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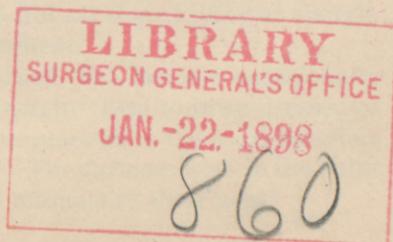
THE COUNTRY SLAUGHTERHOUSE AS A FACTOR IN
THE SPREAD OF DISEASE.

BY

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THE COUNTRY SLAUGHTERHOUSE AS A FACTOR IN THE SPREAD OF DISEASE.

By CH. WARDELL STILES, Ph. D.,
Zoologist of the Bureau of Animal Industry.

INTRODUCTION.

Generally speaking, the places for slaughtering animals for food may be divided into large *abattoirs* and local *slaughterhouses*. The former are usually located in cities, and operated in connection with packing houses. The latter are used chiefly by the meat dealers of the country towns, and the animals slaughtered at these places are generally, if not always, for local consumption. In this article it is intended to discuss only the local slaughterhouses in their relation to disease, and the criticisms here made do not apply to the large abattoirs which prepare meat for export and interstate trade in accordance with the system of Government inspection now in force.

It is impossible to ascertain from the State authorities the total number of places of slaughtering in either of the States discussed, so that no definite figures can be given covering the entire area visited, but a certain number of representative towns will be considered, in which the data were obtained by personal investigation.

The butchers of the counties visited supply themselves with meat from the following sources:

(1) Some meat dealers, especially those of the cities and larger towns, obtain all their meats from the large packing houses and do no slaughtering themselves; this class does not, therefore, enter into the field of this article.

(2) In a few cases meat men were found who did their own killing, but who had no regular place for slaughter. These men would drive from farm to farm and buy one or two animals, which they killed at the place of purchase, throwing the offal of the slaughtered animals to the farmers' hogs. They would take the dressed or partly dressed carcass to their meat shop and place it on the block.

(3) In a number of cases small dealers were found who had no slaughterhouse of their own, but who did all their killing at slaughterhouses controlled by other local butchers.

(4) In two towns at least it was learned that farmers occasionally slaughtered their own animals and brought them to town dressed or partly dressed, selling them in halves or quarters to the local butchers or to families, hotels, restaurants, etc. The farmers were in the habit of feeding the offal of the slaughtered animals to their hogs.

(5) The majority of the local dealers in small towns own or rent small slaughterhouses. In nearly all cases these houses are located on or just beyond the town limits. They are frame structures, generally of one room, built directly on the ground or raised several feet, and surrounded by a small yard, or in many cases situated in a large field.

In perhaps the majority of cases the butchers controlled a small piece of land, and, as a rule, hogs were kept on the premises to eat the offal. In many instances the houses were located on the banks of rivers or creeks into which the premises drained. Frequently the offal was thrown down an embankment toward the water and left there to be eaten by hogs and rats or to decay and drain into the stream. In some cases the slaughterhouses were located on farms. These farms were either owned by the butchers or a farmer would give to the butcher, for his slaughterhouse, the use of a piece of ground on the corner of his premises in return for the use of the offal as food for his hogs.

A very important matter from the standpoint of public hygiene is that in case a town was provided with more than one slaughterhouse, the houses were rarely segregated, but were scattered north, south, east, and west, each butcher apparently trying to place his house in such a position as to prevent any undue amount of curiosity on the part of his competitors as to the character of his stock.

NOTES TAKEN AT THE VARIOUS SLAUGHTERHOUSES.

After this general introduction, it may be well to give some notes taken upon the premises of various slaughterhouses. The plan of inspection followed was first to call on the local board of health and the mayor of the town, in order to obtain as much information as possible regarding the location of the houses, character of the butchers, etc. A visit was then made to the dealer, and permission to visit his slaughterhouse was requested; at the same time information was requested concerning the number of animals used, the origin and disposition of the stock, etc. In these notes any statements not made from personal observation are given upon the authority of the mayor, the local board of health, or the butchers themselves. As a rule, permission to visit the grounds was easily obtained and all questions were cheerfully answered. In some isolated cases, however, permission to enter the premises was refused by the butcher, and these places were then inspected only from a distance. It is needless to state that these premises were found in poor condition.

The cases cited below are taken at random from notes covering nineteen towns in one State and ten towns in another. The number of inhabitants of the towns is for the year 1890.

TOWN 1.

Inhabitants, 1,276. Number of slaughterhouses, 2. Proportion of slaughterhouses to inhabitants, 1 to 638.

Slaughterhouse 1.—About a mile west of corporation limits. Frequent complaints have been made by persons residing in the vicinity, but at present the premises are said to be in much better condition than formerly. About 40 hogs are on the grounds, feeding on offal and corn; these hogs are used only for local consumption. The offal is thrown out of the slaughtering room down a hill, and remains there until eaten by hogs and rats or until decayed; the premises drain into a creek, and are overrun with rats. Of 14 rats examined, 10 were infected with trichinæ.

Slaughterhouse 2.—About a mile and a half east of town; few hogs present, feeding on offal and very poorly kept; these hogs are used only for local trade. Premises badly infested with rats; 3 out of 8 examined were trichinous.

TOWN 2.

Inhabitants, 2,448. Slaughterhouses, 3. Proportion of slaughterhouses to inhabitants, 1 to 816.

The health officer of this town, when asked about trichinosis in this region, advised me to "ask some horse doctor about it, as that disease belonged to horse doctors rather than to physicians." He considered an inspection of meats useless, "as no disease could be communicated through the food supply." As long as such a man is allowed to hold the important position of health officer there need be no surprise if disease is widespread.

Slaughterhouse 1.—Butcher owns slaughterhouse a mile and a half southeast of town, the yards covering about 40 acres; premises in fairly good condition. His shop in town is full of rats; 4 out of 7 examined were trichinous. Butcher stated he had repeatedly attempted to feed hogs on offal, but found that they did poorly; one of the hired men stated that the proprietor had recently shipped 2 car loads of hogs from his slaughterhouse to abattoirs.

Slaughterhouse 2.—Butcher slaughters on his own farm, $2\frac{1}{2}$ miles north of town; keeps about 30 hogs, but does not feed for shipment; shop and slaughterhouse are both dirty and poorly kept; his 22 cats, however, seem to keep the rats down.

Slaughterhouse 3.—As filthy, dirty, and rickety a place as can well be imagined; situated about a mile east of town; premises are absolutely honeycombed with rats; of 5 rats examined, 3 were found infected with trichinæ. How the board of health can allow such a nest to exist passes comprehension, and how people can purchase meat prepared in such a place is a question the writer will not attempt to answer.

TOWN 3.

Inhabitants, 1,088. Slaughterhouses, 3. Proportion of slaughterhouses to inhabitants, 1 to 363.

Slaughterhouse 1.—Half a mile east of town; owner feeds about 150 hogs per year on the offal and sells them to shippers, buying hogs from farmers for his own block. The house is overrun with rats, but is in fairly good condition.

Slaughterhouse 2.—Abandoned about a year prior to visit.

Slaughterhouse 3.—Fairly good condition; 40 or more hogs per year fed on offal. Mr. D., a hog "shipper," ships about 6,000 head per year. Of this number about 125, or $2\frac{1}{2}$ per cent, are offal-fed hogs, from slaughterhouse No. 1.

Mr. M., "shipper," shipped 3,900 hogs from December 1, 1892, to April 1, 1893. Of these hogs, 40 head, or $1\frac{1}{3}$ per cent, were offal fed, from slaughterhouse No. 3.

TOWN 4.

Inhabitants, 6,747. Slaughterhouses, 4. Proportion of slaughterhouses to inhabitants, 1 to 1,687.

Slaughterhouse 1.—A mile and a-half southwest of town, on the banks of a river; the filthiest slaughterhouse found during the entire tour of inspection. A look at the dirty, ignorant man in charge is enough to turn one against any meats which may have passed through his hands. He resented the visit in a most ugly manner,

although the health officer was in the party. From either the proprietor or his hired man it was very difficult to obtain information regarding the origin or disposition of their hogs. Premises in a most horrible condition and totally unfit for use as a place in which to prepare food. The killing room is small and dirty, although an attempt seemed to have been made to wash the center of the floor after slaughtering the last time. Around the sides of the room stood barrels, many of them falling to pieces, filled with scraps of meat, and of easy access to rats. The blood and offal troughs drain directly into the river. Adjoining the killing room is a dirty, filthy rendering room. Some of the swine offal is rendered and the rest of it is fed to hogs. The entire premises are overrun with rats, and the hired man remarked that he "frequently poured hot water into the rat holes and killed the rats by hundreds" as they ran out. When asked what he did with the rats, he replied that he "did nothing with them; some were eaten by the hogs, the others were left to decay." No rats examined for trichinosis, as that would have been a waste of time. Under the conditions existing at this place the infection can certainly not be less than 70 to 80 per cent. Adjoining the buildings is a yard in which hogs, chickens, and turkeys are raised. There were about 70 swine, varying from pigs three days old to large hogs.

The public certainly can not expect that the premises of a country slaughterhouse will be as clean as a reception room, but butchers, on the other hand, should not expect that the public will tolerate such filthy, disease-breeding places as the one just described.

The local health officer has no authority over this house, as it is outside the corporation limits; the State board entirely ignores the condition of the slaughterhouses, and as a result the public has no protection from the impositions practiced by such filthy establishments.

Slaughterhouse 2.—Situated about half a mile south of town; far above the average country slaughterhouse. The premises are dry, except for a small pool, which should be taken care of. There are about 20 head of cattle on the place, and the proprietor generally keeps from 2 to 50 hogs in the yards, all of which are used for local trade; these hogs have access to the offal of the sheep and steers, but the offal of the hogs is carried away in barrels and thrown into the river. An excellent feature of this place is the bone platform, which, like the house itself, is raised about 3 feet above the ground.

Slaughterhouses 3 and 4.—Two small slaughterhouses are located within a few yards of each other, about a mile and a half southeast of town. The buildings are raised above the ground and are in fairly good condition; the yards are very small and there is evidently no attempt to raise hogs; the offal is thrown into the yards and allowed to decay.

The four towns cited are fair examples of the places visited. To publish the notes on the other towns would be simply to repeat the foregoing statements. Some places were found in good condition; some in a condition that was a disgrace both to their proprietors and to the communities that tolerated their existence.

SLAUGHTERHOUSES NATURALLY CENTERS OF DISEASE.

The first matter to notice in connection with this subject is that every slaughterhouse is from the very nature of things a center of disease, and naturally the poorer the condition of the premises the more dangerous they are. These facts will appear clear if one considers what takes place at one of these houses. Even if only a few animals are slaughtered each week, the total number may amount to several hundred during the year. Some of the animals are surely diseased.

At least one of the hogs has trichinosis, and when the offal of this trichinous hog is fed to hogs which are raised upon the grounds the latter can not escape infection with trichinae. But that is not all. The slaughterhouses are often overrun with rats; the rats feed on the offal, and when feeding on the offal of a trichinous hog they likewise can not escape infection with trichinae. As a matter of fact, the rats captured at slaughterhouses, meat slops, and rendering establishments were found to be infected in a much greater proportion than rats taken from other sources, as is shown by the following table:

Summary of trichinosis in rats.

Rats.	Number examined.	Number infected.	Number uninfected.	Percentage infected.
Group 1:				
From slaughterhouses.....	63	35	28	55.55
From meat shops.....	7	4	3	57.14
From packing houses.....	2	.....	2	.....
Total.....	72	39	33	54.17
Group 2:				
From cornercibs.....	11	1	10	9.09
From barns.....	61	.....	61	.....
From feed stores.....	1	.....	1	.....
From hotel.....	1	.....	1	.....
From unknown source.....	1	1	.....	100.00
Total.....	75	2	73	2.66
Grand total.....	147	41	106	27.89

Rats act as direct transmitters of trichinosis to hogs. According to the above statistics, if a hog kept at a slaughterhouse eats a rat, the chances are fifty-five in a hundred that it will become infected with the disease. Now, suppose that a slaughterhouse is burned or abandoned, as was frequently found to be the case; the rats inhabiting the premises naturally wander to the neighboring farms or to the cornercibs in order to obtain food, and of every hundred rats which leave the slaughterhouse grounds fifty-five carry with them the disease known as trichinosis. This disease they transmit to hogs, if eaten by them.

It is frequently denied that hogs will eat rats, but such denial is erroneous. Sometimes hogs have refused rats when offered to them; but that hogs do and will eat rats has been proved by experiment.

In the segregation of slaughterhouses care should be taken to destroy the rats in all the houses which are deserted, in order to prevent their wandering to neighboring farms.

From this it will be seen that every slaughterhouse where hogs are killed forms a center for the spread of trichinosis to neighboring farms, and when the offal is fed to other hogs it can not be expected that the latter will escape trichinosis any more than the rats. Offal-fed hogs are, therefore, liable to be infected to an extent varying from 10 to 100 per cent, and this custom of feeding hogs at country slaughterhouses unquestionably is mainly responsible for the spread of trichinosis among the hogs of the two States visited. When we recall that,

as was ascertained by inquiry, from one-fourth of 1 per cent to nearly 4 per cent of all the hogs shipped from certain localities are offal fed, we need not be at all surprised to find that 1 to 2 per cent of all the hogs examined at the large abattoirs are trichinous. Furthermore, since so much offal-fed pork is placed upon the local market in country towns, we need not be at all surprised should we find that a quarter or a half of all the pork sold by many country butchers is infected with trichinae.

But trichinosis is not the only disease which the country slaughterhouse spreads by offal feeding. It is well known that tuberculosis occurs in cattle and hogs. Now, if one or two hundred of these animals are killed at a country slaughterhouse during the year, it may safely be assumed that one or more of them are tuberculous. Feeding the offal of these tuberculous animals to hogs will transmit the disease to those hogs, and these animals when used as food may in turn transmit tuberculosis to human beings.

The country slaughterhouse is also the center of infection for a number of animal parasites which are injurious to live stock or, in some cases, even to man, and which are spread by means of dogs. Anyone who has visited one of these places will have noticed that dogs soon discover the premises as a good place to obtain food. While eating the discarded organs, they infect themselves with several kinds of parasites, of which the following are the more important:

The *Echinococcus hydatid* is found in the liver, lungs, and other organs of cattle, sheep, hogs, and certain other animals. It varies in size from a small object as large as a hazelnut or smaller to a bladder the size of a child's head. This bladder contains numerous tapeworm heads, and when eaten by a dog each head produces a small tapeworm. The eggs of this tapeworm are in turn transmitted to the various domesticated animals and man, and give rise to hydatids.

This parasite seems to be on the increase in this country. The disease it causes can occasionally be cured, but in man it is said to be fatal in five years in about 50 per cent of the cases. It can, however, be almost completely eradicated if slaughterhouses are properly cared for.

The Thin-necked bladder worm is found in the body cavity, in the omentum, etc., of cattle, sheep, and hogs, and is quite common in some localities. It develops into the Marginate tapeworm when eaten by dogs. The eggs of the marginate tapeworm are then scattered by dogs on farms, in the road, etc., and infect cattle, sheep, and hogs with the bladder worm. It occasionally causes the death of young animals, as the bladder worm can not be reached with medicines.

The Gid bladder worm is found in the brain of sheep, and occasionally in other animals, but fortunately it is exceedingly rare, if present at all, in this country. When eaten by dogs, it develops into a tapeworm which produces numerous eggs. The dogs scatter these eggs on farms, sheep become infected with them, and contract the disease of "gid" or "turnsick."

The Tongue worm is found encysted in the viscera of cattle, sheep, and other animals. It is about a quarter of an inch long, and when eaten by dogs grows to be 2 to 5 inches long, inhabits the nasal cavities, and produces numerous eggs, which are transmissible to man as well as to the domesticated animals.

It is needless to enumerate all the diseases which might center at a slaughterhouse, but two more maladies, i. e., hog cholera and swine plague, demand attention. It has already been noticed that many slaughterhouses drain directly into brooks and creeks. If hogs suffering from hog cholera or swine plague are killed and the entrails thrown into a yard draining into a creek, it inevitably follows that the creek becomes contaminated and the disease then spreads to farms lower down the creek, and an outbreak of the disease will follow. The same remarks apply to wire-worm disease in sheep.

From the foregoing details and discussion, the writer is forced to adopt the view that every slaughterhouse is a center from which disease may spread, and that the chief factors concerned in the spread of these diseases are (1) offal feeding, (2) drainage, (3) rats, and (4) dogs.

PREVENTIVE METHODS.

There are two methods of meeting and lessening the dangers with which slaughterhouses threaten the farmer:

(1) Since every slaughterhouse is a separate center of disease, it follows that a reduction in number or a segregation of slaughterhouses will reduce the number of places from which disease will spread.

(2) Since offal feeding, drainage, rats, and dogs are the important factors concerned in spreading the diseases, it follows that we can control the spread of these diseases by controlling these factors.

THE SEGREGATION OF SLAUGHTERHOUSES.

An exact ratio of the number of inhabitants to each slaughterhouse can not be deduced, as the neighboring farmers naturally draw some of their supplies from the local markets. Taking, however, the number of inhabitants in towns and the number of slaughterhouses, localities can be found where the proportion varies between one slaughterhouse to 72 inhabitants and one slaughterhouse to 1,600 inhabitants. In twenty-nine towns of the two States visited sixty-nine local slaughterhouses were found. Sixteen of the towns had two slaughterhouses each, eight had three each, two had four each, and one had five.

From the above figures it will be seen that twenty-nine localities furnished sixty-nine disease centers for the surrounding country. It is also evident that if the slaughterhouses were so segregated that all the butchers of each town were obliged to do all their killing at a common slaughterhouse, we should have forty places less from which disease could spread to the farms surrounding these twenty-nine towns.

The first and most important proposition, therefore, to lessen the danger due to the country slaughterhouse is to reduce the number of places at which slaughtering is allowed, compelling all the butchers of a given town to slaughter at the same place.

This suggestion will naturally not meet with the approval of all the butchers. The objection will be made that they have money invested in slaughterhouses and that any change will mean financial loss to them. To this the reply is that all or nearly all the country slaughterhouses are frame buildings, which are not of much value; they are cheaply built, poorly arranged, etc., and represent an infinitely smaller investment than the money invested in stock by neighboring farmers; and the temporary loss to be sustained by the butcher will be infinitely less than the loss sustained in the course of time by the neighboring farmers and by the community. Further, these numerous local slaughterhouses are menaces to public health, and under these circumstances a small financial loss to a few individuals can not be taken into consideration.

Another objection that will be made by the butchers is that while the segregation of the slaughterhouses would reduce the number of centers of infection, it would not reduce the amount of infection in a given district. To this the reply is that the objection is more apparent than real, since a given amount of infection in a restricted area is more easily controlled than the same amount of infection scattered over a larger area and in different localities.

Objection will also be made that this segregation of the slaughterhouses is an innovation, an experiment, a scientific theory which is not practicable. The reply to this is, that while it is an innovation in this country, it has been tested and found satisfactory in other countries, where practical experience has borne out scientific theory and where the plan has been shown to be entirely feasible.

Objection may be raised that one butcher does not care to be subjected to having his business open to the gaze of other butchers. This objection answers itself. There undoubtedly are butchers who would object to having other butchers see the class of stock they kill or raise, and the sooner the health authorities exercise some control over these dealers the better.

In connection with the segregation of slaughterhouses it is suggested that a slaughterhouse could be built by a stock company or by the municipality and stalls let to the butchers, or the butchers could build a common house for killing, or each butcher could move or build within a restricted area to be given up to slaughterhouses.

CONTROL OF THE DISEASE-SPREADING AGENCIES.

Passing now to the most potent factors in the transmission and spread of disease from country slaughterhouses, i. e., offal feeding, drainage, rats and dogs, let us see how these factors may best be controlled.

Disposition of offal.—The author unqualifiedly condemns the feeding of the uncooked offal of slaughtered hogs (and also of uncooked swill containing scraps of pork) to other hogs, on the general ground that this custom is a most potent factor in spreading disease, and also on the ground that butchers almost universally admit that offal-fed hogs are inferior to corn-fed hogs. It is here also specifically maintained that offal feeding at the small country slaughterhouses is the most important factor in the spread of trichinosis among our Western hogs, since the conditions found are such that undoubtedly from 25 to 100 per cent of the offal-fed hogs at these houses are infected with trichinæ. This custom unquestionably also plays an important rôle in the spread of tuberculosis among hogs. It is accordingly urged that the offal of hogs be disposed of in some other way. A dealer who kills but two or three hogs per week can not, of course, afford to render the offal, but if all the butchers of a given town or county, or of two or three neighboring towns, kill at the same place, the proportionate expense of rendering will be reduced.

There is no valid sanitary objection to feeding the offal of healthy cattle and sheep to hogs, but there are decided objections to feeding this offal in case the animals are diseased. In order to be on the safe side, therefore, it is urged that the custom of offal feeding be entirely abolished.

In large abattoirs no offal is fed, so that the claim some Europeans have made that offal feeding at Chicago and other large places spreads disease among our stock is entirely groundless.

Drainage.—If the offal is rendered, the problem of the drainage of slaughterhouses will be greatly simplified, since the greatest danger in the drainage is from the decaying offal. The latter being disposed of, the drainage system will simply have to take care of the unused blood, the water used for washing, and the rain.

Regarding the water supply, it may be stated that this is very poor in the average country slaughterhouse, but a segregation of the houses would enable the expense of a windmill or other supply power to be divided among several parties, and thus reduced, while the water supply will be increased. The drainage of the killing floors and yards is naturally quite rich, containing considerable manure, blood, etc. To drain this material directly into small creeks and rivers is somewhat dangerous for neighboring farms. As a safe method of disposal, the use of large covered cesspools situated some distance from the water supply is suggested. The cleanings from these cesspools would form excellent fertilizer, but should not be used fresh on any ground to which cattle, sheep, or hogs have access, or upon grounds planted with vegetables which are eaten uncooked. With comparatively little expense the blood could be immediately prepared as fertilizer.

The destruction of rats.—How to destroy the rats around a slaughterhouse is a serious problem. The use of "Rough on Rats" in these

places is to be condemned, as it causes the rats to wander, thus spreading disease. It is far better that diseased rats should remain on the premises than that they should wander to farms. "Rat runs" by use of ferrets or by pouring hot water into the rat holes, the presence of "ratters," and the systematic use of rat traps and rat falls will do much toward destroying these pests. Although there are slaughterhouses in the two States visited that are literally honeycombed by rats, there are others where rats are very scarce.

A most excellent "rat fall" may be made of a strong barrel, about half full of water. The cover should be placed on a pivot and well baited. Hundreds of rats may be caught with this device. It is important to dispose of the bodies of these rats so that they can not be devoured by other rats or by hogs.

Dogs.—The butcher who allows dogs access to the slaughterhouse or its grounds is directly responsible for the spread of certain animal parasites. Dogs should be absolutely excluded. The presence of cats is not attended with the same danger as that of dogs, but it is difficult to maintain cats at slaughterhouses for any length of time without feeding them on milk or other food besides meat.

GENERAL SUGGESTIONS.

The question of raising live stock on slaughterhouse premises naturally arises in connection with the question of offal feeding. The opinion upon this question needs no defense to anyone who will consider all the conditions involved. The writer is unqualifiedly opposed to the raising of any kind of stock upon premises occupied by slaughterhouses, and condemns this custom, so prevalent in some districts, as dangerous to the public health, in that it inevitably results in breeding disease in animals used for food. It is accordingly recommended that local or State regulations be made to the effect that when any stock animal, more particularly the hog, has once entered the premises of a slaughterhouse, it should not be allowed to leave those premises alive, and that it must be slaughtered within a period not exceeding two weeks.

Such a regulation would have the twofold effect of preventing the shipment of slaughterhouse hogs to abattoirs, and the limit of two weeks would prevent these animals from reaching a stage in the disease known as trichinosis where the malady is transmissible to man, in case healthy hogs became infected after entering the premises.

BUILDING MATERIAL.

Country slaughterhouses are almost invariably built of wood. The use of some other building material, such as brick or stone, is advised, as stone is more easily cleaned and holds odors less tenaciously than wood. The flooring and the pavement of the entire yard should, if possible, be of asphalt.

SANITARY POLICE.

The judging of meats involves a knowledge of disease which can not be assumed or expected to be possessed by butchers. Placing diseased meat on the block, unintentionally no less than intentionally, is dangerous to the health of the consumers. For the protection of both the butcher and his patrons, therefore, all meat should be inspected at the slaughterhouse by someone who is trained in meat inspection. As a rule, a veterinarian is best fitted for this work. Every local board of health should have a competent veterinarian among its members, and the local meat inspection would very naturally be one of his duties. It seems best, however, that the State veterinarian should have control over the slaughterhouses, and the writer would even go so far as to advise the appointment of an assistant State veterinarian whose sole or, at least, most important duty should be a sanitary supervision of slaughterhouses.

There are several reasons for suggesting that the slaughterhouses be placed under the State board rather than under the local boards. In the first place, the majority of slaughterhouses are located a short distance beyond corporation limits, and hence beyond the control of the local boards. If, however, these slaughterhouses are licensed by the State boards, satisfactory regulations can be imposed. Furthermore, the sanitary supervision of the grounds can best be performed by someone who is entirely independent of local practice, and the veterinarian who has this matter in charge should give up his entire time to it. A small country town can not, of course, keep a man for such duty, but a competent State official could be kept busy.

THE RIGHTS AND DUTY OF THE FARMER.

As a rule, there is little complaint against slaughterhouses in case the odor arising from them is not especially offensive. When complaint is made, the butcher sometimes cleans up the premises a little and the matter is dropped. From the above discussion, however, it must be evident that the odor arising from a slaughterhouse is insignificant when compared with the sanitary side of the question. It must also be evident that little will be done to better the existing conditions unless those directly affected take some decided action in the matter. The classes most affected are the farmer and the townspeople. The farmer suffers loss in his stock; the townspeople suffer loss in health. The townspeople can protect themselves against the diseases by thoroughly cooking their meats, and their interest in the matter then ends. The farmers must protect themselves in some other way, and the most natural way is to demand a better regulation of the country slaughterhouses. Let the farmer, therefore, take the initiative, and for his own protection let him demand a State control of these premises.

SUMMARY.

To summarize this subject in a few words—

1. A well-regulated system of slaughterhouses is as necessary to the public health as is a well-regulated system of schools to the public education.

2. Every slaughterhouse is a center of disease for the surrounding country, spreading trichinosis, echinococcus disease, gid, wireworm, and other troubles caused by animal parasites, and tuberculosis, hog cholera, swine plague, and other bacterial diseases.

3. The important factors concerned in spreading these diseases are offal feeding, drainage, rats, and dogs.

4. These diseases may be greatly held in check and in some cases entirely eradicated in two ways: First, by a reduction in the number of premises on which slaughtering is allowed, on which account it is urged as all important that there be a segregation of the slaughterhouses, so that all the butchers of any given town will be compelled to do all their killing in a common inclosed and restricted area. In abandoning slaughterhouses, care should be taken to destroy the rats, in order to prevent the spread of infection. Second, by regulating the factors concerned in spreading the diseases: (*a*) Offal feeding should be abolished; (*b*) drainage should be improved; (*c*) rats should be destroyed; and, (*d*) dogs should be excluded from slaughterhouses.

5. A licensing of slaughterhouses by the State boards of health and the employment of an assistant State veterinarian, whose sole or most important duty shall be a sanitary supervision of all places where animals are slaughtered for food, are necessary.

6. The appointment on every local board of health of a competent veterinarian, whose duty it shall be to control the class of meat placed upon the block, is urged. All meats should be inspected at the time of slaughter, thus securing for the local consumer the same guaranty that the National Government provides for the foreign consumer and for interstate trade.

7. The prohibiting of the raising of any kind of stock within the premises of slaughterhouses is advised, as are also State regulations to the effect that when a stock animal (horse, of course, excepted) once enters the premises of a slaughterhouse it must never be allowed to leave those grounds alive, but must be slaughtered within two weeks' time.

8. It is advisable to use more substantial building material in the construction of slaughterhouses.

9. The country slaughterhouse is more injurious to the farmer than to other classes, as he is less able to meet the dangers involved, and on this account he is urged to take the initiative in calling for a better regulation of places of slaughter.

10. When a farmer kills stock for his own use, he should burn or bury the offal, or cook it in case he feeds it to hogs.

