PIG MANAGEMENT FOR BEGINNERS.

By P. Fowlie, N.D.A., N.D.D.

For the purposes of this paper it is assumed that the farmer intends to breed, rear and fatten his own pigs. This being so, the first problem facing the beginner is to decide what breed and type of pigs he intends to keep, and how many breeding stock he ought to purchase to make a start.

In this country the best market for pigs is usually through the bacon factories. These require pigs between 180 lbs. and 220 lbs. live weight. They should have attained that weight at an early age as possible, and should be fat but not excessively so, as South Africa prefers bacon without too much fat. Bacon pigs should be long in the body with deep sides and an even width from shoulder to ham. The pigs should appear very smooth, with no creases or flabbiness anywhere. Light coloured pigs are preferred by bacon factories, other things being equal, and in temperate countries a large percentage of bacon pigs are either white or have white as the predominating colour. This includes Tamworths; because they have a white skin, although the hair is red.

In many parts of South Africa white pigs are at a serious disadvantage, because their skins readily suffer from sunburn when they are allowed outside. For that reason white pigs can only be recommended if sufficient shade can be provided.

It is generally considered that the best bacon pigs are first crosses; that is to say, the progeny of a pure-bred sow of one breed and a pure-bred boar of another breed. The Tamworth comes nearest to the ideal bacon pig of any of the pure breeds. Sows of the Large White, Large Black and Tamworth breeds usually produce large litters and make good mothers.

In England the favourite cross for bacon pigs is the Large White sow and the Middle White boar. In parts of South Africa where white pigs are not considered satisfactory, the favourite cross is the Large Black sow and the Berkshire boar.

Tamworth sows can also be crossed with either a Middle White or Berkshire boar with good results.

In the sugar belt shade can usually be provided easily, and both Large Whites and Tamworths are giving good results. These two breeds are being crossed with each other and satisfactory bacon pigs are being obtained, but it would be interesting to see what could be done by using either a Middle White or a Berkshire boar on these breeds.

At present some of our breeders are keeping a few of their crosses for sows to be put with a pure-bred boar. This cannot be recommended, because the progeny are not so even in either colour or quality as first crosses. It is generally found that first crosses grow and fatten more economically than either pure-breds or the progeny of cross-bred-sows and a pure-bred boar.

**SELECTION OF BREEDING STOCK.**

To start a herd it is a good plan to purchase young sows which have already had at least one litter and which are safely pregnant to a boar of the same breed. The progeny of these will then be pure bred and the best females can be selected to keep for breeding purposes.

This may seem an expensive method, as it means paying a good price for the foundation sows; but if they are the right class of stock it will pay in the long run.

A couple of young boar pigs of the breed to be used for crossing can be purchased about the same time, and reared together. If only one of these is kept, as will probably be the case, the best can be selected and the other sold; but it may be considered wise to keep both at least until they are proved.

That is the general scheme; now for some details. This selection of foundation stock is so important that the beginner is strongly advised to seek the advice and assistance of some experienced pig breeder in making his purchases. In any case, he ought to inspect the herd from which he is buying as well as the individual animals offered to him. All the records of the herd ought to be inspected to find out whether the herd as a whole, and the near relations of the animals offered for sale, breed satisfactory litters at regular intervals. The best time to visit a herd is in the morning, as it is easier to form correct impressions in the morning than in the afternoon.

One should watch out for any signs of bad temper and avoid it. It is also advisable to reject animals showing any signs of weak pasterns, particularly when looking for a boar, as it is essential that a stud boar should be strong on his legs. Fecundity and stamina are more important than show points.

**QUARANTINE PURCHASED STOCK.**

This does not apply when the first stock are bought; but if new stock are brought into an existing herd, they ought to be quarantined for at least a fortnight before mixing with the herd.

It is advisable to note how purchased stock have been fed by the seller, and to feed them as nearly as possible in the same way at first. Change of feed ought always to be made gradually.

**HOUSING.**

It will not be possible to deal with the planning and construction of piggeries at great length here, but it is hoped that a few remarks on general principles may be useful.

On the Natal coast it is never necessary to provide warm houses if plenty of bedding is used. It is more necessary to do everything possible to have quarters that will be cool in the warm season. Pigs are naturally clean animals, if given a chance. They ought to have a comfortable bed to sleep on and a clean trough to eat out of.

For anyone intending to breed and fatten large numbers of pigs, a well-laid-out piggery is highly desirable. A plan ought to be made before commencing to build. The layout should be such as to suit the site, and ought to be arranged so as to allow it to be built part by part as required. The feed store and mixing house ought to be in a central position, to make the work of feeding as easy as possible. In cold countries a boiler to provide hot water is considered necessary. On the Natal coast it is possible to do without this, but some arrangement for getting a supply of hot water is very useful, as sowds ought to have their feed and water warmed at and just after farrowing time. It is a good plan to have the pens for brood sows a little apart from those for the growing and fattening pigs.

A simple form of piggery in use on many South African farms, including those on the Natal coast, is a long shed with a yard in front, divided into pens, so that each pen has sleeping quarters under the shed and feeding space in the yard, with a door from the yard to a path outside. A good size is 8 feet by 8 feet under the shed and 8 feet by 12 feet at least in the yard. It does not add greatly to the cost to make the yards a little longer.

Good piggeries of this type are built with walls of hollow concrete blocks, floors of concrete and roofs of corrugated iron, malthead, etc. The writer has not seen concrete roofs used, but he would like to suggest that they would probably be cooler and better than corrugated iron and no more expensive, besides being everlasting if properly cast and reinforced.

The floors inside, the sleeping quarters ought to be nearly level, having only enough fall to the yard to allow water to run when the area is washed. There should be a small herb about one brick high between the sleeping quarters and the yard, except for a short opening to let water out. This is to keep the bedding from spreading outside. The floors of the yards should have a decided slope towards the door.

Houses of this class are suitable for six fattening pigs or a larger number of weaners.
This type of house is also often used for brood sows, but is not ideal for this purpose.

Brood sows ought to have a draught-free place when farrowing and for some time afterwards. It is very convenient for the attendant if there is a passage under cover, to allow him to watch a farrowing sow in comfort on a wet night without being inside the pen.

It is better to have the inside part of a sow’s quarters with a wall all round and a door to her outside yard. This makes it possible to shut her inside when desired. A big size for a farrowing pen is 10 feet by 10 feet if the sows are big, though 8 feet by 10 feet will do.

The farrowing pen should be provided with a farrowing rail, with its underside about 9 inches clear of the floor and the same distance from the wall, round at least three sides. This is to prevent the sow from lying on her young whilst they are small.

A good house for brood sows can be made with the pens in two rows. Both rows of pens and a central passage being covered by one roof.

All pigs benefit greatly from being allowed to graze and have a fair amount of exercise, except those that are in the last two months of their fattening period. If suitable paddocks of fair size can be provided, portable houses with strong wooden floors well off the ground are very good and can be made at a reasonable cost in normal times. Full details for the construction of houses of this type are given in Bulletin No. 7, 1914, by E. Harrison, M.Sc., B.Sc., late principal, School of Agriculture, Cedara. This is known as the colony system and gives good results, when the same care is taken in looking after the comfort and well-being of the pigs as would be given if they are shut up. The objections are the space required and the extra work entailed in feeding and looking after the animals.

In such paddocks the food troughs should be movable as well as the houses, and they should be placed some distance from the houses. When grass is not plentiful in the paddocks other green feed should be supplied. When the ground round the house or the trough becomes muddy they can be moved.

It is essential that the fences of all pig paddocks should always be kept in repair, as it is dangerous to allow pigs to break out.

In South Africa a considerable number of pigs become infested by the parasite known as pig measles. This is the bladder worm, Cysticercus cellulosae, which is one stage in the life-history of the human tapeworm, Taenia solium.

The “measles” are found embedded in the muscles of the pig in various parts of the body. They do not seem to cause the pig much inconvenience and measally pigs fatten normally. It is only when they are killed that the measles are seen in the flesh.

The carcasses of measly pigs are condemned at the abattoirs and bacon factories and the producers get nothing for them.

To become measly a pig must be infected with the eggs of the tapeworm which have been excreted by a human being. Tapeworms are not uncommon in natives in South Africa, hence there is need to take all possible precautions to prevent pigs becoming infected.

Precautions.—Always keep the pigs in piggeries or in properly fenced paddocks. They ought never to be allowed to roam to any place where infection might be picked up.

Provide convenient latrines for all natives and see that they are used.

Dose natives with worm medicines such as Areca nut and Santonin, or extract of male shield fern if considered necessary.

FEED FOR PIGS.

The pig is capable of making use of nearly all kinds of farm produce as food, but to obtain good results its feed must be mixed so as to supply a balanced ration suitable for its age and the immediate end in view. It is a much more economical producer of flesh than the ox or the sheep. If the ration is right, a pig can make about one pound of live weight gain from approximately five pounds of dry matter supplied in its feed. The internal organs of the pig resemble those of the human being much more closely than those of the ruminants and are not capable of dealing with large quantities of bulky foods high in fibre. At the same time a certain amount of roughage is necessary.

GREEN FEED.

Pigs ought to have grass or other green feed, preferably of a succulent nature, but this ought not to form a large proportion of their feed. In the absence of suitable green feed they can be fed a little lucerne or other legume hay which is best chopped fine and moistened.

This green feed is important because it helps to keep the internal organs working in a healthy normal way. It thus enables the pigs to make more economical gains from the grain ration.

It has also been found that some of the essential vitamins are deficient in grain feeds but are present in most green feeds.

The following are some of the crops which can be grown for pigs on the Natal coast.

The Legumes, which are valuable for their high protein content, include soya beans, cowpeas, velvet beans, peanuts, and beans of the Canadian Wonder type. These can be fed either green or as seed.

Cruciferous crops include such as rape, kale, and chou moller and turnips.

Sweet Potatoes are one of the easiest crops to grow and both the tops and the tubers can be used for pigs.

Other crops which might be grown are pumpkins, cattle melons, artichokes, mangoes, beet and edible canna.

CONCENTRATED FEEDS.

Maize is fed to pigs in considerable quantities in all the principal pig-keeping countries of the world. Where it is produced locally it is usually much cheaper than any other grain. American experiments have shown that it can be fed whole or even on the cob and gives good results, so the cost of grinding can be saved.

It is rich in carbonaceous matter, but is low in protein and lime, not very well supplied with phosphates and very deficient in some of the vitamins. In fact, it is not a well balanced feed if fed alone or nearly alone.

It is generally agreed that it ought not to form more than about half of the dry matter in pig rations. If properly supplemented by feeds able to correct its deficiencies it is a very valuable feed. Pigs are very fond of it and make good gains in weight from it.

Wheat middlings and other by-products from the wheat milling industry are highly valued as feed for brood sows and for young pigs up to about three months of age. Their protein content is higher than that of other cereals, and this makes them specially valuable for milk production and for young animals rapidly growing. In the fattening ration they are not quite so good as maize. Unfortunately under present conditions they are not available.

Wheat bran is sometimes fed to brood sows in small quantities, but its feed value is low compared with the usual price and its chief value is as a corrective of constipation. If the other feeds are right it ought not to be necessary.

Barley is highly prized as feed for fattening pigs and produces a high-class bacon, especially if it can be supplemented with milk. Pound for pound it does not give as much live weight as maize and it requires to be finely ground. Barley can form a larger part of the fattening ration than maize but cannot be fed alone with profit. This feed, too, is unobtainable or nearly so at present.

Oats are also good feed for pigs if ground, but should not form more than one-quarter of the grain ration unless the rough husk has been sifted out.
Other grains such as kaffir corn, rye and buckwheat can be used in pig feeds in small quantities, but all should be ground into meal. In fact, maize is the only grain that can be successfully fed without grinding, and that only if fed dry.

Molasses are not widely used as feed for pigs, but where molasses are cheap, as they are on the Natal coast, they can be used with great advantage if the necessary precautions are taken. The chief food ingredient in molasses is sugar, which may be as high as 60 per cent., but they also contain all the essential minerals in fair quantity.

Molasses have a laxative tendency, which up to a point is a valuable tendency, but care must be taken not to give too much.

It is advisable to begin with a little and accustom the pigs gradually to molasses in their feed. As to the amount that can be fed, no definite rule can be laid down, but so long as the animals show no signs of purging the amount is not likely to be too much. As a general rule it can be taken that fattening pigs may be given up to 1 lb. per 100 lbs. of their live weight, whilst brood sows and young pigs probably ought to have some what less. Approximately 1/2 lb. of molasses equals 1 lb. of maize grain in feeding value.

Leguminous seeds, such as beans, peas, cowpeas, soya beans, peanuts and velvet beans are very good for making up the protein-deficiency of the grain ration, if they can be grown on the farm or purchased cheaply enough. Perhaps the easiest of these to grow on the Natal coast are soya beans and velvet beans. Soya beans are the more valuable of the two, as they contain a high percentage of fat as well as protein. However, velvet beans are also a suitable pig feed if ground to meal. Sometimes they are ground in the pods as they are cut out. They ought not to form more than 15 per cent. of the ration and are not very suitable for weaners.

Soyabean meal is much richer in protein than maize and also contains a fairly high percentage of fat. It is good in moderate quantities in a mixed ration, but American trials have shown that it is not a satisfactory supplement to a ration consisting largely of maize unless something else, such as meat meal or fish meal is also added. The same authorities give its feeding value as no higher than that of maize.

Brewers' grains, which are fairly rich in proteins and which are an excellent feed for dairy cows, are not suitable for pigs except in small quantities, on account of their high fibre content.

Peanut cake and soya bean cake, which are the residues from the seeds after they have had most of their oil extracted, are very rich in protein and are excellent for pigs. Peanut cake can be obtained in Durban; the price has gone up recently, but the supply is limited. It ought to form about one-fifth of the meal ration for brood sows and weaners, and one-eighth for fattening pigs if it is the only supplement rich in protein.

Linseed and linseed cake are very good, but are not usually available here.

Cotton seed and cotton seed cake are not safe feeds for pigs, though good for cattle. They contain something which may act as a pig poison.

PROTEIN-RICH FEEDS OF ANIMAL ORIGIN.

Fish meal is made from fish offal and sometimes from fish. As it is sterilized in the process of manufacture it is a safe feed. Whole fish is the best, but other qualities may be used. Fish meal may cause bacon to taste fishy if fed to fattening animals in the last stages of fattening. It is recommended that fish meal be reduced when pigs reach six months of age and stopped at least a month before they are sold.

Meal is made at some abattoirs in this country from offal and condemned carcasses. It is thoroughly sterilized in the process of manufacture and is a safe feed.

Both fish meal and meat meal are usually rather expensive feeds, but are very useful in small quantities for correcting the balance of the ration, by bringing up the protein percentage. They are very rich in protein and 1 part to 9 parts of grain feed is the highest quantity that is required for sows and young pigs fed largely on grain. If suitable green feed is given, or if wheat middlings form a considerable part of the ration, much less is necessary.

Separated milk, when available, is the ideal thing to supplement grain feed, as it is high in protein and bone-forming minerals. It gives best results if fed fresh from the separator before it is cold, but can be mixed with the feed and fed after standing about twelve hours if care is taken to clean the mixing vessels between each feed. Whichever plan is adopted ought to be adhered to, as pigs are apt to get scours if they are fed fresh milk at one meal and sour milk at the next.

Greatest profit is obtained from separated milk if only enough is fed to balance the ration. For weaners this is about 4 lbs. of separated milk for each pound of grain feed. For pigs from three to six months old about 3 lbs. of separated milk for each pound of grain, and for fattening pigs over six months old 2 lbs. of separated milk for each pound of grain. Brood sows may have separated milk if it is plentiful. If only limited quantities of separated milk are available the weaners will give best returns for its use. It ought to be sterilized as a precaution against tuberculosis, unless the dairy herd is free of that disease, as tuberculosis can cause serious loss in a pig herd.

Cod liver oil is an excellent addition to the ration of brood sows and young pigs. The sow can be given up to one tablespoonful in each feed, commencing some days before farrowing. Weaners may have up to a tablespoonful at each feed for a pen of six or eight animals.

MANAGEMENT.

The sow carries her young for sixteen weeks, and usually farrows within a day or two either way of that period. It has been claimed that if sows are given service by the boar before 10 a.m., a large percentage of them will farrow during the daylight hours. The writer cannot say whether this is so, but if the boar is kept in his own pen at night and allowed out to the sows after having his morning feed, most of his work is likely to be done in the morning.

After service the sows should be kept in a paddock, preferably large enough to provide some grazing. They ought to have two feeds a day of grain feed. Enough to keep them in good condition but not too fat. About 6 lbs. of grain per day should be about right, with plenty of grass or green feed.

When the sow is from one to two weeks from farrowing she should be placed in her farrowing pen each night to get accustomed to it, but she may be run out each day till she shows signs of milk in her teats, when she is best kept in the farrowing pen. Her grain ration should then be reduced. If she has been having dry feed this can be changed to sloppy food. A little wheat bran is good at this time, and if she has been sucking her litter this feed can be started in moderate quantity before farrowing. A tablespoonful of cod liver oil in each feed is very useful. Such feed is to ensure that she will not be constipated when she farrows, but will be in the best condition to farrow easily and to nurse her litter.

When she comes to farrow, a sow can usually manage without any assistance, but the attendant she knows ought to stay around to see that all goes well and to help if necessary. Sometimes young pigs are born in a bag. These require to be freed at once to allow them to breathe. When farrowing is finished and the afterbirth has been delivered it ought to be removed to prevent the sow from eating it.

Strangers ought not to be allowed near a farrowing sow and she should be kept as quiet as possible. Many young pigs can be saved by a careful attendant.

The sow should be fed warm sloppy feed in only moderate quantities for the first day or two, increasing gradually for a week. It is better to feed a brood sow three times a day than twice. After the first week she should be getting about 9 lbs. of grain feed per day. This is better fed in austy condition as slop. After each feed she should have about a gallon of clean water to drink. As the pigs grow larger and make a greater drain on the sow her feed may be increased gradually up to 12 lbs., or even a little over, of grain feed per day, but not more than she will clean up quickly.
The young pigs will begin to take a little of their mother’s feed when they are about a month old. It is then a good plan to let them have a small trough of sloppy feed, to themselves which the mother cannot get at. If separated milk is available it should be given to the young pigs.

The males should be castrated at about six weeks old. Many pig breeders spay their female pigs intended for baconers at the same time, as this makes them rest and fatten better. It is a more delicate operation than castration, but any person can do it after a lesson or two.

The young pigs are usually weaned at about eight weeks old. The sow can be allowed back to them two or three times to put her off her milk. She is then put with the other dry sows and served again at her first heat. Young sows may be kept back for a month or two if they are rather run down and look as if they would be better to grow out a little.

The weaners ought to have the same feed as they have had with their mother for the first month. They should take 2 lbs. of meal within a few days of weaning and increase to 3 lbs. per day by the time they are three months old. If they are making good progress they should require to have their meal feed increased by about ½ lb. each week, so that they ought to be eating 6 lbs. per week at four months, 8 lbs. at five months, etc., in addition to a variety of green feed. If some separated milk is available less meal will be required. As previously stated, the proportion of protein-rich feed can be reduced as the total amount consumed is increased.

Pigs make most economical gains from their feed whilst they are young, so they ought to be both growing and fattening all the time.

If pushed along on the rations indicated they ought to reach 200 lbs. live weight at about eight months old on the average. Some pig breeders feed the grain ration dry to all pigs over six months old, except to sows when rearing their litters. It is easier to measure out the proper amount to each lot of pigs and it is claimed that the pigs do better on a dry ration with plenty of water to drink.

The following is the Morrison Feeding Standards, taken from “Feeds and Feeding,” by Henry and Morrison.

<table>
<thead>
<tr>
<th>Class of animal</th>
<th>Per day per 1,000 lbs. live weight</th>
<th>Nutritive ratio</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Total dry matter</td>
<td>Digestible crude protein</td>
</tr>
<tr>
<td>Growing and fattening pigs—</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30–50 lbs. weight</td>
<td>46.2–51.0</td>
<td>7.8–8.5</td>
</tr>
<tr>
<td>50–100 lbs.</td>
<td>57.0–60.8</td>
<td>5.5–6.0</td>
</tr>
<tr>
<td>100–150 lbs.</td>
<td>32.4–35.8</td>
<td>4.4–4.9</td>
</tr>
<tr>
<td>150–200 lbs.</td>
<td>29.0–32.0</td>
<td>3.5–3.9</td>
</tr>
<tr>
<td>200–250 lbs.</td>
<td>25.5–28.1</td>
<td>3.0–3.4</td>
</tr>
<tr>
<td>Brood sows with pigs</td>
<td>20.0–24.0</td>
<td>2.4–2.7</td>
</tr>
</tbody>
</table>

The important thing to remember is that the young quickly growing animal requires more food for its weight than the older one, and that its food also requires to be richer in flesh-forming proteins.

Tables giving the composition of foodstuffs are given in “Feeds and Feeding.”

The author has gleaned information for this paper from a good many sources which cannot be mentioned by name, but he gratefully acknowledges his indebtedness to the authors of two books to which he is under special obligation. These are “Feeds and Feeding,” by Henry and Morrison, and “The Individuality of the Pig,” by Robert Morrison.

The matter in a paper such as this is necessarily very condensed in form, but every endeavour has been made to make it as accurate as possible. The paper is quite a long one for a conference such as this, so the author hopes that sins of omission will be dealt with sympathetically by his audience.

Experiment Station, South African Sugar Association, Mount Edgecombe, April, 1942.

Mr. DODDS said that planters had found pig-farming a profitable sideline up to now. The present scarcity of mealies might affect this enterprise, but there were other sources of food rich in carbohydrates available, such as sweet potatoes and molasses.

Mr. Dods said that he had corresponded with Mr. Montagu Simpson and Mr. Simpson stressed the following points: In a hot climate such as the Natal coast, good styes with thickly thatched roofs, as much shade as possible, and good wallows, were important. The progeny of a Tamworth sow, especially if a Large White boar was used, might grow more quickly than that of a Tamworth boar. The resultant progeny in this case would, however, be a practically white pig and the effect of sun-scalld would have to be borne in mind. The Berkshire breed was suitable only for porkers, and it was baconers that fetched the best prices. The straight-bred Large White usually gained the top price for baconers, if reared and fed under suitable conditions, and was therefore popular in Great Britain. A Large White boar and Large Black sow also gave a very excellent type of baconer and was perhaps the most popular with the pig farmer as a whole. A Tamworth boar and Large White sow gave a first-class baconer, and was one of the few crosses recommended by the Estcourt Bacon Factory. The straight-bred Tamworths also made good baconers, but were not quite so fast growing as the Large Whites or the crosses referred to.

Mr. WILKINSON sent the following written comments on this paper:—

“Bacon made from all black pigs is apt to suffer from ‘seedy-cut,’ that is, the roots of the black bristles show up in the fat, especially in the belly pieces; whereas by crossing with a white breed, this defect is reduced considerably, if not eliminated entirely.

“Whilst white pigs are proved to suffer from sunburn in South Africa, frequent access to a mud wallow and the application of oil to the pig’s skin go a long way towards reducing sun-scalld, but that does not apply to all pigs. A good method of applying oil is to tie an old sack round a post, which should be firmly fixed in a position where the pigs can get at it to rub against at frequent intervals. The soaking should be kept moist with oil, and old motor oil has been found as good as any for this purpose. It certainly saves hand-oiling.

“It should be borne in mind that pigs do not perspire through their skins, consequently high temperatures affect them more than animals which perspire freely. It is the reason why pigs die so often of apoplexy in heat waves.

“The beginner who intends to go in for pig-farming on any scale at all, should avoid buying weaners to fatten up on his own farm, even if it should mean a considerable set-back in the production of his baconers or porkers. There is no surer and quicker way of introducing diseases to his existing stock. Breed up your own herd and keep it isolated, except of course for the introduction of fresh blood from time to time.

“If concrete floors are used, movable wooden floors should be installed, made with an airspace underneath, in the sleeping quarters. Pigs are very liable to suffer from rheumatism, especially sows, if they sleep on bare concrete.

“When pigs are kept in paddocks, which are ploughed up at intervals, it will be necessary to ‘ring’ the pigs, otherwise with their ‘rooting’ the paddocks will soon be full of small craters which render ploughing most difficult.

“If there is a scarcity of green crops, ensilage is a good substitute.”
"When maize is fed whole, very often a big proportion of it is passed by the pig in its original whole state, which is very wasteful, being of no food value whatsoever.

"The following method of castration is recommended for the beginner: Two men are required for this operation. One holds the pig upside down by the hind legs and grips its shoulders between his legs, the pig’s back facing forward. By this means the pig is held practically rigid. The blood runs to its head and the operator is able to do his job quickly and efficiently. The cuts should be swabbed with a solution of permanganate of potash, which should also be used by the operator on his hands and the knife.

"Bacon factories have often objected to dry-fed pigs if they have not been on to wet food (the consistency of thick porridge) for fourteen days before killing. If this is not done, the sides of bacon were found to be hard or 'boardy,' i.e., not filled out properly."