A few phrases with nothing original on it but it may help.

A.D. W.
Dietetic errors of the Northumbrian Agricultural Labourers
where a class of people has no regulations as to diet except those of habit and inclination it is difficult if not impossible to get exact statistics of the nature and quantity of the substances consumed. The diet which I am going to give as typical of the Northumbrian agricultural labourer is what from observation and inquiry I have concluded to be the average, though its component alimentary principles vary in some cases for the better, in some for the worse, when compared with what such authorities as Playfair and Parry consider to be a proper diet for labourers.

Within the last thirty or forty years a great change has occurred in the kinds of food commonly eaten by the Northumbrian farm servants, and several useful substances have fallen either partly or entirely into disuse. It is a matter of considerable difficulty to arrive at least conclusions as to the average diet thirty or forty years ago. Still from the fact that this class had then, the greater part of their wages paid in kind, we can at least find out the kinds of food eaten.

I shall first try to show the average diet of the Northumbrian 'birds' at the present time, second to give an idea of their diet thirty or forty years ago, third to compare these diets and last to speak of effects which I believe to have their cause in the change.

The ordinary diet at the present time is as follows.

**Breakfast.** This meal is taken early in the morning before commencing work. The time
varies from half past five in summer to seven in winter. It consists in the great majority of cases of white bread, butter, and tea without milk. A few still take what is known as 'Crowdy,' which is a mixture of oatmeal, hot water, and milk, but this is getting quite uncommon. Genuine oatmeal porridge is hardly ever used.

About nine o'clock a.m. a meal consisting again of white bread, butter, and tea is carried out to the labourers in the fields and eaten there.

Dinner. This meal is eaten at noon. It usually consists of bacon which is eaten with a considerable quantity of soft bread and potatoes. This is followed by a pudding made from white flour with some suet and currants. Tea is always drunk with this meal, and also some white bread is eaten. Dumplings or cabbage are occasionally used. Though the above is the commonest form of dinner, yet one sometimes finds small quantities of butternut substituted for the bacon, and broth made from vegetable with a small quantity of meat, is sometimes taken.

At four o'clock p.m. another meal consisting of white bread, butter, and tea is taken to the fields and eaten there. In some parts this is omitted.

Supper. This meal is eaten between six and seven o'clock after finishing work. It again consists of bread, butter, and tea. The bread at this meal is usually eaten hot.

In some cases where nothing is taken at four o'clock an equivalent meal is eaten during the
The Diet of Children. The children of this class are nearly always fed with farinacious food from the time they are from about three weeks old. The mothers cannot be persuaded that this is wrong in principle, and always argue that, because in special cases children fed in this way have grown up healthy, therefore it can do the others no harm. It is very rare indeed to find a child which has been fed exclusively on milk till it is five or six months old. The favourite form of farinacious food is that known as "Boiley." This consists of white bread broken into small pieces and mixed with about equal quantities of hot water and milk. Amount is sometimes given instead. few is given regularly to children from six months to a year old. When a child has reached the age of one year and six months, it has usually got on to pretty much the same diet as the grown up members of the family, and after the age of two years unless it be specially ordered, a child will exceptionally get any milk. The children themselves soon grow to prefer tea to milk, and often can hardly be persuaded to taste the latter.

The corners of Northumberland have lately on several occasions commented very severely on the present methods of feeding children so that perhaps fear may have some effect where advice seems to have little or none.
The Diet of the Northumbrian Agricultural Labourers.

Thirty or forty years ago, at this time as I have mentioned the Northumbrian farm servants had the greater part of their wages paid in kind. These allowances were known as ‘grains’ and were as follows: some meal, wheat, oats, barley, beans, peas, land to grow potatoes, and the keep of a cow.

The wheat was ground into flour, which contained nearly the entire grain, and was eaten as bread. The oats were ground into oatmeal, which was largely used in the form of porridge, and to a less extent as oat-cakes. Barley meal was used for bread making either alone or mixed with pea or bean meal. The whole allowance of barley was not always eaten, by the hired themselves, a part being sometimes used to feed pigs.

Pea or bean meal were eaten alone as porridge, and used in making bread mixed with either wheat flour or barley meal. Nearly every married girl kept a cow, and milk and its derivatives butter and cheese were largely partaken of. Tea was not drunk in large quantity partly because they had them much less pay in the form of money, and also because tea was then more expensive. From the former cause also bacon seems then no more to have been their favourite flesh food. For though they could keep pigs themselves yet they were unable to buy enough butcher meat which was quite as high in price then as now.

The children up to the age of six months seem to have been fed nearly altogether with milk, and got
little farinaceous food. Inwards the end of the
first year and for some time after they largely
subsisted on oat-meal porridge and milk, and
later on bread made from whole wheat flour,
barley meal, and its various combinations with
beans and peas. Milk was the staple drink.
From the above facts it will be seen that a
great change has taken place in the quality of
the food consumed by the Northumbrian Agricul-
tural Labourers. This change seems in great
part due to the different modes of payment.

The wages in those days were as follows. A
married man got yearly 25s. worth of wheat,
barley, oats, beans, and peas; the keep of a cow
which equalled 4; Potatoes equal to to 5s. and to 4 to
5 in money, in all equal to about 32s.

The married men were paid less in kind and
more in ready money.

At the present time the kings are paid almost
entirely in money, except in the case of potatoes
and in cases where a cow is kept. Cows
are kept by exceedingly few of the kings
now.

The change in the mode of payment origin-
ated altogether with the Agricultural Labourers
themselves. The chief reason was that they
get so much fleeced (or thought they did)
by the millers who ground their wheat,
oats, etc. They have however had their re-
venge for the change has exterminated the
small country millers. It seems probable too
that the married men felt on an unequal
footing with the unmarried the latter having
more actual money. Also there was a
smiling feeling of inequality with their neighbours.

The experimental values of the new and old diets shall now be considered individually, the substances comprising each.

The Present Diet. Wheat is the only cereal now used in any quantity by the labouring classes. In the form of bread and pasta it constitutes quite two thirds of their whole diet. The bread is always made from the finer and whiter kinds of flour. The flour made by the 'American Roller Process' is that most in favour, and the coarser and brown varieties have long been altogether discarded. This process comes to the removal of the outer part of the wheat grain. How it is well removed that the outer part of the wheat grain contains the largest proportion of nitrogenous matter, fats, and mineral salts, while the inner part of the grain gives the greatest proportion of starch. Pery in this point remarks: 'Further the cortex is soft and more friable. This part goes with the folder. Obtained in dressing the flour, it is the portion of the grain which is richest in nitrogenous matter, fats, and salts. It possesses therefore the highest alimentary value.' (Treatise on Food and Dietetics, second edition, page 230.) By the 'American Roller Process' of grinding, therefore, we get a fine flour in nitrogenous matter, fats, and salts, but little in starch. Considering the small proportion of animal food in the diet, this gratificatio-
time of the eye, and, perhaps to a certain extent, of the palate entails a serious loss to a class of people who, as will be seen further on, derive the greater part of the nutritive element of the food from bread. The Ballard and braw are used to feed cattle, the beef of which, however, is not as a rule eaten by the hinds. White flour is also used in making the paste which is eaten with the bacon or butcher meat forming part of the midday meal. This paste is not leved to form a crust, but is, as already men- tioned, eaten in a soft, doughy condition. Oatmeal is besides wheat, the only cereal now used by the farm servants. It is not how-ever the common article of diet it used to be. Oatcakes are not eaten at all, and oatmeal porridge gets every day a more uncommon article of diet. The only form in which oatmeal survives is as 'crumbly' which is still taken by some for breakfast. I have already mentioned how this is made and also that its use is on the decrease. Oatmeal is not only rich in albumen and fat, but also contains a much higher percentage of mineral salts than any other meal or flour made from a cereal.

Perry 'A Treatise on Food and Diestics 2nd ed. p. 457.

Potatoes. The use of the potato has undergone no variation. Potatoes are always eaten in considerable quantity with the midday meal. This is a food the chief characteristic of which is its richness in starch.
considerable and valuable part of the diet of a rural population, is in most cases conspicuously absent from the present diet of the Northumbrian Farm Servants. This is due to the fact that only a small proportion of them keep cows. This seems to have come about as part of the general tendency to do away with payment in kind; the keeping of a cow as I have said being returned as part of the wages. Now the women having once acquired the trouble involved by the management of cows do not at all like to return to it again. Also from want of practice they get unskilled in milking and the making of butter and cheese. A large farmer in this county tells me that on engaging a married man, provided that he always him to be respectable, he always offers to lend him money to buy a cow, but that in comparatively few instances is the proposal accepted. So that now cheese is little used and all the milk and butter have to be bought. In most cases they prefer to do without the milk but butter is used in quite ordinary quantity. "In the egg and also in milk," says Parry, "we have articles provided by nature for the special purpose of being employed in the construction and subsequent maintenance of the animal organism. Milk is complete in itself. In it exists, besides the organic principles, all the inorganic matter, including both saline and water that is needed." (Pratt in Food and Diabetics 2nd ed. p. 138.) But looking at milk's not as an article, but...
as part of a mixed diet the same austerity
practised (p. 1493 same work) that it has been
found in the case of the prisoners of the
Glasgow Prison for Scotland, that a diet con-
taining a very small quantity of meat—and
therefore incapable of the use under consider.
tion—can be made in every way sufficient
by the addition of milk.
Beau's is the favourite flesh food among the
Northumbrian Boors. This is probable due
to the fact that they can eat no great expense
Keep pigs, but was where it is in case
of buying they prefer it to beef or mutton
from bœuf they get of cheaper rate a good
supply of fat (6 to 9%) which being the best
beef producers enables them better to withstand
the cold to which they are frequently sub-
jected by their outdoor labour. In an allevi-
am, from its value is not very high (79 to 88%)
being rather under that of average meat flour.
Beef and mutton are not eaten in large
quantity by this class, perhaps be
cause they are more expensive and also be.
cause from the reasons mentioned in the
last paragraph bacon is more readily
obtained.
Sea is drunk to excess by the Northumbrian
farm servants male and female. It
is taken, as I have mentioned, with every
meal—bœuf with those carried out to them
in the fields. Milk from its scarcity is
not usually taken with it. The tea is
almost always drunk in the form of a
decreation, the teapot being allowed to stand

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\{All the analysis of different kinds of food in this paper unless stated to

come from some other source, are from the Table from Bulletin 43 of
\}
in the hot for a considerable time before use. The product is dark colored, astrin-
gent, and has an acid reaction. Though tea in moderation is a valuable stimulant
and beverage, yet, except for the milk and sugar taken with it, its alimentary value is
practically nil.
Fresh fish is seldom eaten by the Heathen.
Brain auicks, but smoked herrings
are occasionally used.
Fresh vegetables are not eaten in large quantity
though a small quantity of either
cabbage or swedes is usually taken with the
midday meal. Vegetables, especially Leeds, are also
taken in the form of soup, which however
is not itself an article of diet regularly
used.
I shall now give in a tabular form the commonest
diet for me day at the present time, giving
the respective proportions of the alimentary prin-
ciples calculated by the table from the work of
Dr. Lattesby and Parkes p. 457. Mary's Treatise on
Food and Dietetics, 2nd ed.

<table>
<thead>
<tr>
<th></th>
<th>Breakfast</th>
<th>Dinner</th>
<th>Supper</th>
<th>Morning-Main</th>
<th>Totals</th>
<th>Totals day</th>
</tr>
</thead>
<tbody>
<tr>
<td>White bread</td>
<td>6 oz</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>25 oz</td>
<td>15.75 oz</td>
</tr>
<tr>
<td>Sea</td>
<td>½ pt</td>
<td>½ pt</td>
<td>½ pt</td>
<td>½ pt</td>
<td>2½ pt</td>
<td>2.25 pt</td>
</tr>
<tr>
<td>Sugar</td>
<td>½ pt</td>
<td>½ pt</td>
<td>½ pt</td>
<td>½ pt</td>
<td>1½ pt</td>
<td>1.5 pt</td>
</tr>
<tr>
<td>Potatoes</td>
<td>3 oz</td>
<td>4 oz</td>
<td>3 oz</td>
<td>3 oz</td>
<td>10 oz</td>
<td>9 oz</td>
</tr>
<tr>
<td>Butter</td>
<td>3 oz</td>
<td>4 oz</td>
<td>3 oz</td>
<td>3 oz</td>
<td>12 oz</td>
<td>10.5 oz</td>
</tr>
<tr>
<td>Bread</td>
<td>3 oz</td>
<td>4 oz</td>
<td>3 oz</td>
<td>3 oz</td>
<td>12 oz</td>
<td>10.5 oz</td>
</tr>
<tr>
<td>Collage or</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunrise</td>
<td>3 oz</td>
<td>4 oz</td>
<td>3 oz</td>
<td>3 oz</td>
<td>12 oz</td>
<td>10.5 oz</td>
</tr>
</tbody>
</table>

*In the above table six ounces of bread is taken as
the equivalent of the same used in marking the
to the ground of which the former starts. The counterpoint is a quiet counterpoint to the main theme of the work, which complements the main melody and builds up to a crescendo.

At the point of this development section, we see the presentation of the main theme in counterpoint form. The countermelodies 1 and 2, written in a diatonic scale, play off of each other, creating a sense of harmony and unity. The main theme is then repeated in counterpoint, with the countermelodies building up to a climax.

During this section, the writer's technique of alternating between the countermelodies and the main theme creates a sense of tension and release. The countermelodies are also used to create a sense of unity and harmony, while the main theme remains the focal point of the work.

At the end of this section, the writer brings back the main theme in its original form, creating a sense of closure and resolution. The work then concludes with a final cadence, leaving the listener with a sense of satisfaction and completion.
grain is richest in nitrogenous matter, fats, and salts. This flour was well supplied with these principles. It made a brown bread which though palatable not so pleasing to the eye and palate, was more valuable dietetically. In several particulars, though it had a lower percentage of starch than the bread made from fine white wheat flour.

Oatmeal as I have already mentioned was eaten in large quantities by the whistling-wind Agrarian labourers thirty or forty years ago. Oatmeal contains a large percentage of albuminates (12·6%) fats (5·6%) and salts (3·1%). It is not only valuable from these principles, but also from the milk with which the porridge or ‘crowdy’ was eaten.

Beans and Pea Meals were consumed in very considerable quantity. These were eaten in the form of porridge, and soups, or more commonly mixed in bread with barley or wheat flour. Peas and Beans have a remarkably high albuminum value (23%) and also contain a large amount of mineral salts (2·5%).

Barley meal was used in considerable quantity in the form of bread. It has a comparatively low albuminum value, but is rich in carbohydrates (74·3%) and inorganic salts (2%).

Potatoes and fresh vegetables seem to have been used much in the same quantity as now.

Milk in these days was rarely made from servant kept a cow, so that there always had a plentiful supply of milk, which was their chief drink besides water. The children also
as previously mentioned were well supplied with this very essential part of their diet, also the labourers' voices made them row butter and cheeses which latter was in small quantity found a considerable addition to the albuminous part of their diet (28 to 44% of albumen). The milk and cheese also yielded a liberal supply of phosphate of lime. "Casein is a nitrogeneous principle which is conspicuous for the tenacity with which it holds a large quantity of phosphate of lime incorporated with it." (Key's Nutrition and Diets, 2nd ed., p. 137).

Below the Strids probably consumed bacon in quite as large quantity thirty or forty years ago as now, for they were able to feed more pigs then, which makes up for the amount now bought. The relative value of the chief principles contained in bacon have been alluded to when speaking of the present diet.

Beef and mutton were hardly ever eaten by the minds in those days, so that it is unnecessary to go into their value.

Sea for reasons already mentioned was not then drunk in great quantity, and as I have said has, by itself, practically no alimentary value.

Comparison between the present and the old diets.

In the following a certain amount of recapitulation of what has already been said for the sake of comparison must be exercised. I shall make the comparison chiefly with the two principles which I believe to be most affected by the change of diet, viz.: nitrogenous matter and mineral salts.

1. The flour now used by the Northernman form...
laboured, being altogether of the fine white kind, made from the middle part of the grain contains a large proportion of starch compared with the amount of albumen and mineral salts (1.1%). The flour used thirty or forty years ago, containing as it did a much larger part of the center of the grain had a larger proportion of albumen and mineral salts. I have had an analysis of fine white and whole wheat flours made by Dr. Stevenson Macadam, Edinburg, with relation to the amount of albumen and phosphates of lime in each. The result is as follows.

Fine white flour albumen 10.51% Phosphate of lime 2.44%
Whole wheat flour albumen 11.31% Phosphate of lime 6.88%

The large proportion of fat contained in the whole wheat flour may be mentioned though both class seem well supplied with fat.

2. Oatmeal is now less consumed in very small quantity. Under the old system of diet oatmeal was eaten in large quantity. It contains a large proportion of albumen (12.6%) and is richer of all the cereals in mineral salts (3%). Though containing less starch than wheat, it is very rich in fat.

3. Pea and Bean meals which are not now eaten added considerably to the albumen in the old diet. They contain about 28% of albumen and 2.5% mineral salts.

4. Barley meal which used now eaten contained a low percentage of albumen (6.3%), but this was made up partly the fact that it was generally mixed with pea or bean meal. It contains 2% of mineral salts.
5. The use of Bacon, Beef, Mutton, Potatoes and fresh Vegetables does not seem to have changed to any great degree.

6. The almost entire substitution of tea in the present diet for milk in the old is a matter of great importance. Tea and have already been said except for the milk, taken with it is practically unimportant. In the majority of cases, raw milk is not taken with tea. milk is used only in small quantity and in most cases not at all as a part of the present diet. Thirty or forty years ago, while tea was somewhat of a luxury to the class, milk was both drunk by itself in considerable quantity and also taken with oatmeal porridge. milk is a food the solids (14%) of which contain 2.92% of albumin, 37.1% of carbohydrates and 5.7% of inorganic salts chiefly phosphate of lime. Cheese which was a good deal used in the old diet contains from 20.4% to 44.8% of albumin and 41.9% to 5.4% of salts. less of fats from the disease of milk for an equivalent, purely an equivalent, amount of butter is bought.

Now white flour alone, in the present diet, represents and takes the place of coarse ground flour, oatmeal, pea and bean meals, and barley meal in the old. How each of the latter except barley meal contains a larger proportion of albumen than fine white flour and all contain a larger proportion of inorganic salts than fine white
flour, also by the almost entire substitution of tea in the present diet for milk in the old, a loss of albumen and inorganic salts, not to speak of carbohydrates, with which the present diet is well supplied, has been caused. The consumption of animal food, potatoes, and green vegetables may be taken to be the same. Therefore I think I am justified in concluding

1. That the diet of the northumbrian farm servants, thirty or forty years ago, contained a much greater proportion of albuminous material and inorganic salts than the diet now generally taken by them.

2. That the old diet from its largely vegetable nature must have contained a sufficient quantity of carbohydrates.

3. That in fact the old diet was just as rich as the new, no notably fatty food contained in the latter being absent in the former.

how it was seen that the present diet differed from the fairs' diet for active labourers chiefly in the small quantity of albuminous matter it contained, so that the old diet was as a whole much nearer that standard than the new.

Effects produced by the Change of Diet. Have tried to show that the change which has occurred in the diet of the Northumbrian labourers a decrease in the amount of mineral salts has taken place. This
seems to be the chief cause of the badness of their teeth, which is quite remarkable. Both the temporary and permanent teeth are affected. The temporary teeth are generally quite carious long before their term of usefulness has expired, and in some cases the first to come are almost useless before the eruption of the later ones.

The permanent teeth are, generally, at the age of twenty in a very bad state, and many of them are often quite gone by that time. They are rather uncommonly affected in the women—now in those who have not borne children—than in the men. The first of the permanent teeth to decay are those which appear first, viz., the first molars and upper incisors. It is very unusual to see a passably good set of teeth in either a man or woman of this class who has reached twenty-five years of age. In many of the old people, however, one sees very good teeth which would seem to indicate that the conditions destructive to them had not always obtained. Also among the upper classes the teeth are no worse than usual.

The liability of the temporary teeth to become carious seems to be due to imperfect calcification during their formation in utero. This is probably owing to the deficiency of lime salts in the diet of the mother, which deficiency is not made up for by the
Abstracting the lime salts which is known to occur from the bones and teeth of frequent
women.

This explanation also applies to those of the permanent teeth whose formation is commenc
ed in utero. A similar deficiency in the supply of lime salts would be likely to exist during lactation, primarily in the food of the mother, and secondarily in the milk supplied by her to the child.

If, at the age of one and a half to two years the child goes on to the same diet as its
parents, this diet, composed as can have been
it to be, chiefly of white bread and
tea contains a very small percentage of inorganic salts, so that the deficiency continues during the further formation
and eruption of the permanent teeth.
An account of some experiments on the influence of food on the density of
the teeth, by Dr Miller of Berlin, published
in the "Kranz" Dec. 13th, 1866, tends to throw some light on this subject.

Dr Miller is endeavouring to show experimentally how far changes can be produced in
the teeth. His method operanda is to extract a tooth from a healthy dog
and then to feed the animal on food
containing but little lime salts for three
months; a second tooth is now removed. The
food is changed to one containing an ex
cess of salts. This is continued for four
months when a third tooth is extracted.
From the results of chemical analysis
he finds that there is an appreciable loss of lime salts in the first stage amounting in one case to more than one per cent, and during the second stage that the proportion of lime salts rises to normal.”

How if it be true that this change can be produced in teeth already formed, it is at least probable that their composition may be even more affected by a deficiency of lime salts in the diet during their development, while calcification is going on.

It is remarkable that the shepherds and their families on the poorer farms in Northumberland have quite ordinarily good teeth. But they always keep cows—sometimes more than one to each household—and make large quantities of milk, and also hay. Still me oatmeal as an article of diet in considerable quantity.

The badness of the teeth of the Northumbrian farm servants may be due secondarily to the prevalence of dyspepsia, to which I shall now refer from the solvant effect of acid secretions.

Dyspepsia is more than usually common among the Northumberland shepherds. The chief cause of this seems to be the amount and nature of the tea drunk with all their meals and the early loss of the teeth. The tea taken by them having nearly always been "steamed" has a markedly acid reaction when tasted with litmus paper. Thus when taken into the mouth, at the same time
as the food, it prevents the action of the salivary ferment on carbohydrates, which action only takes place in an alkaline medium. The well-known deleterious effects of the continual drinking of strong boiled tea on the stomach itself need only be mentioned.

In an early loss of the greater number of the teeth prevents the thorough mastication of the food. This is especially important in a diet containing a large proportion of carbohydrates. For the saliva cannot penetrate the imperfectly divided food. Also when the food has passed into the stomach there is a greater difficulty of digestion, for the carbohydrates being still in great part in the insoluble form of starch, prevent the gastric juice from getting at the albuminous part of the food, whereas if the carbohydrates had in the act of mastication been changed by the saliva into the soluble form of sugar, then solution would leave the albuminous base to be acted on by the gastric juice. Also from the simple mechanical fact of imperfect subdivision the digestion of the food as a whole is rendered more difficult in all its stages.

The prevalence of dyspepsia may be to some extent one of the after effects of improper feeding when children. It may be also referred to their habit of eating hot newly baked bread on every available occasion. Also the paste eaten with the midday meal is a tinacious, indigestible, article of diet.
The present diet with relation to work.

Men who have long been farmers in Northumberland seem agreed that to do the same amount of work, more men are now required than thirty or forty years ago. This I understand to be the case when taking into consideration that labourers do not work quite such long hours now as then. The reason, assigned for this is, that owing to various agitations political and social, it is not the fashion for the muids to work as hard for their masters as formerly. And really when observed working they do not seem to work themselves very much, or do a great deal of work in a given time. But even allowing this to be to some extent true, it seems doubtful whether on their present diet they are able to perform the same amount of work as on the diet they took thirty or forty years ago. Parry says: "Practically it is found that hard work is best performed on a liberal supply of nitrogen containing food. The reason probably is that it leads to a better nourished condition of the muscles and of the body generally." (see Parry: "Nutrition and Dietetics," 2nd ed., 1930.) How we have seen that the amount of nitrogenous food in the present diet is only about 2.6 oz. per day, whereas Playfair in his model diet for labourers gives about double that quantity (Parry: "Nutrition and Dietetics," 2nd ed., p. 459). The dynamic value of the modern diet I have given is 4,341 foot tons.* But though the present diet

* Calculated by Frankland's experimental determinations of dynamic value of food.
from the large proportion of carbohydrates and fats contained in it. There is theoretically a considerable dietary value, yet practically from the deficient supply of nitrogenous material, the muscles are not strong enough to take the full amount of work out of the food.

Also from the frequency of dyspepsia which results chiefly from the present conditions of diet, there must be a considerable diminution of the work performed. The body is weakened by the imperfect utilization resulting from defective assimilation of the food. Also, through the indigestibles may not be sufficient to cause them to stop work, yet it is evident that while suffering from the discomfort of chronic dyspepsia, they will neither be inclined nor able to do as much work as it in perfect health.

A notable exception to the usual deficiency of nitrogenous food in the diet of the urban Poor occurs in the case of those men whose employment consists in cutting surface drains. This particular kind of labor is always done by piece work—so much a rod. The men who do it are selected men in physique and endurance, for though a strong man and one who understands the work can make five shillings a day, yet an ordinary hired is found by experience to make less than half that sum. These men are not hired by the term but
move about from place to place, taking work by the piece wherever their services may be required. They work for considerably shorter hours than the ordinary farm servants, but while at it they expend a great deal of power and perform an equivalent amount of work; in fact, farmers in Northumberland assure me that in the same time they expend four times as much energy as an ordinary hind.

It appears that the chief difference of the diet of these men from that of the ordinary farm servants is the large quantity of butcher meat consumed. They eat a considerable quantity of bread but few potatoes. In a case which came under my notice two men in an unemployed commencement for dinner two pounds each of beef without bones, how this is a class of labourers do have to perform a much greater amount of work than ordinary so that they may turn their great physical strength to a pecuniary advantage. But finding by experience that on the ordinary diet it is impossible to do so, they instinctively increase the nitrogenous element of their food, which, by improving the nutrition of the muscles enables them to take the highest possible amount of work out of the food. These men increase the nitrogenous supply by taking an even of animal food in their diet, which they are quite able to do from their
relatively high wages.
In collecting information with regard to the present diet of the Northumbrian agricultural laborers, I have trusted almost entirely to my own observations during a year and a half of practice among them. The facts concerning the diet thirty or forty years ago have, so the best authority, that is from intelligent men who were farmers of that time and also from the older farm servants themselves. It is to be regretted that there seems no chance of anything occurring to correct the errors which exist in the present diet of the Northumbrian laborers, and if nothing be done to make up for its deficiencies, the results here referred to them are likely to remain if not to increase.