antipathy to vaccination, as a large number were unvaccinated. They will not take this precautionary measure if they can escape, and as they are a shifting population escape is easy. But a good deal of blame must be attached to insufficient vaccination by medical men, who make it in many cases

little more than a band.

In 15 months we have had 3 epidemics of measles, many cases of Scarlet fever, epidemics also of Whooping cough, Influenza, Mumps & Diarrhoea, with nothing remarkable about them, unless they spread with which they spread!

In September of this year we had however a severe outbreak of Diarrhoea, which spread like wildfire through all the villages, attacking old & young & showing symptoms of Choleraic diarrhoea. During its continuance many deaths took place. One old man died after 2 days illness, & others after longer intervals, & in the case of children the diarrhoea was mostly complicated by convulsions. The epidemic, however, was undoubtedly traced to over ripe plums. Measles usually spreads

over a colliery with greater rapidity than Scarlet Fever. The parents have more dread of Scarlattina & greater precautions is taken. Still among such a dense population, it is impossible to enforce separation; and, as a rule the epidemic must take its course, although every thing is done to arrest its onward progress which is possible.

Excepting Atrophy & Convulsions these epidemics cause more deaths than anything else among children. Thus at Lancy Moor & Slutburn

20	Deaths are due to epidemics in those under 2 years	21
3	Over 21	21
	Out of a total death rate of 250 - 10.8 p.c.	
	are due to epidemics	
	At Brandon & Browney.	
16	Deaths are due to epidemics in those under 2 years	21
9	Over 21	21
4	Over 21	21

So that out of a total of 172 deaths 10.5 percent may be claimed under epidemics. Still, although epidemics are common, they do not attain to the magnitude of former times, and within the last few years the type has been very mild.

Asthma. This is a disease which one beginning practice in a mining village expects to meet with very frequently. Indeed, it must have been exceedingly common at one time, as in nearly all text books (e.g. Tanner's practice of medicine &c) we find mention made of miners asthma, or Anthracosis, Carbonaceous Bronchitis or Black Rhinitis.

During nearly 2 years residence among miners in the county of Durham I have never seen, I have never heard of a real case of miners asthma. For 3 years in a population of 16,000 not one death has taken <sup>place</sup> from Asthma.

not even a death in which Asthma was a complication. In fact in that population of 16,000 it would be impossible to find a dozen cases of confirmed Asthma. And there is only one case of really chronic asthma.

This man, named Hutchison of Brandon Colliery has suffered very much for the last 2 or 3 years, & is now incapable of following his employment. However, it is not a case of miners asthma although present in a mine, but, like many other cases of Asthma most likely due to spasmodic contraction of the muscular tissue of the bronchial tubes. He is always relieved by Datura Tabaca or Stramonium on the fumes of nitric paper. This is the only case that in any way appears like miners asthma, but black sputum is entirely absent.

The other cases are mostly among females & might be called Stomach

Asthma & the only way to give relief is to treat the gastric derangement.

A great deal no doubt has been done of late by 'Acts of Parliament' to bring about this happy condition.

Coal dust has been recognized as a fertile source of explosions in mines.

For this reason it is required to be kept well down by constant watering.

Fire damp is so common in Durham that in most pits the men work with safety lamps, which give off very little smoke; and, even in non fiery mines, the men work with candles which give off less smoke than the Scotch miners naked lamp.

When shot-firing is necessary, the men are mostly out of the pit, and even when present the smoke is soon chased away by the strong current of air.

Then again the system of ventilation by fan suction is much improved with

a great advance on the old method. Parks (in his "Practical Hygiene" new syndham series page 137) states that "60 cubic feet of air per minute is allowed for each light".

But practical colliery managers know that, to develop the full energies of the miners much more than that is required, as much as 100 cubic feet per man per minute, or, equal to 6000 cubic feet per hour. Even this quantity is exceeded when the pit is working what is called "double shift"; that is to say, when only half the men are in the mine at one time & yet have the same amount of air constantly supplied.

Further, boys are not allowed to enter the pit till they are 13 or 14 years of age. They are not allowed to begin work before 6 a.m. or to stay after 5 p.m. They are not recognised



as men till they are 21 years of age, and are not allowed to do a man's work. This is a pleasing contrast to the time when they were carried to the pit at 6 years of age & remained there for 16 or 18 hours at a time, and in winter barely seeing daylight unless on Sunday.

With improvements in the pit, and with improved hygienic surroundings at home, I have no doubt, that, so far as Northumberland & Durham are concerned, Miners Asthma will become a thing of the past. As it is, there is no reason why a miner should not be one of the healthiest of workmen, with his short hours & his home in the country.

VII

Bronchitis & Pneumonia are exceedingly common, as might be expected from the nature of their work.

A miner has to work very hard when in the pit, often his "place" is very hot & low; & extra exertion is required because of the confined space. As he sweats very much, he removes all his clothes, with the exception of a pair of short trousers. Thus when his days work is over, he is anxious to get home as soon as possible, & little time is left him to cool down. He immediately emerges into the air courses & waggon ways with his clothes half on; with the result that the cold air, chills the surface of his body, & the blood vessels of skin <sup>become</sup> paralysed, <sup>while</sup> the cooled blood returning to the lungs sets up in many cases Catarrh, Bronchitis & Pneumonia. one

attacks of bronchitis predispose to others, & so we find chronic bronchitis very common. But even with a bad attack of bronchitis it is surprising how little carbonaceous matter is expectorated. Indeed after the first day one sees less black sputum than he will see in a large town or such as came within my observation in the Royal Infirmary, Glasgow when acting as House Physician.

In proportion to the number of cases we treat, neither bronchitis nor pneumonia raises the death rate very much.

For example in Lansey most of Sluethurn the statistics stands thus:-

Under 2 years of age	Bronchitis	Pneumonia
" 21	"	"
Over 21	"	"
	4	3
	10	7

For Peruvian & Brownley thus: —

Under 2 years of age	Bronchitis	8	Pneumonia	8
" 21	" - - -	3	" - - -	2
Over 21	" - - -	1	" - - -	5

Among men the bronchitis tends to become chronic, while among the children it is acute or sub-acute.

Children suffer a good deal from these ailments. They are very much exposed to changes of temperature; for, a miner's kitchen is exceedingly hot & close from the large fires kept constantly burning. The children are thoughtlessly carried from this warm inside temperature out into the cold air & as a result bronchitis or pneumonia is set up.

Perambulators are also greatly to blame as a cause of bronchitis. Children are taken out in them, by careless attendants or children & are allowed to go to sleep, with

insufficient covering, and often hanging half out of the perambulator; or, they are left standing at a street corner, or in a draughty passage while the attendant sleeps or plays. They are also cribbed & fastened in such a manner that no free play is allowed the limbs which are apt to become icy cold. And even if rickets is not a result, so much sitting must be bad for the pelvic bones especially in female children. No amount of medical counsel seems sufficient to warn ~~the~~ parents against the dangers involved in this method of giving their children fresh air. Few minus houses however poor are complete without a perambulator.

Phthisis. At a meeting of the Royal Balloon Society held in London on April 22<sup>nd</sup> 1886, a Dr. Robertson read a paper on "Preventable deaths" in which he asserts that "50 per cent of all miners die of Consumption".

Dr. Robertson does not give his authority for his statement. It is certainly quite contrary to my experience, and contrary to the experience of all whom I have met well qualified to judge. Dr. Stewart of Lonsley Moor, after 15 years practice among miners, says that "Phthisis among miners has been very uncommon in his experience". Dr. Minnie of Brandon Colliery, also with extensive experience among miners says that "Phthisis is unusual among pitmen".

Phthisis does not exist as it does among "all sorts and conditions of men". But not in any marked

degrees, nor in direct relation to the nature of their employment.

Of the 250 deaths in Langley Moor & Clutburns, 11 were due to Phthisis; that is, scarcely equal to 5 per cent. But on examining the statistics a little further <sup>close</sup> this percentage is still further reduced.

Thus, one was a girl aged 15 years & one a lad aged 17 years, while 6 women died aged respectively 25, 26, 30, 30, 40 & 52. Likewise three men, one aged 54 was, however, a draper & had never wrought in a pit; while two were miners aged 33 & 46. So that only 3 in this death rate could be by any chance be due to pit work.

At Brandon & Browney the results are similar.

Of the 192 deaths 4 were due to Phthisis. Two girls died aged, 3 & 14 years & 2 boys, one at 15 & the other at 16. Also

2 females aged 18 & 32. Only one  
 miner aged 31 years, so that only  
 3 deaths could by any possibility  
 be referred to this cause. (1871.)  
 In opposition to this statement, it  
 may safely be said that in these  
 workings at least Phthisis is uncommon,  
 & even there more common among  
 the female portion of the population.

Rheumatism is very common, but  
 the chronic form is most prevalent.  
 Still, a good deal of Acute Rheumatism  
 is met with & especially in the  
 working decades of their lives, &  
 from its bad effect on the heart  
 it causes more deaths than Phthisis.  
 This is shown more particularly  
 in the later portions of life.  
 No deaths have taken place in  
 our district for the last 3 years  
 from Rheumatism or Heart disease  
 under the age of 21. But over



21, there were 5 deaths from Acute Rheumatism & 16 from Heart Disease.

Lumbago & Sciatica of course are a direct interference of their modes of work, & almost universal. But while sufficient to prevent a man from working, they do not even take the death record nor take away much from his "chance of life".

General Diseases. Are almost unknown among our working population. In 18 months out of a working population of about 6000, we treated only one case of Syphilis, & not more than 6 cases of Gonorrhoea. This is more due to their young men & women contracting early marriages, than to their high moral condition.

Old age

The number of men & women in a colliery village who attain to the scar & yellow leaf stage of life is greater than is generally supposed. An impression seems to be very common that a miner is an old man at 50. This is not so.

Of the 250 deaths in Causley Moor & Clutburn, 42 or 16.8 per cent were over 60 years of age - Now, 169 die before attaining the age of 21, therefore, more die over 60 than between 21 & that age.

Of the 42 deaths

14 died between 60 & 70

20 " " 70 & 80

7 " " 80 & 90

1 " " 90 & 100.

16 of these deaths were due to Senile decay.

5 " " " " " " " Heart Disease

4 " " " " " " " Apoplexy.

7 " " " " " " " Bronchitis

Of the 192 deaths at Brandon & surrounding 29 or 15.9 per cent were over 60 years of age & of these cases 9 were due to senile decay.

"The Miners Permanent Relief Fund" of Northumberland & Durham recognises the fact that miners are not short lived, as they regard a man as able for work till he is 60 years of age at least. It is only when above 60 years of age that he can claim benefit from "the old man's section".

On looking into the balance sheet of that Society, I find that more money is paid under this section of "the old man's fund" than of any other; & that of the 56,866 miners in the counties of Northumberland & Durham 1905 are aged, or over 60 years. But a considerable number are

receiving benefit from the accident fund. ~~It~~ ~~was~~ not included among the 1905 so that 2300 or 2500 would be near the figure. Besides, there is a large number of old miners who are not connected with this fund, and a greater number still who are able to continue their work beyond the age of 60. It is not uncommon to find men 65 or 70, or even more, at work every day, in spite of the fact already noted that the greater number of these men began to work when about 6 years of age.

In very few employments do you find men working for 50 or 60 years in a fair measure of health a thing which is common enough among the miners whose diseases have for some time been the subject of my professional study.

Therefore - so far as my experience goes in the county of Durham, & so far as I can ascertain from the experience of those similarly engaged, the following conclusions are borne out on a somewhat broad foundation of observed facts -

- (1) That there is no disease which can be said to be special to miners & which is not in some degree incident to Society in general.
- (2) That on the whole they are an exceedingly healthy race, and that, so far as serious illness is concerned, they are not worse in any respect than other working men.

- (3) That the greater proportion of the adult illness is due to high feeding & indigestion, directly traceable to ignorance of the first principles of physiology.
- (4) That epidemics are very common & weaken & reduce the population.
- (5) That Atrophy & convulsions are the great cause of infant mortality and that this is largely due to wrong ideas on infant dietetics.
- (6) That Phthisis is uncommon in no way connected with their work.
- (7) That Bronchitis, Pneumonia & Rheumatism are common; due partly to their work, partly to their mode of life.
- (8) That a large proportion of miners attain the age of 60.